

Annual Report 2018

**Presented by the Austrian Board of Trustees
of the Austrian Member Universities**

Chair: o.Univ.-Prof. Dr. Dr.h.c. A Min Tjoa



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Preface by the Austrian National Coordinator

Prof. Dr. A Min Tjoa

2018 was another very successful year for ASEA-UNINET!

More than hundred projects and events were accomplished by the joint efforts of the Austrian ASEA-UNINET member universities with their Asian partners.

In 2018 for the third time, the Bernd Rode Award was announced in the three categories: Junior Researcher, Senior Researcher and Project Excellence. The submissions convincingly prove the many superb cooperation endeavours between Austrian and Asian member universities. The large number and high quality of the submissions reveal that scientific cooperation within the network has strongly increased and steadily and significantly gained growing importance.

The membership applications from four renowned universities to join ASEA-UNINET [namely University Klagenfurt (Austria), Hanoi Academy of Theatre and Cinema (Vietnam), Universiti Sains Malaysia (Malaysia) and Jönköping University (Sweden)], are another indicator for the immense attractiveness of the network.

At the ASEA-UNINET 2017 Plenary Meeting in Graz the network declared the “United Nations Agenda 2030 for Sustainable Development” as a major focus for the networks scientific cooperation. As a consequence soon thereafter the ASEA-UNINET “Sustainability Issues Workshop” was held in Kuala Lumpur in August 2018 . The primary goal of this workshop was to deepen research cooperation on SDGs and to trigger novel interdisciplinary North-South-South cooperation in the sake of the Agenda 2030. The start of our digital magazine “ASEA-UNINET Sustainability News” is another living testimony reflecting the many activities of our member universities in teaching and research on sustainability issues. We are extremely proud that Weena Gera who was hosted 2016/2017 by ASEA-UNINET at WU Vienna and who was one of the initiators of the sustainability workshop at the ASEA-UNINET Plenary Meeting in Graz, has received the prestigious “Gro Brundlandt Award 2018 for Women in Sustainable Development”.

We are very indebted to all supporters of our network for the successful academic cooperation in the past year. In the first place, we want to mention the continuous support of the Federal Ministry of Education, Science and Research. Our special thanks go to those personalities of this Ministry and the OeAD, who have been enduringly committed to the goals of ASEA-UNINET. I would like to cordially thank all members of the Austrian ASEA-UNINET board (“Kuratorium”) for their initiatives, hard work, commitment and excellent cooperation. Finally yet importantly, we would like to thank all staff members of the ASEA-UNINET office, who are constantly striving to ensure that the administration of our projects succeeds as smoothly as possible.

Scholarships awarded by ASEA-UNINET 2018

The table below lists the scholarships by category to show the source of funding.

A. Science & Technology Grants for South East Asia (TSA Grants)

7 researchers used a grant within the framework of TSA Grants in Austria (Period: 1.1.2018 – 31.12.2018, including extensions of scholarships awarded in previous years):

Indonesia	3 Ph.D.
Thailand	1 Ph.D.
Vietnam	3 Ph.D.

B. Ernst-Mach-Grant – ASEA-UNINET

Indonesia	10 Ph.D., 1 Post-Doc
Thailand	7 Ph.D., 9 Post-Doc, 4 music grants
Vietnam	7 Ph.D., 7 Post-Doc, 1 music grant
Philippines	3 Ph.D.

C. ASEA-UNINET – Project funding (SP24)

Including guest residences (1-3 months) within the framework of university projects

Indonesia	1 grant
Thailand	12 grants
Vietnam	3 grants
Malaysia	1 grant
Austria	2 grants (outgoing)

D. Other grants managed by ASEA-UNINET

The Higher Education Commission Pakistan funded in May 2018 41 Ph.D. grants in Austria. In October 2018 the number dropped to 23 scholarship holders from Pakistan.

Reports
of the
ASEA-UNINET
Austrian Member Universities



Bringing Behavioral and Experimental Finance-Expertise to Thailand 2018

Applicant

Juergen Huber (e-mail: juergen.huber@uibk.ac.at) is head of the Department of Banking and Finance at the University of Innsbruck, Austria, and was until 2017 general manager of the Society for Experimental Finance, which he co-founded, and co-editor-in-chief of the Journal of Behavioral and Experimental Finance. He studied at Tulane University and University of Innsbruck and was visiting professor at Yale University, University of Vienna, and Universities in Thailand, Vietnam and Indonesia. At the core of his research is behavioral and experimental finance.

Project Partner Abroad

Tanakorn Likitapiwat (e-mail: tanakorn@cbs.chula.ac.th) is Lecturer in Finance and the Faculty of Commerce and Accountancy, Chulalongkorn University since 2010. After completing his BA in Electrical Engineering (1996) and Master of Business Administration (2004) at Chulalongkorn University he did a PhD in Finance at the University of Memphis, USA which he completed in 2009. His main areas of interest are investment, market microstructure, and Behavioral Finance.

Report

After visits in December 2015, July 2016 and July 2017 I spent the week July 12th to 17th 2018 at Chulalongkorn Business School (CBS) to strengthen the ties between University of Innsbruck and CBS through (1) teaching, (2) a research seminar, (3) joint research, and (4) student exchange. Let me briefly state what activities were set in each of the four fields.

Ad (1) teaching: The Department of Finance at the University of Innsbruck has one of the leading groups in the fields of behavioral and experimental finance. We are happy to share this expertise and our experiences, e.g. in experimental research and I thus agreed to give a course on “Foundations of Behavioral Finance” at CBS. The six-day course was attended by 42

students, including nine visitors from Vietnam. During the class we covered several of the most important fields of Behavioral finance, and three times we went to the CBS FinLab where we ran experiments on the computers. For example, I had programmed an artificial stock market and students bought different information levels (the better the information the more expensive) and then traded on a continuous-double auction market. This experience was quite instructive for students who experienced trading as in a real stock market and who participated lively. I was also informed by colleagues from CBS that students value these experiences very highly.

Ad (2) research seminar: CBS asked me to give a research seminar, which I did on July 14th on the topic “What Drives Risk Perception? A Global Survey With Financial Professionals and Laymen”. There were about 40 students, mostly freshmen, and researchers in the seminar and we had an interesting and very interactive time together, as the audience was very eager to learn about the topic and methodology used.

Ad (3) joint research: the past two years Dr. Tanakorn Likitapiwat (tanakorn@cbs.chula.ac.th) from the Business School of Chulalongkorn University was in the research seminar I gave then and he was very eager to learn how to conduct experiments in finance to introduce and help advance this methodology in Thailand. Experiments are well-suited to explore the real behavior of people, rather than abstractly modelling it in equations and formulae. Dr. Tanakorn then read some of my (and other people's) papers and we started to design an experiment to elicit the risk and loss preferences of people, namely financial professionals and the general population in Thailand. Recently Dr. Likitapiwat has accepted to supervise a PhD-candidate, Ms. Som Patsi (som.patsi@gmail.com), who will also work in this field. The three of us met during my stay to discuss the project. The design was finished last year and the data collection (online experiments) have been almost finished. As Dr. Tanakorn has recently become a father and as his workload is very high, progress is not very fast, but we move on step by step.

Ad (4) student exchange: The school of management of the university of Innsbruck and Chulalongkorn Business School (CBS) have in 2017 signed a separate MOU under the Umbrella Agreement of ASEA-UNINET to strengthen the bond between the two schools. This MOU has already been filled with life in its first few months, as Ms. Paulina Dehmer and Mr. Johannes Stempfhuber visited last year. This year two more students (Thomas Ecker and Thomas Pichler will spend a Trimester each in Thailand). We are looking forward to also

welcome CBS students in Innsbruck. I met with Ms. Nattaya Mahing (nattaya@cbs.chula.ac.th), person responsible at Chulalongkorn for the exchange with Innsbruck.

Expected results and publications (Zu erwartende Ergebnisse und (eingereichte) Publikationen)

Dr. Likitapiwat has already collected most of the data of our jointly designed experiments. Now the results of the experiments are analyzed and then the paper will be written, presented at international conferences and submitted to an international journal. In this process the PhD candidate Som Patsi is involved and she played a central role in actually carrying out the experiments. Realistically it will still be about some time until we will have a working paper.

Planned activities and cooperations (Geplante Tätigkeiten und Kooperationen)

Our main goals are now to continue with the joint research project with Dr. Likitapiwat and Som Patsi and to fill the exchange program with life. In addition I was invited to teach again at CBS in July 2019, which I happily accepted. In September 2018 a delegation from CBS will come to visit Innsbruck and I have set up a meeting with them and our dean of studies that I will also attend.



Report for the “AIC-ATC-APC Joint Labs 2018”

As in the past years the long-standing cooperation between the University of Innsbruck and its partner institutions being the Austrian-Thai Centre for Computer Chemistry (ATC) at the Chulalongkorn University, Bangkok/Thailand and the Austrian-Indonesian Centre for Computational Chemistry (AIC), Gadjah Mada University/Yogyakarta, Indonesia have been continued. In 2018, it was aimed to strengthen the cooperation with the Indonesian collaboration partners. However, this activity was overshadowed by the unexpected passing of Dr. Ria Armunanto just two days prior to the visit of the principal investigator assoc. Prof. Dr. Thomas Hofer at the partner institution. In order to ensure that the long-standing cooperation between the University of Innsbruck and the Gadjah Mada University is continued, the research activities had to be adapted and the cooperation with the head of the computational chemistry group Prof. Dr. Harno dwi Pranowo was enforced. To achieve this two separate visits of Prof. Dwi Pranowo at the University of Innsbruck took place, instead of the planned research stay of Dr. Armunanto.

The research activities with our international partners are continued in 2019. In July 2019 the principal investigator will visit the Gadjah Mada University as well as the Chulalongkorn University, in Bangkok, Thailand. Afterwards, Dr. Dita Saputri, research at the Gadjah Mada University will visit the Computational Chemistry Department in Innsbruck for a 2 month research stay. In fall 2019 two post-doctoral visits at the University of Innsbruck are planned as well.

Furthermore, the collaboration with Prof. Dr. Tarique Moin from the H.E.J. Research Institute, Karachi/Pakistan is continued in form of joint publications being in preparation and the planned visit of a doctoral student as a guest researcher at the University of Innsbruck.

1) Curricula Vitae:

Principal Investigator:

Name: assoc. Prof. Dr. Ing. Mag. **Thomas Hofer**

Institution: University of Innsbruck, Institute for General Inorganic and Theoretical Chemistry

Email: t.hofer@uibk.ac.at

Prof. Hofer graduated from the University of Innsbruck and earned his habilitation in Theoretical and Computational Chemistry in 2010. Since 2011 he is associated professor at the Institute for General Inorganic and Theoretical Chemistry of the University of Innsbruck. His main field of research is in the area of hybrid quantum mechanical/molecular mechanical (QM/MM) simulation studies of liquids systems and theoretical vibrational spectroscopy.

Cooperation partners:

Name: Prof. Dr. **Harno dwi Pranowo**

Institution: Department of Chemistry, Gadjah Mada University

Email: harnodp@ugm.ac.id

Prof. Dr. Harno dwi Pranowo carried out his Ph.D. studies under the supervision of Prof. Dr. Dr.hc. mult. Bernd M. Rode at University of Innsbruck in 2000. Since 2009 he is head of the computational chemistry group at the Gadjah Mada University. The research activities of Dr. Ria Armunanto are focused on the area of hybrid quantum mechanical/molecular mechanical (QM/MM) simulations of non-aqueous solutions such as liquid ammonia.

Name: Ast. Prof. Dr. **Tarique Moin**

Institution: University of Karachi, HEJ Research Institute for Chemistry

Email: tarique.syed@iccs.edu

Ast. Prof. Dr. Tarique Moin graduated from the University of Innsbruck in 2011 under the supervision of Prof. Dr. Dr.hc. mult. Bernd M. Rode and the principal investigator. Since 2013 he is ast. Prof. at the HEJ Research Institute for Chemistry of the University of Karachi. Ast. Prof. Moin's research is focused on the application of theoretical methods in chemistry to systems relevant for biomolecular processes.

2) Publications resulting from the research conducted in earlier projects:

The following articles resulting from the respective cooperation activities have been accepted for publication in international peer-reviewed scientific journals.

"Single-ion thermodynamics from first principles –absolute redox potentials, ionic hydration free

energies and water surface potentials from ab initio Quantum Mechanical/Molecular

Molecular Dynamics of aqueous Li^+ "

Niko Prasetyo, Philippe H. Hünenberger and Thomas S. Hofer

J. Chem. Theory. Comput. 12 (2018) 6443 - 6459

"Absolute Hydration Gibbs Free Energy of Carbon Dioxide in aqueous environment: A

Quantum Mechanical/Molecular Mechanics Molecular Dynamics Thermodynamic Integration (QM/MM

MD TI) Simulation Study"

Niko Prasetyo and Thomas Hofer

J. Chem. Theory. Comput. 12 (2018) 6472 - 6483

"Square planar or octahedral after all? The indistinct solvation of platinum(II)"

Muhammad Saleh and Thomas S. Hofer

Dalton Transactions 47 (2018) 13032-13045

"Investigation of the preferential solvation and dynamical properties of Cu^+ in 18.6% aqueous ammonia solution using ab initio quantum mechanical charge field (QMCF) molecular dynamics and NBO analysis"

Wahyu Dita Saputri, Yuniawan Hidayat, Karna Wijaya, Harno Dwi Pranowo, Thomas S Hofer

J. Mol. Liquids 275 (2019) 859-866

"A DFTB/MM MD Approach for Solid-State Interfaces: Structural and Dynamical Properties of H_2O and NH_3 on R-TiO_2 (001)"

Muhammad Saleh, Thomas S. Hofer

J. Phys. Chem. C 123 (2019) 7230 -7245

“Adsorption and dissociation of water molecules at the α -Al₂O₃ (0001) surface: A 2-dimensional hybrid self-consistent charge density functional based tight-binding/molecular”

Niko Prasetyo, Thomas S. Hofer

Comput. Mat. Science 164 (2019) 195-204

In addition a number of further manuscripts are currently submitted as well as under preparation.

3) Research visit of assoz. Prof Dr. Thomas Hofer in Yogyakarta (12. - 26.07.2018):

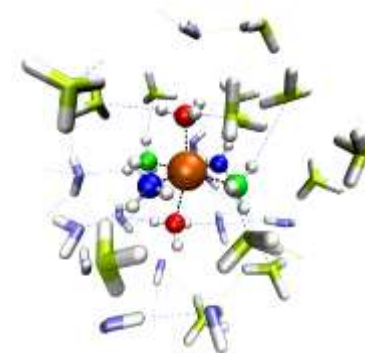
This research visit was intend to connect with Dr. Ria Armumanto, alumni of the Theoretical Chemistry Division of the University of Innsbruck and his staff members to finalise manuscripts for dissemination and to formulate new work packages to continue the collaborative research activities. However, on 10. 07. 2018 Dr. Armunanto unexpectedly deceased. In order to keep the collaboration active, the Ph.D. projects of Dr. Armunanto's student have been discussed in detail together with Prof. Harno dwi Pranowo, in order to ensure that the students are capable of continuing their research activities with a different supervisor. In addition, the students have been supervised during the production of research articles for dissemination.

In addition to delivering a guest a lecture on QM/MM methods in material sciences, a second invited talk was held at the workshop for molecular drug design focused on chemical simulations techniques in molecular modelling.

4) Research Visits of Prof. Harno dwi Pranowo (09.-17.08. & 24. - 30.11.2018)

As mentioned in the introduction the sudden passing of Ast. Prof. Dr. Ria Armumanto threatened the continuation of the long-standing cooperation between the Theoretical Chemistry Department at the University of Innsbruck and the Universitas Gadjah Mada (UGM). In order to develop a suitable strategy to support the students of Dr. Armunanto and to ensure future collaborations, the head of the Theoretical Chemistry Lab at the UGM performed two visits at the University of Innsbruck. It was deecided that the position of Dr. Armunanto will be given to Niko Prasetyo, M.Sc. who currently performs his Ph.D. studies under the supervision of the PI at the University of Innsbruck. In additon, Dr. Muhammad Saleh, who also graduated from the Univesity of Innsbruck in the research group of the PI will be offered a position at the UGM. Thus, it is planned that the activities of Dr. Armunanto are continue by two young researchers, which also holds potential to further advance the collaborative activities.

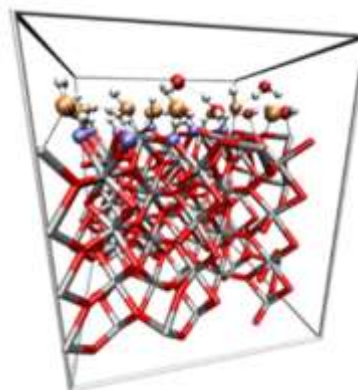
In addition to strategic considerations, a number of research articles have been prepared with the contribution in the *Journal of Molecular Liquids* has already been published in 2019 (see above). In this article the preferential properties of Cu⁺ in aqueous ammonia solution have been investigated with respect to the associated structural, dynamical and energetic properties using the hybrid quantum mechanical/molecular mechanical (QM/MM) molecular dynamics simulation technique developed at the University of Innsbruck.



Furthermore, a research visit of the PI in July 2019 has been planned. At this occasion a workshop focused on the use of density-functional tight binding (DFTB) theory will be held with contribution of both the PI as well as research staff from the UGM. Furthermore, a post-doctoral visit of Ms.W. Dita Saputri, Ph.D. from the UGM at the University of Innsbruck from August to September 2019 has been planned.

5) Research visit of Dr. Muhammad Saleh in Innsbruck (01.01.-30.01.2019):

Dr. Muhammad Saleh from the Theoretical Chemistry Lab of the University of Innsbruck visited the University of Innsbruck in January to finalise the article on a newly developed simulation approach for the study solid-liquid interfaces via the combination of self-consistent charge density functional tight binding (SCC-DFTB) with a molecular mechanics approach. Due to the computational efficiency of the SCC-DFTB technique, an unprecedented simulation time of 1 nanosecond was achieved, enabling the detailed characterisation of numerous proton transfer reactions occurring between the solid and the liquid phase.



The respective article outlining the details of this novel simulation approach forms the basis of a new research focus relevant for the existing collaborative activities and was published in the Journal of Physical Chemistry C.



Development of Rapid Analysis Methods for the Determination of Sofosbuvir (SOFO, SBV), an Antiviral Drug for Hepatitis C (HCV) Therapy

Report for ASEA Project

"ASEA 2018/Uni Innsbruck 4"

Applicant: Ao. Univ. Prof. Dr. Andreas ZEMANN

Project Leader: Mag. Alex MAIR

Leopold-Franzens-Universität Innsbruck

Institut für Analytische Chemie und Radiochemie

Centrum für Chemie und Biomedizin – CCB

Innrain 80/88, A-6020 Innsbruck, AUSTRIA

Tel.: +43-512-507-57311

email: andreas.zemann@uibk.ac.at

Cooperation Partner Abroad: Prof. Dr. Nguyen Duc TUAN

University of Medicine & Pharmacy of Ho Chi Minh City

Department of Analytical Chemistry and Drug Quality Control, Faculty of Pharmacy

41 Dinh Tien Hoang Street, District 1

Ho Chi Minh City, VIET NAM

Tel.: +84-2838295641

email: ductuan@ump.edu.vn

Introduction

Motivation and State of the Art

Since 2013 Sofosbuvir (SOFO, SBV) is used for the therapeutical treatment of Hepatitis C (HCV) and various analytical methods have been proposed for its determination. [¹⁻¹⁰]

In order to maximize therapy efforts and, at the same time, minimize negative side effects for affected patients a serum monitoring would be useful.

In the course of this project, three analysis methods have been developed and evaluated for the quantitative determination of Sofosbuvir:

- Ultraviolet/Visible Absorbance Spectroscopy (UV/VIS)
- High Performance Liquid Chromatography (HPLC)
- Capillary Electrophoresis (CE)

Analyzed Samples

For the three developed methods, linear regression analysis was performed and evaluated with respect to linearity and precision. All three methods were found to be suitable for the analysis of Sofosbuvir in tablets of a commercial brand (SOFOVIR – Sofosbuvir) from Hetero Labs Limited, manufactured in India under a license from Gilead Sciences Ireland UC (Figure 1).

-
- [¹] Asselah, Tarik. (2013). Sofosbuvir for the treatment of Hepatitis C virus. Expert opinion on pharmacotherapy. 15. 10.1517/14656566.2014.857656.
- [²] Axley, Page & Ahmed, Zunirah & Ravi, Sujana & K. Singal, Ashwani. (2018). Hepatitis C Virus and Hepatocellular Carcinoma: A Narrative Review. Journal of Clinical and Translational Hepatology. 6. 1-6. 10.14218/JCTH.2017.00067.
- [³] Backus, Lisa & Belperio, Pamela & A. Shahoumian, Troy & A. Mole, Larry. (2018). Direct-Acting Antiviral Sustained Virologic Response: Impact on Mortality in Patients without Advanced Liver Disease. Hepatology. 68. 10.1002/hep.29811.
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- [¹⁰] de Martel, Catherine & Maucourt-Boulch, Delphine & Plummer, Martyn & Franceschi, Silvia. (2015). Worldwide relative contribution of hepatitis B and C viruses in hepatocellular carcinoma. Hepatology (Baltimore, Md.). 62. 10.1002/hep.27969.

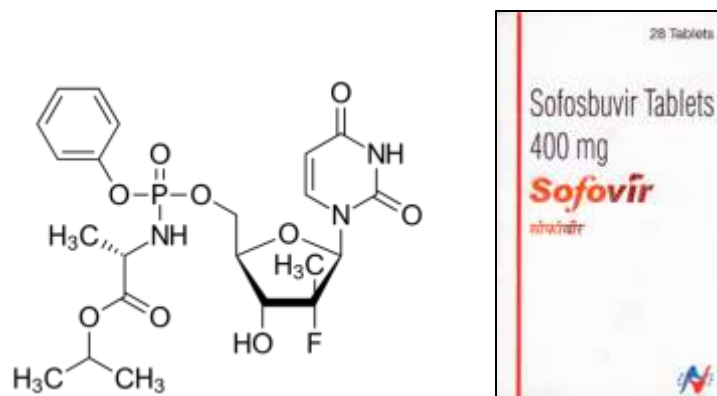


Figure 1. Sofosbuvir (SOFOS)

left: Chemical structure of Sofosbuvir

right: SOFOVIR tablets containing 400 mg Sofosbuvir as active ingredient (Hetero Labs Limited, India)

Results

Statistical Evaluation

In pharmaceutical analysis it is always recommendable to have more than one analytical method at hand. Besides the fact that results obtained with more than one analysis method can easily be cross validated by the respective other method(s) other advantages can be stated. Alternative methods reduce the bias due to unknown false positive or false negative errors and, even if these errors are small, any analysis method should aim at maximum accuracy.

Accuracy is generally prone to two error contributions:

- systematic error impairing trueness and
- random error compromising precision

Whereas systematic errors can be avoided by applying as much experimental care as possible, random errors always occur to at least some extent and should therefore be minimized. It is not always possible to distinguish between the two sources of error, however, there are statistical parameters indicating the lack or at least acceptable levels of errors which may negatively affect accuracy.

A detailed data evaluation of the developed methods has been carried out using various statistical parameters describing the accuracy of the applied linear calibration regimes (Table 1).

Table 1. Description of the statistical parameters used for linear regression analysis

b (slope):	slope of the linear regression line (not forced through origin)
a (intercept):	ordinate distance of the linear regression line at point of origin
S_b:	standard deviation of b (slope) of the linear regression line (not forced through origin)
S_a:	standard deviation of a (ordinate distance) of the linear regression line at point of origin
r²:	square of Pearson correlation coefficient (PCC)
S_y:	residual standard deviation of the linear regression
df:	degrees of freedom
SS_{reg}:	sum of squares of the linear regression
SS_{resid}:	sum of squares of the residuals of the linear regression
\bar{x}:	arithmetic mean of the x values
\bar{y}:	arithmetic mean of the y values
S_{xo}:	standard deviation of procedure in the middle of the linear regression
V_{xo}:	relative standard deviation of procedure in the middle of the linear regression
LOD:	limit of detection estimated from the linear regression data
LOQ:	limit of quantification estimated from the linear regression data
N:	total number of calibration points
m:	total number of sample points (defined as 1)
$\Sigma(x_i - \bar{x})^2$:	sum of squares of the calibration x values
$\Sigma(y_i - \bar{y})^2$:	sum of squares of the calibration y values

The results of the applied linear regression analysis reveal very good and sufficiently precise reproducibility of all the developed methods over the chosen concentration range, be it UV spectroscopy, Chromatography, or capillary electrophoresis, respectively. The statistical parameters obtained by the linear regression analysis for all three methods are shown in Table 2.

For a quick assessment of the linear calibration function the relative standard deviation of procedure in the middle of the linear regression (V_{xo}) can be used. It is calculated from the residual standard deviation and the slope and describes the precision of the linear regression function. The lower the value, the more precise. Usually, V_{xo} is given as a % value by multiplying the calculated number by 100. Generally, a value for V_{xo} below 5% represents a good precision, for trace analysis methods a higher value below 15-20% is considered satisfactory.

Table 2. Linear regression analysis results for the applied analytical methods

	UV	HPLC	CE (int)
b	0.01925445	15809.7224	0.01007403
a	-0.0087127	-5670.681	-0.0364136
S _b	6.89E-05	157.321303	0.00011253
S _a	0.00309333	15235.1694	0.02541224
r ²	0.99982076	0.99901077	0.99875386
S _y	0.00594454	18726.1947	0.02482411
F	78094.0801	10098.8848	8014.75927
df	14	10	10
SS _{reg}	2.75965007	3.5414E+12	4.93898625
SS _{resid}	0.00049473	3506703676	0.00616236
\bar{x}	39.375	90.54	216.666667
\bar{y}	0.74943125	1425741.58	2.14629226
S _{x0}	0.30873569	1.18447334	2.46416939
V _{x0}	0.78%	1.31%	1.14%
LOD	0.61747137	2.36894668	4.92833879
LOQ	1.54367843	5.92236671	12.320847
N	16	12	12
m	1	1	1
$\Sigma(x_i - \bar{x})^2$	7443.75	14168.504	48666.6667
$\Sigma(y_i - \bar{y})^2$	2.76014479	3.5449E+12	4.94514861

Ultraviolet Absorbance (UV) Spectroscopy

UV absorption is a rather simple method. However, it generally lacks specificity which means that the analytical signal cannot be uniquely attributed to single compounds and maybe overlapped by other compounds of similar or even different chemical nature. However, due to its simplicity UV absorption is a popular, inexpensive, and commonly used method.

It was thus obvious to at least try to use UV absorption for the quantitative determination of Sofosbuvir in tablets. It turned out that with UV absorption excellent precision numbers could be obtained.

Table 3 lists the data which were obtained using a calibration series of increasing concentrations of Sofosbuvir standard solutions and their subsequent UV absorption measurements. The respective statistical parameters calculated for linear regression analysis are shown in Table 2.

Figure 2 shows a UV/VIS spectrum of a standard solution of Sofosbuvir (20 µg/mL) in a methanol/water mixture (50:50). The absorbance maximum of the substance of interest is 260 nm which was then used for method development and validation. The measurements were carried out using a Shimadzu MPC-2200 UV/VIS-spectrometer.

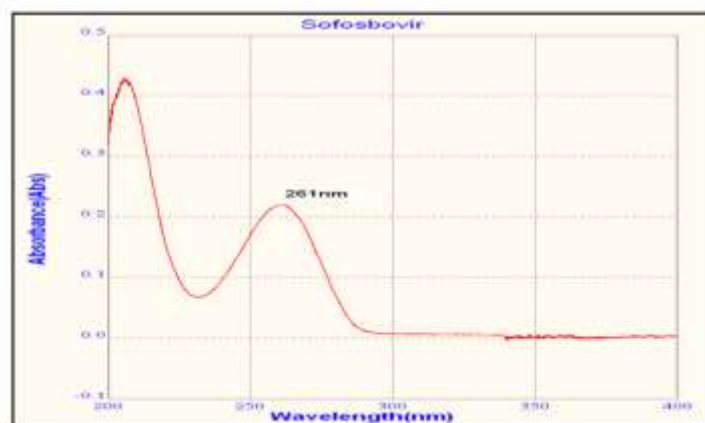


Figure 2. UV/VIS spectrum of a standard solution of Sofosbuvir (20 µg/mL) in methanol/water (50:50). UV measurements were carried out at a measurement wavelength of 260 nm.

Table 3. Calibration data of Sofosbuvir for the developed UV absorbance method

ppm	Signal	ppm	Signal
10	0.1842	40	0.7561
10	0.1842	40	0.7561
20	0.381	50	0.9507
20	0.382	50	0.9503
25	0.4805	60	1.1442
25	0.4811	60	1.1436
30	0.5594	80	1.5369
30	0.5621	80	1.5385

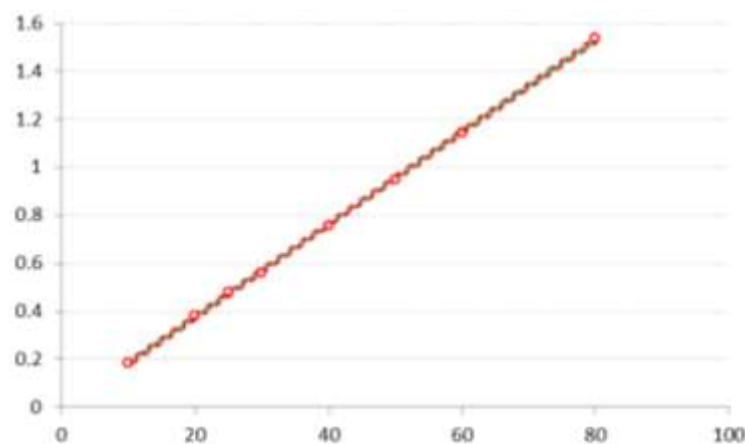


Figure 3. Linear calibration plot of Sofosbuvir obtained with UV absorption.

Generally, the relative standard deviation of procedure (V_{x0}) is used for a qualitative assessment of precision for the developed UV method (Table 2). A value of 0.78% for V_{x0} represents an excellent precision! This becomes apparent from Figure 3 where confidence intervals (for $\alpha = 0.05$) of both regression (dotted green) and prediction (dashed red) are drawn but can hardly be told from the linear regression line (red line).

High Performance Liquid Chromatography (HPLC)

High Performance Liquid Chromatography (HPLC) is a modern and well established method in Analytical Chemistry. HPLC enables the separation of even complex mixtures of compounds and the subsequent detection of a number of compounds out of a sample in a single step. Contrary to UV absorption it is much less prone to both α - and β -errors. Selectivity can further be increased by using highly selective detectors, such as mass spectrometry. Nevertheless, even simple detection means, such as UV detection, are well suitable for a sensitive quantitative detection.

Figure 4 shows a series of chromatograms of a reference sample containing 30 mg/mL Sofosbuvir (black), and a blank solution containing no Sofosbuvir (green). HPLC measurement were carried with a Waters Alliance 2695XE system with UV detection (262 nm) using a Phenomenex® Gemini C18 reversed phase column (150 x 4.6 mm; 3 μ m) with a mobile phase consisting of a mixture of 0.1% methanol/formic acid (60:40).

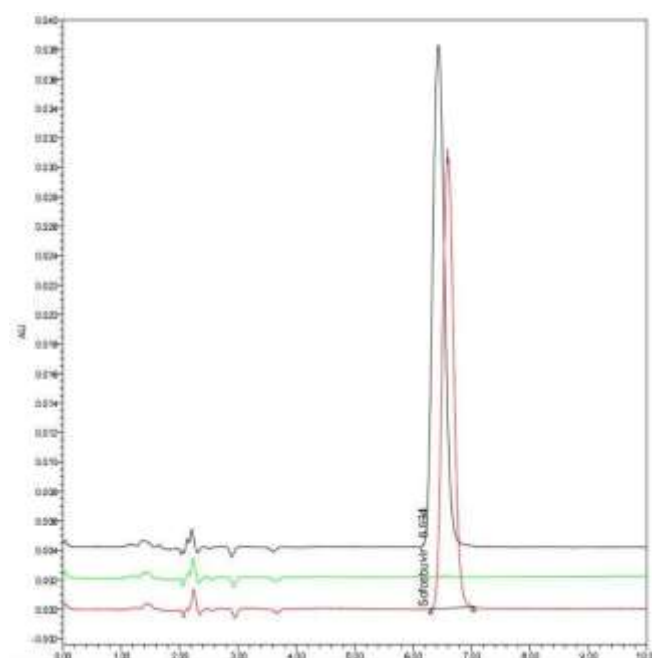


Figure 4. Chromatograms of Sofosbuvir. Black: reference sample (30 mg/mL); Red: test sample; Green: blank

For this method, peak areas are measured against the external standard concentrations and the respective linear calibration data are calculated.

Table 4. Calibration data of Sofosbuvir for the developed HPLC method

ppm	Signal	ppm	Signal
40.24	628312	100.6	1620574
40.24	633665	100.6	1621573
60.36	940261	120.72	1887394
60.36	935615	120.72	1893838
80.48	1255925	140.84	2219857
80.48	1264117	140.84	2207768

As with the data of the UV absorption method (Section 0) the relative standard deviation of procedure (V_{x0}) is used for the assessment of the developed HPLC method (Table 2). Also with HPLC, a very good precision is achieved ($V_{x0}=1.31\%$)! Despite slightly less precise compared to UV/VIS absorbance spectroscopy the linear calibration function of HPLC as shown in Figure 5 (red line) depicts very good confidence intervals (for $\alpha = 0.05$) of both regression (dotted green) and prediction (dashed red). Despite the low number of calibration points (which affects the degree of freedom) a sufficiently good precision can be assigned to developed HPLC method.

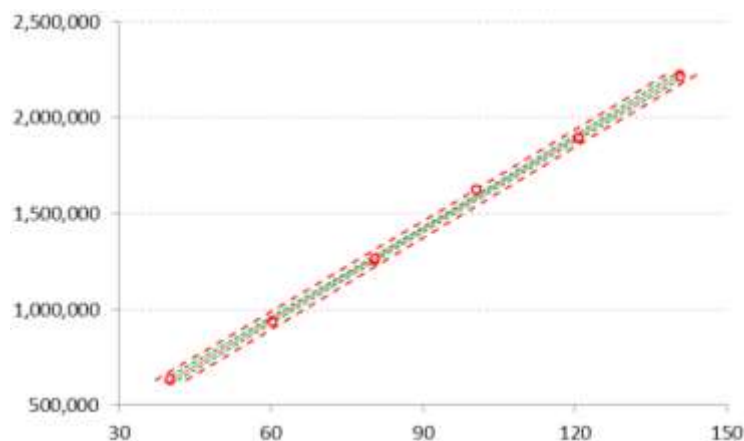


Figure 5. Linear calibration plot of Sofosbuvir obtained by HPLC.

Capillary Electrophoresis (CE)

Capillary Electrophoresis (CE) represents an experimentally simple and yet efficient separation method. This method requires charged species which are separated in the narrow bore of a fused silica capillary in a separation buffer. A high voltage direct current is applied along the capillary and compounds can be separated in accordance to their size-to-charge ratio. The method also allows the separation of complex mixtures.

For the method development of Sofosbuvir an internal standard (Metformin) is used to increase the precision of the quantitative determination. For the calculation of the linear calibration data, the ratio of the peak areas of the analyzed substance and of the internal standard is used.

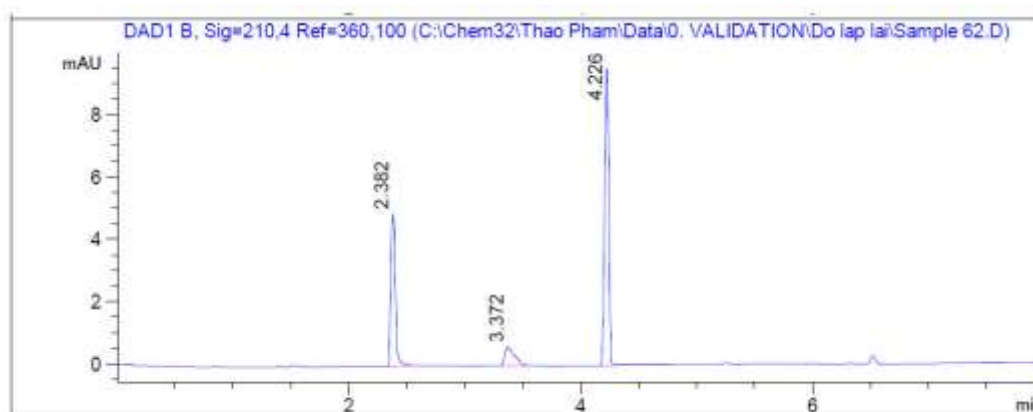


Figure 6. Capillary Electropherogram of Sofosbuvir (4.226 min) and Metformin (internal standard; 2.382 min).

Figure 6 depicts a capillary electropherogram of a standard mixture of Sofosbuvir (active compound) and Metformin (internal standard). It is apparent that the separation of both compounds is finished within a short time (below 6 minutes) which enables both rapid analysis times and high throughput numbers in case of a practical application of this method. Turn-over times can be kept low because only a purging sequence of 1-2 minutes is required to reset the analysis system and get it ready for the next analysis run.

Table 5. Calibration data of Sofosbuvir for the developed CE method

ppm	Ratio SBV/Met	ppm	Ratio SBV/Met
120	1.211403558	240	2.357399478
120	1.182783923	240	2.403706395
160	1.549158904	280	2.818101476
160	1.547276877	280	2.785717998
200	1.95467844	300	2.970796829
200	1.98357606	300	2.990907169

Table 2 depicts a relative standard deviation of procedure (V_{x_0}) for the developed CE method of 1.14 % which represents a very good precision! This can also be seen when looking at the linear calibration function in Figure 7 (red line) which depicts the confidence intervals (for $\alpha = 0.05$) of both regression (dotted green) and prediction (dashed red). Also in this case, despite the low number of calibration points (which affects the degree of freedom) the very good precision of the method can be estimated.

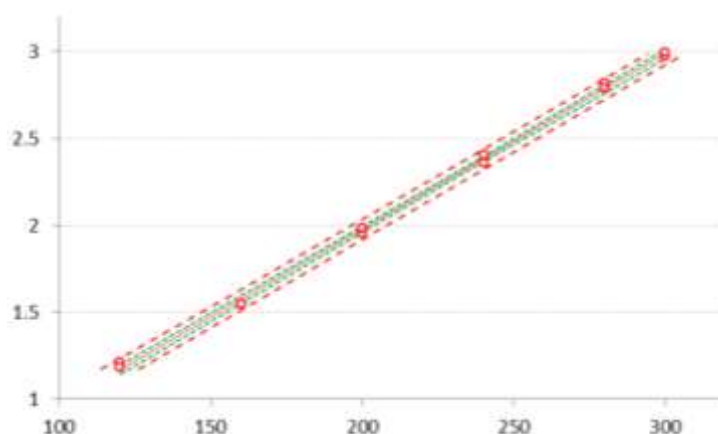


Figure 7. Linear calibration plot of Sofosbuvir obtained by CE.

Summary

In the course of this project 3 independent separation methods for the quantitative assessment of Sofosbuvir have been developed and validated. All 3 methods show excellent numbers in terms of reproducibility and precision and can be used for the quantitative determination of Sofosbuvir.



Identification of anti-inflammatory natural products from Vietnamese and Thai plants

Details of the persons involved in the project

University of Medicine and Pharmacy, HoChiMinhCity

- **Hung Tran**, PhD, Assoc. Prof. Dr., Vice-Rector for Academic Affairs and Quality Management, email: tranhung@uphcm.edu.vn
- **Tran Thi Van Anh**, PhD, Postdoc, email: vananh99@gmail.com

University of Innsbruck

- **Stuppner, Hermann**, Univ.-Prof. Mag. Dr., Head of Department of Pharmacognosy
Dean of Study Affairs of the Faculty of Chemistry and Pharmacy; email: Hermann.Stuppner@uibk.ac.at
- **Waltenberger, Birgit**, Ass.-Prof. Dr., Senior Postdoc (currently on parental leave),
email: birgit.waltenberger@uibk.ac.at
- **Schwaiger, Stefan**, Dr., Senior Postdoc, email: stefan.schwaiger@uibk.ac.at
- **Engels Nora**, PhD student, email: nora.engels@uibk.ac.at
- **Thi Xuan Dieu Nguyen**, PhD student, email: Thi.X.Nguyen@student.uibk.ac.at

Description of the Project

As part of the ongoing project, a variety of Vietnamese and Thai medicinal plants traditionally used in native folk medicine are being studied for their anti-inflammatory and anti-aging potential. The objective is to identify and characterize those ingredients that may be considered for the treatment of inflammatory diseases, especially in the area of the cardiovascular system, as well as contribute to healthy aging.

- ***Melodorum fruticosum* and *Siegesbeckia orientalis***

The work on two Vietnamese plants, namely *Melodorum fruticosum* and *Siegesbeckia orientalis* could be finished by one of my PhD students. In an initial screening, the dichloromethane extract from the leaves of *Melodorum fruticosum* showed distinct inhibitory effects on the release of interleukin-8 (IL-8) in human neutrophils. Therefore, the aim of the present study was the phytochemical and pharmacological investigation of this extract, to better understand which compounds might be responsible for the anti-inflammatory effect. Phytochemical analysis led to the isolation of 12 known compounds and two new natural products, 5-hydroxy-6-(2-hydroxybenzyl)-4',7'-dimethoxyflavanone (13) and 2',4'-dihydroxy-3'-(2-hydroxybenzyl)-4,6'-dimethoxychalcone (14). The influence of the isolated compounds on the production and release of the pro-inflammatory factors IL-8, tumor necrosis factor alpha (TNF- α), reactive oxygen species (ROS), and adhesion molecules (CD62L and CD11b) in human neutrophils was evaluated. Three constituents, melodamide A, 2',4'-dihydroxy-4,6'-dimethoxychalcone, and 2',6'-dihydroxy-4'-methoxychalcone, showed significant inhibition of IL-8 release (IC₅₀=6.6, 8.6, and 11.6 μ M, respectively) and TNF α production (IC₅₀=4.5, 13.3, and 6.2 μ M, respectively).

Melodamide A, a phenolic amide from the leaves of *Melodorum fruticosum* Lour., has previously shown prominent anti-inflammatory activity. In order to rapidly isolate larger quantities for biological testing, a fast, one-step isolation method by centrifugal partition chromatography was developed within this study. Fractionation of the dichloromethane extract was performed with a two-phase solvent system consisting of n-hexane, ethyl acetate, methanol, and water (3:7:5:5 v/v) leading to the isolation of melodamide A with a purity of >90 % and a yield of 6.7 w% within 32 min. The developed method can be also used in dual mode for the enrichment of further constituents like flavonoids or chalcones. In order to support the CPC method development additionally a HPLC-

DAD method was established and validated to determine quantities of melodamide A in plant material and crude extracts. Analysis of *M. fruticosum* leaves and a dichloromethane extract generated of this plant material exhibited a total melodamide A content of 0.19 ± 0.008 and 8.9 ± 0.249 w%, respectively.

- ***Limnophila aromatica***

Study on *Limnophila aromatica* (Lam.) Merr. are currently being performed by the PhD student Thi Xuan Dieu Nguyen. Activity-guided isolation led to the identification of fifteen compounds, mainly flavonoids and triterpenes. Pharmacological evaluation of the obtained compounds pointed out that both flavonoids and triterpenes contribute to the anti-inflammatory activity of this plant. Active principals were quantified by SFC method. The validation of the developed method is in process. After that, the active compounds of geographical variations (collected from various locations of Vietnam in February, 2018); seasonal variations (collected at different time points of the year at Ho Chi Minh City) as well as two varieties (green stem type and purple stem type) of *L. aromatica* will be quantitatively compared. Furthermore, the application of molecular networking resulted in dereplication-guided isolation of twenty-four compounds from polar fractions of this plant, including two miscellaneous compounds, four phenylethanoid glycosides, three iridoids (one new iridoid), fifteen flavonoids (eleven potentially new compounds). A part of these results was presented in the poster "Anti-inflammatory potential of the rice paddy herb *Limnophila aromatica* (Lam.) Merr." at the conference First Austrian Summit on Natural Products held in Seefeld, Tyrol, Austria from January 14 - 16, 2018.

List of publications resulting from the project

Braeuer P, Anielski P, Schwaiger S, Stuppner H, Tran TVA, Vollmer G, Zierau O, Thieme D, Keiler AM. *In vitro* metabolism of selected bioactive compounds of *Eurycoma longifolia* root extract to identify suitable markers in doping control. Drug Testing and Analysis, 2019, 11, 86-94. Doi: [10.1002/dta.2449](https://doi.org/10.1002/dta.2449)

Engels N, Waltenberger B, Michalak B, Huynh L, Tran H., Kiss AK, Stuppner H, Inhibition of Pro-Inflammatory Functions of Human Neutrophils by Constituents of *Melodorum fruticosum* Leaves. Chemistry & Biodiversity, 2018, 15, e1800269. Doi: [10.1002/cbdv.201800269](https://doi.org/10.1002/cbdv.201800269)

Nora S. Engels, Birgit Waltenberger, Stefan Schwaiger, Loi Huynh, Hung Tran, Hermann Stuppner, Melodamide A from *Melodorum fruticosum* – Quantification using HPLC-DAD and One-step-isolation by Centrifugal Partition Chromatography, submitted to the Journal of Separation Science

Nora S. Engels, Birgit Waltenberger, Barbara Michalak, Fang-Rong Chang, Anna K. Kiss, Hermann Stuppner, Sesquiterpene lactones from *Sigesbeckia orientalis* inhibit pro-inflammatory functions of human neutrophils, in preparation for J. Ethnopharmacology

Petrochronological investigations in basement and intrusive suites of Thailand

Project Partners:

Urs Klötzli, Ao. Univ.-Prof. Mag. Dr., University of Vienna, Department of Lithospheric Research, PhD University of Berne, Switzerland, 1991, Geochronology, petrochronology, Geology of the Alps, Earth Science mass spectrometry.

Pitsanupong Kanjanapayont, Associate Professor Dr., Chulalongkorn University, Bangkok, Thailand, Department of Geology, Faculty of Science, PhD University of Vienna, 2007, Structural geology, geochronology, geology of Thailand.

Project Description:

The Mae Ping shear zone (MPSZ) in northwest Thailand exposes high-grade metamorphic basement rocks, the so called Lan Sang gneisses. These basement rocks are part the Chiang Mai-Lincang Belt that extends from northwest Thailand into Yunnan. Previous geochronological studies from the Lan Sang showed that (1) amphibolite-facies metamorphism occurred at the Triassic-Jurassic boundary, (2) a period of magmatic activity resulted in the emplacement of the protolith of orthogneisses into pre-existing paragneisses in the Early Cretaceous, (3) ductile deformation probably initiated at ~37 Ma and (4) ceased at ~30 Ma and (5) cooled to near-surface temperatures (apatite fission-track closure temperature) at 19-25 Ma. Igneous and metamorphic activity at the Triassic-Jurassic boundary, thermal overprints in the Cretaceous and subsequent Cenozoic metamorphism and magmatism are also recorded in other basement rocks of the Chiang Mai-Lincang Belt and high-grade metamorphic rocks exposed in strike-slip systems further south and lend support to previous age determinations from the Lan Sang gneisses. However, in the Lan Sang area existing datasets are either relatively small (i.e. few analyses), they are based on whole-(single or multi)-grain U-Th-Pb analyses or they were performed on a single mineral (e.g. zircon or monazite). As a result, some interpretations were made on a few data points only and the often intricate nature zircon (i.e. zoning) remained obscured by whole-grain analyses. Moreover, these limitations did not enable the authors of previous geochronological studies to tell the “full” story. This patchy geochronological framework therefore leaves room for uncertainty primarily regarding the high-temperature evolution of the shear zone. We seek to contribute to the existing knowledge by providing new in-situ LA-(MC)-ICP-MS zircon ($n = 457$) and monazite ($n = 46$) U-(Th)-Pb analyses from the Lan Sang gneisses and from a late syn- or post-

kinematic subvolcanic dyke. With our dataset we want to address a series of questions: What are the main age populations recorded in zircon (\pm monazite) from various lithologies? Are previously determined U/Pb age populations representative? What do the age populations tell us about the high-temperature evolution of the Lan Sang gneisses? What is the protolith age of the orthogneiss in the Lan Sang area? How do our findings relate to other geochronological studies of basement rocks in Thailand? What does the intrusion of an undeformed subvolcanic dyke tell us about the timing of ductile shearing in the MPSZ?

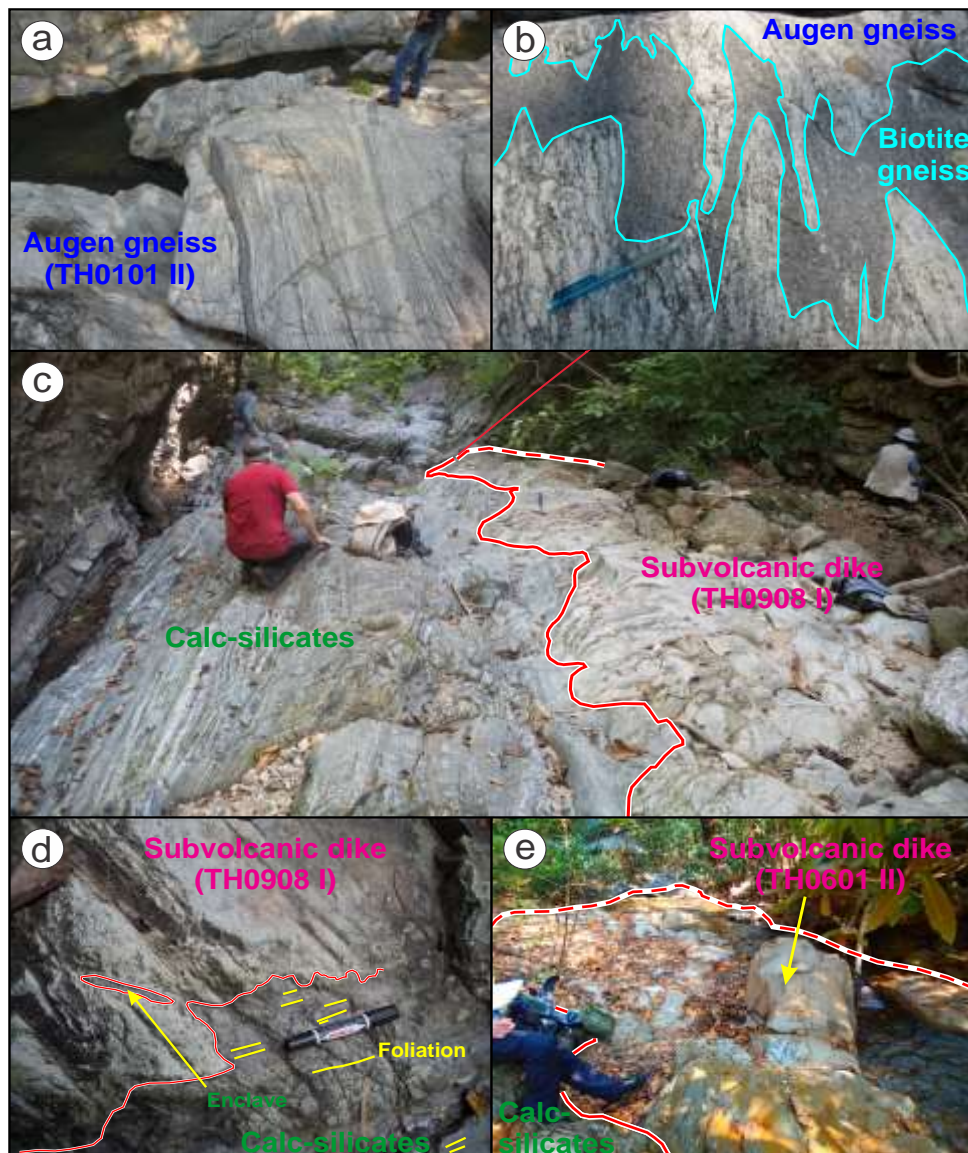
We have established new zircon and monazite U-(Th-)Pb LA-(MC-)ICP-MS ages from the Lan Sang gneisses, exposed in the Mae Ping shear zone (MPSZ) in NW Thailand. The in-situ nature of our study reveals a complex history not unveiled in previous studies in the Lan Sang area. Despite the complexities, two age populations that are contemporaneous with the Indosinian and Himalayan orogenies prevail. Zircon cores with possible magmatic affinity from an augen gneiss imply crystallization in the Late Triassic followed by possible minor zircon modifications and growth throughout the Mesozoic and a major period of metamorphic overgrowth in the Eocene (~45 Ma). The Indosinian age of the granitic protolith contradicts a recently published Early Cretaceous age (~114-123 Ma) interpreted to date protolith emplacement. The pre- or synkinematic intrusion of the magmatic protolith of a biotite gneiss into the augen-gneiss in the Late Eocene (~35 Ma) provides constraints on the timing of mylonitic deformation in the MPSZ and the greenschist-facies overprint seen in both gneiss samples. These temporal constraints agree with recently published monazite Th/Pb ages that were interpreted to reflect the onset of mylonitic deformation in the shear zone at ~37 Ma. Shearing likely ceased in the Oligocene (30-33 Ma) in the gneisses as apparent from previously determined biotite Ar/Ar ages. However, deformation may have continued in the rheologically weaker calc-silicate and marble core of the shear zone. A late undeformed subvolcanic dyke that cross-cuts the mylonitic fabric of the calc-silicate and marble core, dated in this study at ~22 Ma, may provide a maximum age for ductile deformation. New field work has also revealed a second subvolcanic dyke in the Lan Sang area and a variety of post-orogenic basic to intermediate intrusives, formerly collectively addressed as 'Tak granite'. Samples from these new findings are currently under investigation.

Future Steps:

- Finalization of the Master thesis of Bernhard Neugschwentner, BSc.
- Petrochronological investigations on new sample material from the field campaign 2018.
- Presentation of data at various topical conferences.
- Continuation of field work and petrochronological investigations in the Op Luang National Park and Omkoi-Doi Tao (central and southern part of the Doi Inthanon complex ss.), Khao Laem (southerly part of the Doi Inthanon complex sl.), Surat Thani-Khanom (most southerly part of the Doi Inthanon complex sl., host rocks of the Khlong Marui FZ).

Impressions from geological field work in Lan Sang, Tak Province, Thailand:

- Typical macroscopic appearance of strongly banded Lan Sang gneisses of the Lan Sang National Park.
- Close-up view of intrusive contact between augen gneiss and biotite gneiss in the Lan Sang gneisses. The original more linear contact has been strongly overprinted (folded) by post-intrusive tectonism.
- Overview of the post-tectonic subvolcanic dike discordantly intruding calc-silicate rocks of the Lan Sang gneisses.
- Close-up of the discordant contact of the subvolcanic dike with the calc-silicate rocks. Remark that the foliation in the latter is cut-off by the former, clear evidence that the dike is younger than the deformation of the gneisses.
- Overview of the second subvolcanic dike intruding the Lan Sang gneisses.



Copyright of all photos: U. Klötzli + J. Österle

Publications:

- Österle, J., Klötzli, U., Stockli, D., Palzer, M., Kanjanapayont, P. (2019): New constraints on the timing of events of the Lan Sang gneisses, Thailand, from in-situ zircon and monazite U-Th-Pb geochronology. *Journal of Asian Geology*, in press.
- Kanjanapayont, P., Ponmanee, P., Grasemann, B., Klötzli, U., Nantasini, P. (2018): Quantitative finite strain analysis of the quartz mylonites within the Three Pagodas shear zone, western Thailand. *Austrian Journal of Earth Sciences*, 111/2, 1 – 9 doi: 10.17738/ajes.2018.0011.
- Neugschwentner, B., Kanjanapayont, P., Konečný, P., Broska, I., Klötzli, U. (2018): Petrogenesis of Triassic and Cretaceous metamorphic rocks from Khanom (Peninsular Thailand); monazite CHIME dating and ³²Ar/Ar-barometry. *Pangeo*.
- Klötzli, U., Österle, J., Kanjanapayont, P., Neugschwentner, B., Burda, J. (2018): Geochronological research in the crystalline basement units of N Thailand: a review. *GREAT 2018, Bangkok*, 34-39.
- Kanjanapayont, P., Klötzli, U. (2018): Deformation microstructures within the Mae Ping shear zone, western Thailand. *Geoinfo, Khon Kaen, Thailand*, 52.
- Ponmanee, P., Kanjanapayont, P., Grasemann, B., Klötzli, U., Choowong, M. (2016): Quantitative finite strain analysis of high-grade metamorphic rocks within the Mae Ping shear zone, western Thailand. *Austrian Journal of Earth Sciences*, 109/2, 233-240 doi: 10.17738/ajes.2016.0017.

Activity Report on ÖAD supported stay in Thailand

Gerald Quirchmayr, Faculty of Computer Science, Department of Distributed and Multimedia Systems, gerald.quirchmayr@univie.ac.at

2019-03-11 (departure Vienna) until 2019-03-22 (arrival Vienna)

Major objectives and outcomes:

- Ph.D. seminar at KMUTNB – fully achieved
- Participation in 60th anniversary celebrations of KMUTNB – see report on March 115th
- Preparation of planned research stays of KMUTT PhD graduates in Vienna – achieved
- Identification of future joint project activities that could be supported by ÖAD and DAAD – initiated, needs follow-up discussions
- Discussion of potential for Erasmus Mundus application – initiated
- Planning of teaching involvement in information security courses at KMUTNB in 2020 – courses and contribution identified, detailed planning will follow
- Further involvement in conferences organized by KMUTNB and KMUTT – arranged
- Joint publications planned for ic2it 2020 in Da Nang; eventually also for AutSys 2019

Activities in chronological order, including pictures of major events:

2019-03-12

- Arrival in Bangkok, late afternoon
- Evening meeting with Asst.Prof.Dr.Maleerat Sodanil (KMUTNB) and Prof. Herwig Unger (FU Hagen) to discuss opportunities for future joint research and teaching activities

2019-03-13

- Meeting with Dr. Charnsak Srisawatsakul to plan for his 6 months research stay at the University of Vienna starting in September 2019 (Ubon Ratchathani Rajabhat University, Vice Dean for Academic and Research Affairs and Lecturer at Faculty of Computer Science)
- Preparation of application for ÖAD scholarship to the University of Vienna with Dr. Waransanang Boontarig (Ubon Ratchathani Rajabhat University, Lecturer at Faculty of Computer Science)

2019-03-14

- PhD workshop at KMUTNB, Faculty of Information Technology, Department of Information Technology
- Meetings with Dean Assoc.Prof.Dr. Phayung Meesad, Asst.Prof.Dr.Maleerat Sodanil (several ÖAD travel scholarships) and Asst.Prof.Dr. Nalinpat Porrawatpreyakorn (Doctorate from University of Vienna, supported by ÖAD) to identify potential focus areas for joint research and next teaching exchange stays; discussion of international networking and joint teaching between KMUTNB – University of Vienna – FU Hagen – IRIT Toulouse, involving the seeking of advice from ÖAD and DAAD regarding Erasmus Mundus.



Lecture at PhD student workshop 2019-03-14, jointly run at KMUTNB with FU Hagen and Universität Leipzig, chaired by Dean Assoc.Prof. Dr. Phayung Meesad (left), © G. Quirchmayr and Maleerat Sodanil



Official group picture of PhD student workshop 2019-03-14, © G. Quirchmayr and Maleerat Sodanil

2019-03-15

- Invitation to 60th anniversary exhibition at KMUTNB
- Medal and honorary plaque received from HRH Princess Sirindhorn in recognition of contributions made to KMUTNB and research and teaching in Thailand
- Formal lunch at KMUTNB with HRH Princess Sirindhorn



Official video of event by KMUTNB, minute 17: <https://www.youtube.com/watch?v=XoGkwf010i4>



Medal and honorary Plaque received from HRH Princess Sirindhorn, © G. Quirchmayr and Maleerat Sodanil

- Reception by Vice President International Sikan Kulchonchan at KMUTNB and Chairman of KMUTNB University Council Prof. Teravuti Boonyasopon
- Dinner hosted by Vice President International Sikan Kulchonchan



At the International Office KMUTNB with Asst.Prof.Dr.Maleerat Sodanil, Prof.Heriwg Unger (FU Hagen), Dean Assoc.Prof.Dr. Phayung Meesad and Vice President International Sikan Kulchonchan late afternoon of 2019-03-15, © G. Quirschmayr and Maleerat Sodanil

2019-03-18

- More detailed planning of future 36eaching stays, especially embedding in regular courses in newly developed curricula of KMUTNB

2019-03-19

- Invitation to participate in 6th International Technology Education Conference hosted by KMUTNB
- Meeting Thai-French Innovation Institute at KMUTNB under the auspices of the French Embassy with participation of the Attaché responsible for Science and Culture

2019-03-20

- Meetings at KMUTT with Assoc.Prof. Dr. Wichian Chutimaskul and Asst. Prof. Dr. Suree Funilkul (both former ÖAD scholarship holders) to plan involvement in future conferences organized by KMUTT, especially IAIT 2019
- Visit to Royal Thai Air Force exhibition at Dong Mueang Airport

2019-03-21

- Invitation by Prof. Dr. Suchart Siengchin, President of KMUTNB, to participate as VIP in 8th Asia Pacific IIW International Congress held in the Queen Sirikit National Convention Center, opened by the Minister of Labor, H.E. Police General Adul Sangsinkeo (see picture below)



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- Return flight to Vienna arriving 2019-03-22

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HYBRID MATERIALS FOR BIOSELECTIVE SENSORS

ASEA-UNINET INCOMING PROJECT REPORT 2018

1. PROJECT TEAM

Univ.-Prof. Dr. Peter A. Lieberzeit, University of Vienna, Department of Physical Chemistry

(Project Leader): Full professor since 2011, specialized in the design of novel “artificial antibodies” based on self-organization and the design of mass-sensitive, optical and electrochemical sensors. Currently 124 papers in Web of Science and roughly 160 conference contributions. Holder of the Fritz Feigl Award of the Austrian Society of Analytical Chemistry and the ISOEN Wolfgang Göpel Award. Member of the Editorial Board of “Sensors and Actuators B: Chemical” (IF=5.6). Organizer and General Chair of the “17th International Meeting on Chemical Sensors – IMCS2018” and Chairman of the International Steering Committee of IMCS conferences. Collaborations in Southeast Asia since 2009.

Prof. Dr. Kiattawee Choowongkamon, Kasetsart University Bangkok, Faculty of Science,

Department of Biochemistry: BSc from Chulalongkorn University, Bangkok; MSc in Biochemistry from Lehigh University, PA, USA; PhD in Cell Physiology from Case Western Reserve University, OH, USA. Currently Associate Professor at Kasetsart University, Bangkok. He is mainly interested in Protein Purification, Protein Structure, Protein NMR, Protein Crystallography, Cloning and Expression Protein, Protein Simulation, Biosensors. Currently 96 papers in Web of Science. Broad interest in both fundamental and applied sciences.

Ms. Supaporn Klangprapan MSc, Kasetsart University Bangkok, PhD student with Prof.

Choowongkamon: Obtained a PhD grant by the Thai Research Fund within the program Research and Researchers for Industry (RRI); Works on generating highly selective sensors for veterinary pathogens (mainly viruses) based on aptamers and molecularly imprinted polymers and mainly optical detection.

Ms. Supannika Klangphukhiew MSc, Khon Kaen University, Department of Biochemistry: PhD

student with Prof. Maliwan Amatongchai. Obtained a PhD scholarship analogous to RGJ for students from poorer regions. Research stay with Prof. Roongnapa Suedee, Prince of Songkhla University, Hat Yai, who has long-lasting collaboration with the group at UNIVIE; Previous research stay at UNIVIE (2017).

2. PROJECT ACTIVITIES AND RESULTS

2.1. MIP-BASED SENSORS FOR THE COMMON SWINE FEVER VIRUS (CSFV)

This part of the project started in July 2018 with joint discussions between the two main investigators (PL, KC) and Ms. Supaporn to establish possible detection protocols for common swine fever virus (CSFV), one of the most virulent and economically detrimental pig pathogens. During her stay, Ms Supaporn successfully implemented this sensor system based on polymers she started to synthesize in Bangkok after discussions with PL in 2017. **Fehler! Verweisquelle konnte nicht gefunden werden.** shows SEM images of both molecularly imprinted polymer (MIP) toward CSFV, as well as the corresponding non-imprinted polymer (NIP), as well as the corresponding sensor characteristics obtained by quartz crystal microbalance (QCM).

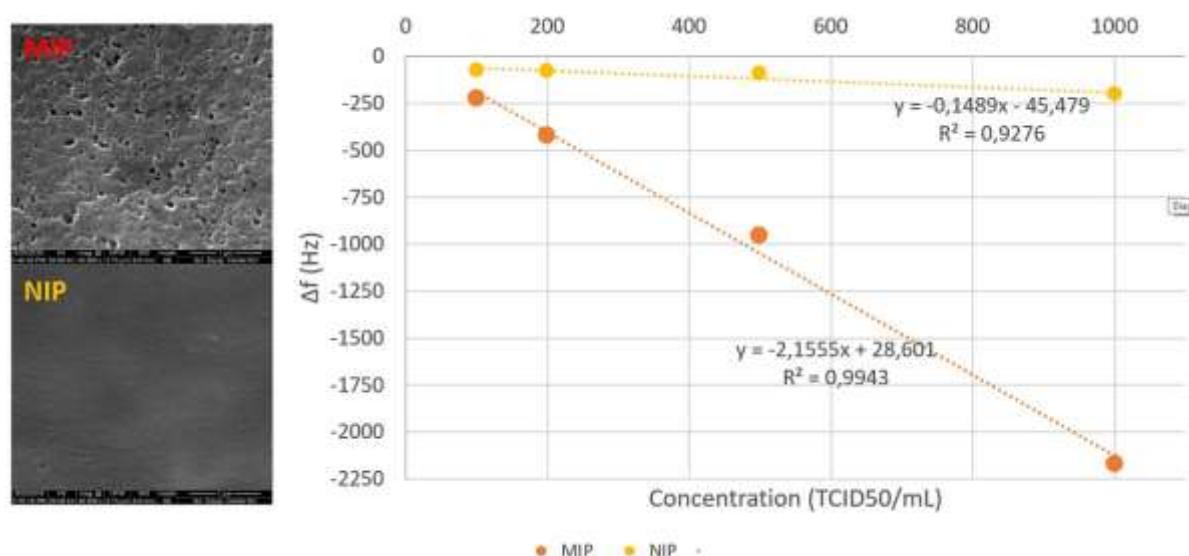


FIG. 1: SEM IMAGES AND SENSOR CHARACTERISTICS OF CSFV-MIP AND NIP

Evidently, molecular imprinting leads to cavities that resemble the virus in shape and diameter, whereas the corresponding non-imprinted polymer does not reveal any characteristic features on its surface. These results were further corroborated by sensor measurements, where MIP give rise to roughly 14 times higher sensitivity, than corresponding NIP. Preliminary selectivity measurements also revealed that the polymer is selective for CSFV compared to porcine reproductive virus (PRV) and porcine respiratory and reproductive virus (PRRSV). Currently, further measurements are ongoing and a manuscript to publish the results is in preparation.

2.2. CHOLESTEROL-MIP AS SENSOR LAYERS

This part of the project aimed continued work of the previous year on cholesterol imprinting. Despite retrying large number of polymers and further optimization, QCM measurements proved unsuitable for that purpose. However, electrochemical detection at Khon Kaen University later in 2018 revealed that the materials developed are useful for recognition. Furthermore, Ms. Suppanika Klangphukhiew successfully defended her thesis at Khon Kaen University, partly based on the results she obtained during Asea Uninet stays.

3. EXPECTED RESULTS AND PUBLICATIONS

The following results can be expected from this project within the next 1-1.5 years:

- Papers summarizing the outcome of both PRRSV and CSFV MIP; the work for the former was carried out in 2017 and comprised aptamer-based sensing.
- Test for application scenarios of these MIP.
- Further collaboration between the groups in Vienna and at KU concerning innovative chemo- and biosensing of target analytes of interest.

Based on the direct support of Asea Uninet, the two following papers were published in 2018:

- Phan NVH et al. "Combined Layer/Particle Approaches in Surface Molecular Imprinting of Proteins: Signal Enhancement and Competition", *Sensors (MDPI)* 18 (2018) 180; doi:10.3390/s18010180
- M. Amatongchai et al. "Selective amperometric flow-injection analysis of carbofuran using a molecularly-imprinted polymer and gold-coated-magnetite modified carbon nanotube-paste electrode", *Talanta* 179 (2018) 700-709; <https://doi.org/10.1016/j.talanta.2017.11.064>

Two more publications are not directly linked to the program. However, they result from cooperations that were made possible by the fact that the sensor group in Vienna can maintain substantial collaboration in Thailand, which is partly funded by the program.

One more paper was accepted in early 2019, and one more is currently under review. They are hence not part of this report. Furthermore, results from collaborations partly funded by ASEA-Uninet were presented at least at four conferences in 2018, including the 17th International Meeting on Chemical Sensors 2018 (Vienna) and AsiaSense 2018 (Manila), to name the most important ones.

Successful collaborations will be continued in 2019 and beyond, especially with Kasetsart University (C. Sangma and K. Choowongkamon) and Prince of Songkla University, Hat Yai (R. Suedee and S. Chunta).

BIOMIMETIC APPROACHES FOR TESTING PHARMACOLOGICAL ACTIVITY

ASEA-UNINET OUTGOING PROJECT REPORT

1. PROJECT TEAM

Univ.-Prof. Dr. Peter A. Lieberzeit, University of Vienna, Department of Physical Chemistry

(Project Leader): Full professor since 2011, specialized in the design of novel “artificial antibodies” based on self-organization and the design of mass-sensitive, optical and electrochemical sensors. Currently 124 papers in Web of Science and roughly 160 conference contributions. Holder of the Fritz Feigl Award of the Austrian Society of Analytical Chemistry and the ISOEN Wolfgang Göpel Award. Member of the Editorial Board of “Sensors and Actuators B: Chemical” (IF=5.6). Organizer and General Chair of the “17th International Meeting on Chemical Sensors – IMCS2018” and Chairman of the International Steering Committee of IMCS conferences. Collaborations in Southeast Asia since 2009.

Professor Dr. Roongnapa Sudee, Prince of Songkla University, Faculty of Pharmaceutical

Sciences: Associate Professor at Prince of Songkla University with a long-standing track record in molecular imprinting and in aspects of pharmacological recognition. Especially interested in detecting pharmaceutically active components and in developing novel assay formats for detection and pharmacological/pharmacodynamic studies. Involved into the excellence center of nanotechnologies at PSU. Broad experience with sensing and instrumental analysis as well as microbiological techniques. Currently 44 papers in Web of Science. Longstanding collaboration with the group at UNIVIE.

Dr. Suticha Chunta, Prince of Songkla University, Faculty of Biomedical Engineering: obtained her PhD (Analytical Chemistry) in 2018 from the University of Vienna, where she stayed on a scholarship from the Thai research fund. Now she is a lecturer at the Faculty of Medical Technology at Prince of Songkla University, Hat Yai. Her research interests focus around detecting clinically relevant analytes with chemical sensors, currently especially lipoproteins.

Dr Panwadee Wattanasin, Prince of Songkla University, Faculty of Chemistry: Currently serves as lecturer at PSU. Obtained her PhD from Mahidol University. Stayed at the group at UNIVIE for one year funded by a Thai PhD scholarship. Interested in mass-sensitive and electrochemical sensing of contaminants in the environment, food, and traditional Thai herbal drugs.

Prof. Dr. Kiattawee Choowongkomon, Kasetsart University Bangkok, Faculty of Science, Department of Biochemistry: BSc from Chulalongkorn University, Bangkok; MSc in Biochemistry from Lehigh University, PA, USA; PhD in Cell Physiology from Case Western Reserve University, OH, USA. Currently Associate Professor at Kasetsart University, Bangkok. He is mainly interested in Protein Purification, Protein Structure, Protein NMR, Protein Crystallography, Cloning and Expression Protein, Protein Simulation, Biosensors. Currently 96 papers in Web of Science. Broad interest in both fundamental and applied sciences.

Ms. Supaporn Klangprapan MSc, Kasetsart University Bangkok, PhD student with Prof. Choowongkomon: Obtained a PhD grant by the Thai Research Fund within the program Research and Researchers for Industry (RRI); Works on generating highly selective sensors for veterinary pathogens (mainly viruses) based on aptamers and molecularly imprinted polymers and mainly optical detection.

2. ACTIVITIES WITHIN THE PROJECT

PL travelled to Asia between Nov. 12th, 2018, and Nov. 25th, 2018. Arriving in Bangkok on Nov. 13th, he acted external examiner for two PhD defenses of candidates **on Nov. 14th**. Both had previously been funded by Asea Uninet, namely those of Mr Chakpetch KOITIO (funded in 2016; supervisor: Prof. K. Choowongkomon) and Ms Chompoonuch TANCHAROEN (funded in 2017; supervisor: Prof. C. Sangma). Both candidates have graduated by now. Costs of stay were covered from the RGJ grant of Ms Tancharoen and are thus not relevant to this project.

Between Nov 15th and 18th, PL stayed in China for issues unrelated to Asea Uninet. Obviously no costs were claimed against the program.

On **Nov. 19th**, PL met Ms. Supaporn Klangprapan and Prof. Kiattawee Choowongkomon to discuss a scholarship application with the Thai research fund on “epitope sensing” of virus capsid proteins based on molecularly imprinted polymers. SK, KC and PL together elaborated a first working version of that project, which they jointly improved and finalized. The Thai Research fund approved the project (see “Results”).

On **Nov. 20th**, PL visited Prof. Orawon CHAILAPAKUL, Prof. Sirirat KOKPOL and Prof. Paitoon RASHATASAKHON at the Faculty of Science, Chulalongkorn University. They discussed a scholarship application by one of Prof. Chailapakul’s students and possible Bachelor projects in Applied Chemistry to be carried out in the Sensor group at UNIVIE.

Nov 20-24, PL stayed at Prince of Songkla University and carried out the following activities:

- Giving two seminar talks on Nov 21st and 23rd at the Faculties of Chemistry and Pharmaceutical Sciences, respectively, titled “Biomimetic Matrices for Assessing Biological and Clinical Target Species”.

- Discussing possible details of future joint projects with S. Chunta and P. Wattanasin. This resulted in a project submitted by SC to the Thai Research Fund that by now got approved (see “Results”).
- Discussion of a joint paper with SC (details, see “results”)
- Discussion with Professor Roongnapa Suedee on further possible projects in the area of pharmaceutical sciences. Currently, PSU experience a lack of PhD students, so concrete steps needed to be postponed to at least 2019.
- Discussions with Dr. Chonlatid SONTIMUANG, who finished his PhD under co-supervision of Prof. Suedee and Prof. Franz L. Dickert (predecessor and mentor of P. Lieberzeit at UNIVIE), about the possibility to jointly develop sensors for quality control in natural product production.

Costs of stay were covered by the Faculty of Pharmaceutical Sciences of Prince of Songkla University.

3. RESULTS AND FURTHER ACTIVITIES

The immediate outcomes of this outgoing project are as follows:

- The Thai Research Fund approved the project “Development of Sensor Based Molecularly Imprinted Polymer for Oxidized-Low-Density-Lipoprotein” submitted by S. Chunte. PL already signed the necessary MoU to act external mentor of that project. This ensures financial support for further collaboration and joint efforts.
- The manuscript “Sensing array to determine lipoproteins simultaneously based on molecularly imprinted polymers” by SC, RS and PL is currently under review in a reputed sensor journal.

SC will now submit for an Asea Uninet staff scholarship (deadline March 2019). If successful, this will enable her to continue parts of her research in the group at UNIVIE.

Anti-inflammatory activity of silk cocoon, cordyceps, and Thai edible insect extracts

Project leader:

Prof. HELMUT VIERNSTEIN

University of Vienna, Department of Pharmaceutical Technology and Biopharmaceutics

e-mail: helmut. viernstein@univie.ac.at

Prof. Viernstein obtained his PhD at University of Vienna and earned his habilitation in the field of Pharmaceutical Technology. Since 1999 he is Head of the Department of Pharmaceutical Technology and Biopharmaceutics. He has published more than 160 papers in peer reviewed journals and 27 patents. The current research focuses on structure studies of new oligosaccharides from plants and their bioactivities as well as complexation of drug substances with selected cyclodextrins for stabilization, increase of solubility, taste improvement, etc.

Project partner:

Ass.-Prof. Mag. Dr. WANTIDA CHAIYANA

University of Chiang Mai/Thailand

Department of Pharmaceutical Sciences, Faculty of Pharmacy

1. Introduction

Interleukin-6 (IL-6) is a pleiotropic cytokine involved in the regulation of immune responses. This cytokine is produced by a variety of cell stimulations, such as infection, trauma, or immunological challenge (Tilg *et al.*, 1994). A decrease of IL-6 secretion level in macrophage cell after stimulation by lipopolysaccharide (LPS) can indicate the anti-inflammation effect of the compounds (Mueller, *et al.*, 2010).

Interleukin-10 (IL-10) is an anti-inflammatory cytokine which can both impede pathogen clearance and ameliorate immunopathology (Couper *et al.*, 2008). This cytokine can also facilitate the tissue-healing process in injuries caused by infection or inflammation, repress proinflammatory responses, and limit unnecessary tissue disruptions caused by inflammation. Therefore, IL-10 has indispensable functions in many infectious and inflammatory diseases (Ouyang *et al.*, 2011).

Tumor necrosis factor (TNF- α) is a pleiotropic polypeptide that plays a significant role in immunology and inflammatory activities (Feuerstein *et al.*, 1994). TNF- α is produced primarily by monocytes and lymphocytes. It could be induced by a wide range of pathogenic stimuli and it also induces other inflammatory mediators and

proteases that orchestrate inflammatory responses (Sethi *et al.*, 2008). Hence, it is one of the major mediators of inflammation.

Therefore, the present study aims to determine the anti-inflammatory effect of silk cocoon, cordyceps, and Thai edible insect extracts by investigation of IL-6, IL-10, and TNF- α secretion level using enzyme-linked immunosorbent assay (ELISA).

2. Materials and methods

2.1 Extraction method

Yellow and white silk cocoons (Figure 1A) were obtained from Queen Sirikit Sericulture Center (Chiangmai), Thailand. The cocoons were extracted by decoction in 1.25%w/v citric acid solution (30 min), 0.05% w/v sodium carbonate solution (30 min), and DI water with the assisted of high pressure and high temperature using autoclave (15 min). The extract solution was lyophilized until dryness.

Cordyceps (Figure 1B) was obtained from Mushroom Research and Development Center, Chiang Mai, Thailand. Whole part of cordyceps was dried in the oven at 40°C and then extracted by ethanol, fractionated hexane, fractionated ethyl acetate, and fractionated ethanol.

Thai edible insects, including *Bombyx mori*, *Omphisa fuscidentalis*, *Hieroglyphus banian*, *Bombay locust*, *Acheta testacea*, and *Lethocerus indicus* (Figure 3) were purchase from local market in Chiang Mai, Thailand. The insects were extracted by ethanol.

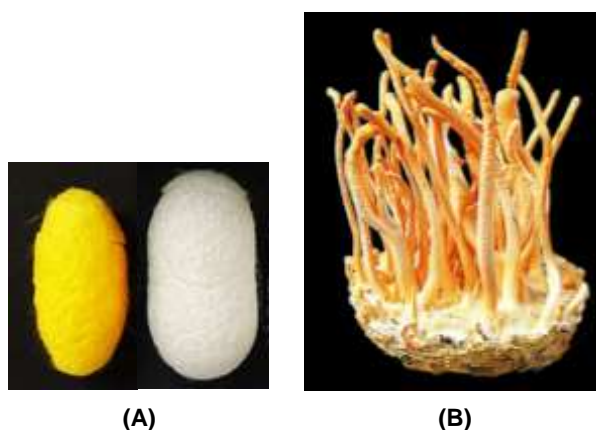
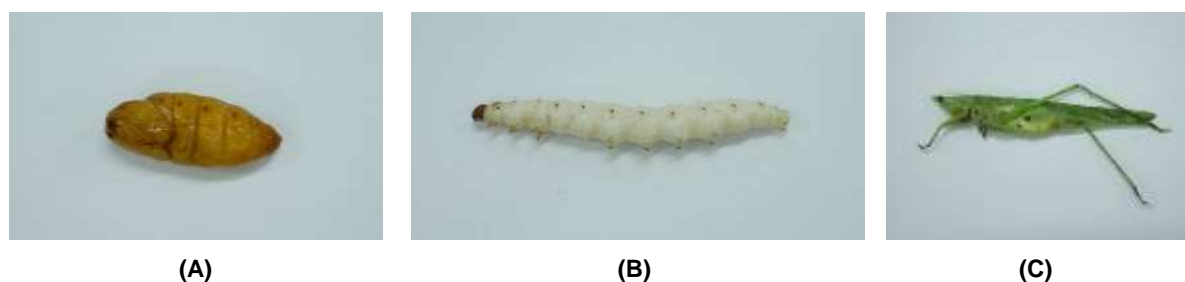


Figure 1 Silk cocoon (A) and cordyceps (*Cordyceps militaris*) (B)





(D)



(E)



(F)

Figure 2 *Bombyx mori* (A), *Omphisca fuscidentalis* (B), *Hieroglyphus banian* (C), *Bombay locust* (D), *Acheta testacea* (E), and *Lethocerus indicus* (F)

2.2 Determination of anti-inflammatory activity

The anti-inflammatory activity of each extract was determined using the experiment as shown in Figure

3.

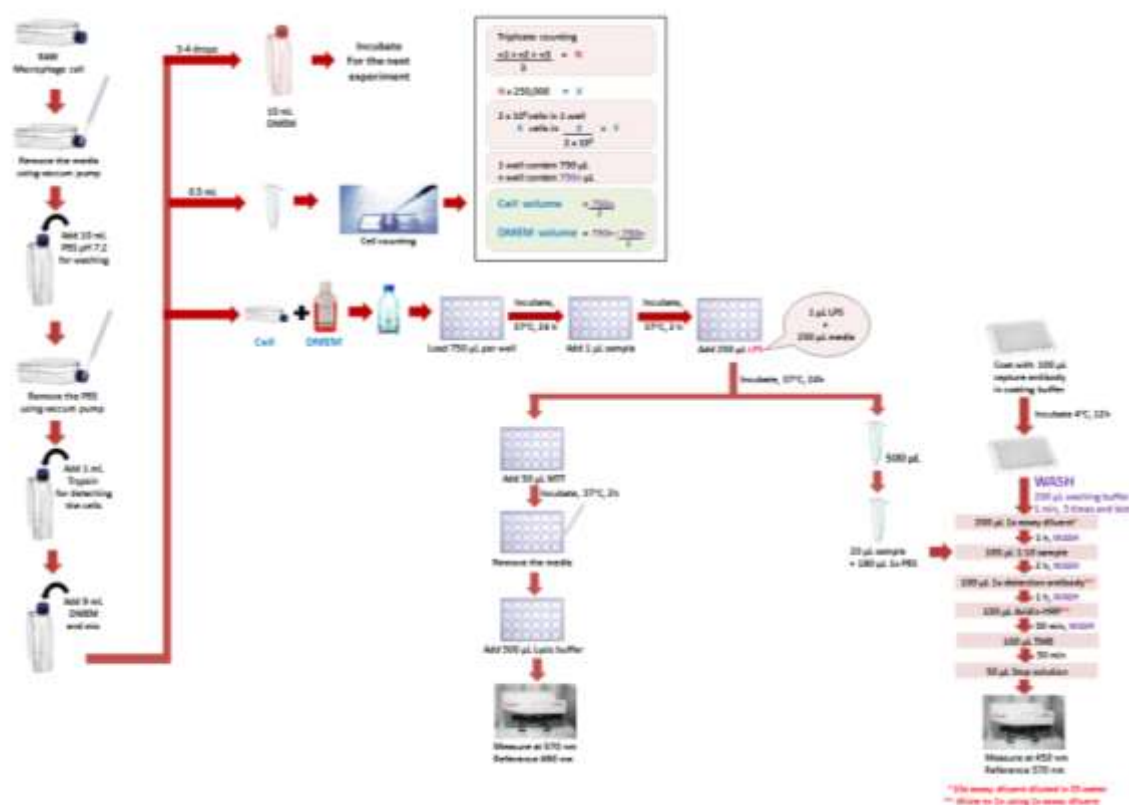


Figure 3 Overview of the experiment investigating anti-inflammatory activity of medicinal plant extracts

2.2.1 Cell culture

The cell culture was performed following the method used in the previous study of Mueller, *et al.* with slight modifications (Mueller, *et al.*, 2010). Briefly, macrophages stimulated with LPS were used to examine the effect of various extracts and compounds on inflammation. RAW 264.7 cells (American Type Culture Collection, ATCC-TIB-71) were seeded at a density of 2×10^6 cells per well in 24 well plates, and incubated for 24 h at 37 °C. On the following day, test substances in ethanolic solution in dulbecco modified eagle medium (DMEM)

were added, and cells were incubated for a further 3 h at 37 °C before LPS was added at a final concentration of 1 µg/mL. Cells were pretreated before addition of LPS because this way the best results were achieved in prestudies. The cells were then incubated for a further 24 h at 37 °C. On the third day, the media was removed and centrifuged at 13,500×g for 5 min to remove cells; the supernatant was aliquoted and analyzed by ELISA. Cells which were not treated with LPS served as a negative control and cells incubated with ethanol and LPS served as a positive control.

2.2.2 ELISA

The IL-6 in 100 µL of cell supernatant, was determined by ELISA assay according to the manufacturer's protocol (R&D Systems). All incubation steps were performed at room temperature. The optical density at 450 nm, corrected by the reference wavelength 570 nm, was measured with a Genios Pro microplate reader (Tecan, Crailsheim, Germany).

2.2.3 MTT assay

Simultaneously with the ELISA assay, the viability of LPS-stimulated cells was assessed by a MTT assay, based on the mitochondrial-dependent reduction of MTT to formazan. After removing the supernatant for ELISA analysis, MTT was added to the cells, and the cells were incubated for 2 h at 37 °C. The supernatant was then removed, and the cells were lysed with lysis buffer (10% SDS in 0.01 N HCl). The optical density at 570 nm, corrected by the reference wavelength 690 nm, was measured using a Genios Pro microplate reader.

2.2.4 Calculation of the anti-inflammatory activity

The calculated concentrations of cytokines were normalised to MTT values to reduce any variation from differences in cell density. For a positive control, cells were treated with only LPS and the resulting amount of secreted cytokines was defined as 100%. The results from the experimental compounds were then calculated as a percent of this value. The entire inflammation assay, starting with cell seeding and LPS-induction, was performed (duplicate or triplicate) on individual days.

2.3 Statistical analysis

All data were presented as a mean ± standard deviation (S.D.). Individual differences were evaluated by One-Way ANOVA followed by post-hoc tests. In all cases, * $p < 0.05$ indicated statistical significance.

3. Results and discussion

The IL-6, IL-10, and TNF- α secretions of RAW 264.7 cells after treated with silk cocoon, cordyceps, and Thai edible insect extracts are shown in Figure 4.

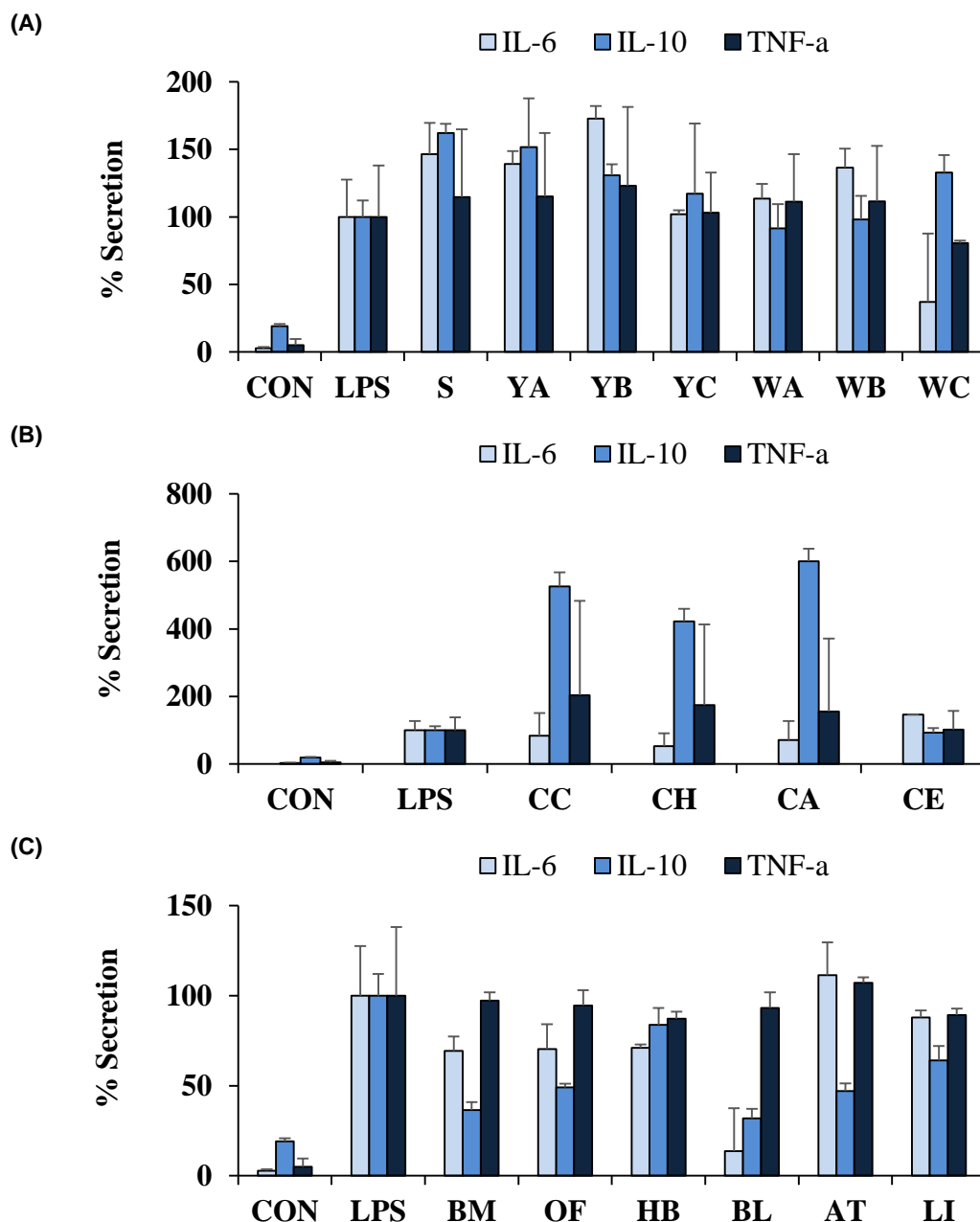


Figure 4 IL-6, IL-10, and TNF- α secretion of silk cocoon, cordyceps, and Thai edible insect extracts (CON: control, LPS: lipopolysaccharide, S: sericin, YA: yellow cocoon extracted by acid, YB: yellow cocoon extracted by base, YC: yellow cocoon extracted by autoclave, WA: white cocoon extracted by acid, WB: white cocoon extracted by base, WC: white cocoon extracted by autoclave, CC: crude ethanolic cordyceps extract, CH: fractionated hexane cordyceps extract, CA: fractionated ethyl acetate cordyceps extract, CA: fractionated ethanolic cordyceps extract, BM: *Bombyx mori*, OF: *Omphisa fuscidentalis*, HB: *Hieroglyphus banian*, BL: *Bombay locust*, AT: *Acheta testacea*, and LI: *Lethocerus indicus*)

4. Conclusion

Among various extracts, Thai edible insect extracts possessed a promising anti-inflammatory activity. *B. locust* ethanolic extract showed the most potent IL-6 inhibition ($86.3 \pm 23.8\%$). Additionally, white cocoon extracted using DI water with the assist of autoclave also showed a potent IL-6 inhibition ($63.0 \pm 50.6\%$). Therefore, they could be used as active component in further development of inflammation products.

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Synergistic anti-inflammatory activity of hydrolysis products of flavonoid glycosides from *Crytosperma johnstonii*

Report by Mag. Dr. Ruttiros Khonkarn

Project leader:

Prof. HELMUT VIERNSTEIN

University of Vienna, Department of Pharmaceutical Technology and Biopharmaceutics

e-mail: helmut. viernstein@univie.ac.at

Prof. Viernstein obtained his PhD at University of Vienna and earned his habilitation in the field of Pharmaceutical Technology. Since 1999 he is Head of the Department of Pharmaceutical Technology and Biopharmaceutics. He has published more than 160 papers in peer reviewed journals and 27 patents. The current research focuses on structure studies of new oligosaccharides from plants and their bioactivities as well as complexation of drug substances with selected cyclodextrins for stabilization, increase of solubility, taste improvement, etc.

Project partner:

Mag. Dr. RUTTIROS KHONKARN

University of Chiang Mai/Thailand

Department of Pharmaceutical Sciences, Faculty of Pharmacy

Introduction:

Many tropical plants exhibit several interesting biological activities with potential therapeutic applications. *Crytosperma johnstonii*, family Araceae, locally named “singhamora” in Thailand is also found in Trinidad, New Guinea, Malaysia and Indonesia. Local people in the central part of Thailand use *C. johnstonii* for centuries in the treatment of many diseases. Our previous report found that *C. johnstonii* extracts displayed the high antioxidant activity and possessed cytotoxicity against sensitive and resistant cancer cells. The extracts showed no detectable cytotoxicity towards PBMC normal cells. Regarding the mechanism of cell death, cell cycle arrest occurred at the G2/M phase and followed by apoptosis. It was found that the flavonoid glycosides existing in the extracts play an important part in both antioxidant and cancer cell cytotoxic activities. Moreover, hydrolysis products of flavonoid glycosides from *Crytosperma johnstonii* show stronger antioxidant and cancer cell cytotoxic properties than original flavonoid glycosides. The synergistic antioxidant activity of hydrolysis products of flavonoid glycosides from *Crytosperma johnstonii* was also observed. Because, anti-inflammatory activity is related to antioxidant activity. Thus, the aims of this study are to evaluate synergistic anti-inflammatory activity of hydrolysis products of flavonoid glycosides from *Crytosperma johnstonii*.

Method:

RAW 264.7 cells (5×10^5 cells) were seeded into 12-well plates and incubated for 24 h at 37°C. The cells were then exposed to the tested samples for further 3 h at 37°C before LPS was added at final concentration of 1 µg/ml. After that, the cells were then incubated for a further 24 h at 37°C. The supernatant was removed to analysis using ELISA and MTT assay.

Results:

Anti-inflammatory activity of products of flavonoid glycosides (rutin and isorhamnetin rutinoside) and hydrolysis products of flavonoid glycosides (quercetin and isorhamnetin) from *Cryptosperma joinstonii* was determined using model of LPS-stimulated macrophages. These macrophages were treated with 100 µM of quercetin, isorhamnetin, rutin and isorhamnetin rutinoside. The concentrations of secreted pro-inflammatory cytokines which are IL-6, IL-10 and TNF-α were then evaluated. The results found that secretion of IL-10 was reduced at 81%, 81%, 63% and 51% after treated LPS-stimulated macrophages with quercetin, isorhamnetin, rutin and isorhamnetin rutinoside, respectively (Fig. 1). Moreover, secretion of IL-6 was decreased at 68% and 89% upon incubation with quercetin and isorhamnetin, respectively. However, rutin and isorhamnetin rutinoside did not reduce IL-6 secretion as shown in Fig. 2. These results indicate that hydrolysis products of flavonoid glycosides show better anti-inflammatory activity than their parental flavonoid glycosides. Anyway, all of tested compound did not have any effect on reduction of TNF-α secretion (Fig. 3) and synergistic anti-inflammatory activity of hydrolysis products of flavonoid glycosides from *Cryptosperma joinstonii* was not observed.

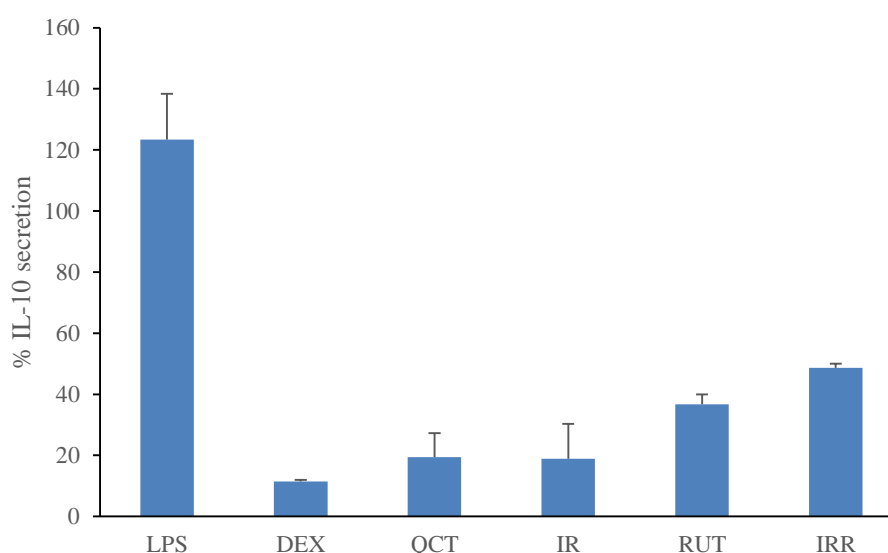


Fig. 1 IL-10 secretions of LPS-stimulated macrophages after treated with 100 µM of dexamethasone (DEX), quercetin (QCT), isorhamnetin (IR), rutin (RUT) and isorhamnetin rutinoside (IRR)

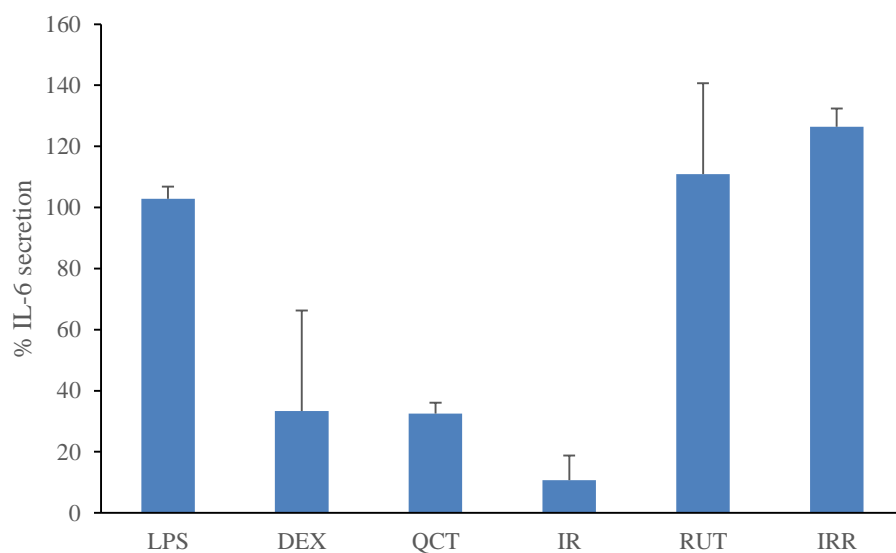


Fig. 2 IL-6 secretions of LPS-stimulated macrophages after treated with 100 μ M of dexamethasone (DEX), quercetin (QCT), isorhamnetin (IR), rutin (RUT) and isorhamnetin rutinoside (IRR)

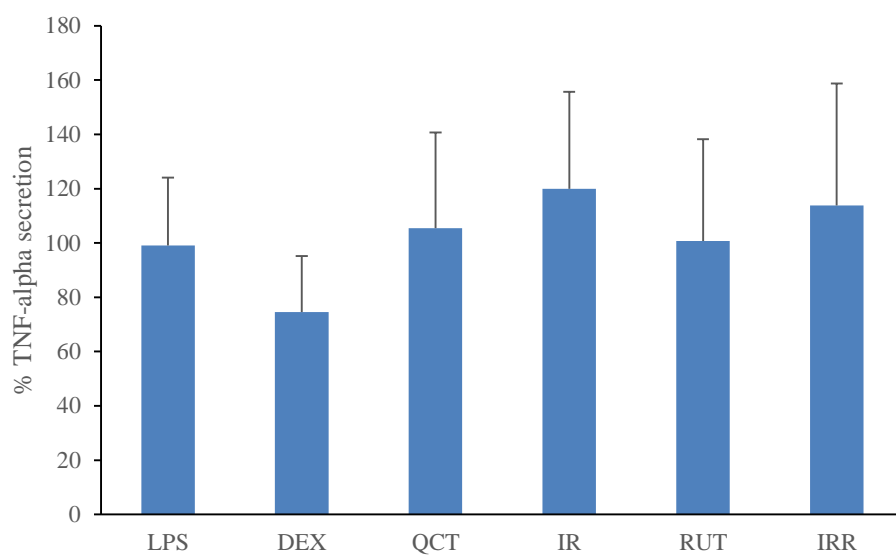


Fig. 3 TNF- α secretions of LPS-stimulated macrophages after treated with 100 μ M of dexamethasone (DEX), quercetin (QCT), isorhamnetin (IR), rutin (RUT) and isorhamnetin rutinoside (IRR)

The impact of relocation modes on livelihood rehabilitation and recovery after disasters

A comparative study of populations affected by the 2010 Merapi volcano eruption in Yogyakarta and the 2006 mud volcano eruption in Sidoarjo, Indonesia.

Involved Researchers:

Project Leader:

Dr. **Gunnar Stange**

Department of Geography and Regional Research, University of Vienna, Austria

gunnar.stange@univie.ac.at

Dr. Gunnar Stange currently holds a position as Assistant Professor in Human Geography at the Department of Geography and Regional Research, University of Vienna, Austria. He received his PhD from the Department of Social and Cultural Anthropology, Goethe University, Frankfurt am Main, Germany. His research interests include peace and conflict studies, development studies, and forced migration. His regional focus is on South-East Asia.

Research Collaborator:

Dr. **Bambang Hudayana**

Department of Anthropology, Faculty of Cultural Sciences, Universitas Gadjah Mada, Yogyakarta, Indonesia

bambang.hudayana@ugm.ac.id

Dr. Bambang Hudayana is currently serving as head of the Department of Anthropology at Universitas Gadjah Mada, Yogyakarta, Indonesia. He received his Master in Anthropology from the Australian National University and his PhD in Anthropology from the Universitas Gadjah Mada. His research interests include post-disaster livelihoods, village-elites and societal transformation as well as empowerment strategies of rural populations.

Background

As a result of natural disasters, governments are often faced with the challenges of minimizing risks for the affected population, rebuilding the material and immaterial infrastructure or quickly evacuating and, if necessary, relocating the affected populations. The pressure to find very quick and unbureaucratic solutions to extremely complex problems can save lives and prevent the outbreak of diseases in the short-term but can have a negative impact on the resilience and vulnerability of affected communities in the medium- and long-term. Of particular relevance in this context, but so far largely ignored in research, are the modes by which affected communities resettle after a natural or man-made disaster.

Aim and Scope

Against this background, the comparison of the resettlement strategies of communities affected by two different disasters in the recent past in Indonesia promises important insights into the interdependence of socio-economic recovery and the way in which respective resettlement processes had been organized. The two disasters in question are the eruption of the Merapi volcano in Central Java in 2010 and the eruption of the mud volcano “Lusi” in Sidoarjo, East Java, Indonesia. In the years 2010 to 2014 and 2017, respectively, a comprehensive studies on the resettlement processes of the affected communities and their impacts was carried out on either case. This project aims at comparing both studies regarding the question in how far the mode of relocation used by the affected communities impacted the socio-economic recovery process after relocation.

Research Cooperation

The research project is being carried out in two steps together with Dr. Bambang Hudayana from Universitas Gadjah Mada in Yogyakarta, Indonesia. The project is scheduled to run for a total of eight months. In the first phase of the project, Dr. Gunnar Stange visited the Department of Anthropology at Universitas Gadjah Mada for two weeks in February 2019. During this research visit, he and Dr. Bambang Hudayana coded the existing data on both cases and developed a framework by which the two cases will be compared. As the research funding for this project was granted only after mid 2018, the project work could only be commenced in early 2019. A planned research visit by Dr Bambang Hudayana, scheduled for March 2019, to finalize the data comparison had to be cancelled due to personal reasons. Therefore, Dr Bambang Hudayana will visit Vienna in September 2019 to finalize the data analysis together with Dr. Gunnar Stange.

Planned Publications

The project partners plan to submit an article manuscript for review to the international peer-reviewed journal “Disasters” by end of October 2019.

Future Collaborations

As a next step, the cooperation partners will extend their research collaboration into research-oriented teaching activities. In July 2019, the working group Population Geography and Demography at the Department of Geography and Regional Research together with the Department of Geography of Chiang Mai University will hold a three weeks joint field research school on agricultural transformation and migration in northern Thailand for BA and MA students. The Department of Anthropology of Universitas Gadjah Mada will join the field school with one academic instructor and two MA students. Additionally, Dr. Gunnar Stange has been invited as a guest professor by the Faculty of Cultural Science of Universitas Gadjah Mada to hold a two weeks lecture on academic journal writing with a special emphasis on post-disaster recovery and rehabilitation in August 2019. Furthermore, the researchers involved in the project are currently discussing the design of a comparative research project that will look at livelihood rehabilitation and transformation strategies of disaster affected communities in Southeast Asia.

Report of the visit of the Chulalongkorn University, Bangkok, Thailand from November, 4th of to December 4th 2018

Involved scientist in the scientific contacts between the University of Vienna and various Universities in Thailand:

Univ. Prof. Dr. Supot Hannongbua, PhD at the University of Innsbruck (B.Rode), Director of the Austrian Thai Center at the Chulalongkorn University, Dean of the Faculty of Science of the Chulalongkorn University, Staff member, Research interests: Molecular simulations of biological systems as well as of catalytical active heterogenous systems. 182 publications, Bernd Rode Award 2017 for excellent projects.

e-mail: Supot.H@chula.ac.th

Univ. Prof. Dr. Sirirat Kokpol, former director of the Austrian-Thai Center, Director of the Food and Testing Laboratory. Research interest: Quantum chemical calculations on excited state interactions in proteins. 80 publications.

Ass.Prof. Dr. Thanyada Rungrotmongkol, Chulalongkorn University, PhD in Physical Chemistry at the Kasetsart University, research position at the Center of Innovative Nanotechnology, Chulalongkorn University and Computational Chemistry Unit Cell, Faculty of Science, Chulalongkorn University, Research Interests: Molecular Dynamics of biological systems. 100 publications, Bernd Rode Award 2017 for excellent projects.

A.Univ.Prof.i.R. Dr. Peter Wolschann, PhD in Theoretical Chemistry at the University of Vienna (O.E.Polansky), Staff member at the Institute of Theoretical Chemistry, former vice-head of the institute, deputy of the representative of ASEA-Uninet at the University of Vienna, guest lecture at the Kasetsart University, Bangkok and the Technological University in Taschkent. Lecturer at the University of Vienna and at the Chulalongkorn University.

Research interest: Molecular simulations of ligand protein interactions, drug design.

210 publications. Awards 2017: Bernd Rode Award for excellent projects. Honour medal of the University of Wroclaw.

e-mail: Karl.Peter.Wolschann@univie.ac.at

Activities during the visit:

Teaching and research activities at the Chulalongkorn University at the Department of Chemistry (Austrian Thai Center), at the institute of Physical Chemistry, as well as at the Department of Biochemistry and the Computational Unit Cell.

Seminars for Master- and PhD students within the frame of the Cyclodextrin research project of the research unit of Prof. Dr. Supot Hannongbua and Prof. Dr. Thanyada Rungrotmongkol
Defensio of Ms. Wiparat Hotarat – 3.12..

Final version of a publication (already accepted): S. Kongkaew, T. Rungrotmongkol, Ch. Punwong, H. Noguchi, F. Takeuchi, N. Kungwan, P. Wolschann, S. Hannongbua
Interactions of HLA-DR and Topoisomerase I Epitope Modulated Genetic Risk for Systemic Sclerosis
Scientific Reports

Final version of a publication (submitted): Wiparat Hotarat, Saranya Phunpee, Chompoonut Rungnim, Peter Wolschann, Nawee Kungwan, Uracha Rukta Ruktanonchai, Thanyada Rungrotmongkol, Supot Hannongbua
Prediction of binding processes of inclusion complexes between alpha-mangostin and hydrophilic β CD-derivatives: A molecular dynamics simulation
J. Mol. Liquids

Scientific discussions with members of the research group of Prof. Thanyada Rungrotmongkol about common publications and support for PhD works (Ms. Nitchakan Darai).

Scientific contacts with Prof. Supot Hannongbua, Prof. Sirirat Kokpol, Prof. Vudhichai Parasuk, Prof. Pornthep Sompornpisut and Prof. Warinthorn Chavasiri (all Chulalongkorn University), discussion about common research projects.

Scientific discussion with Prof. Supa Hannongbua, Prof. Chak Sangma and Prof. Kiattisak Choowonkamon. (Kasetsart University)

Discussion with Prof. Luckhana Lawtrakul from the Thammasart University and with Prof. Rungtiva Poo-Aporn, King of Mongkut University, Thonburi Campus about visits of students and staff members at the University of Vienna, concept for common research projects.

Theoretical and spectroscopic investigations on biological as well as on macroscopic materials

Incoming Report:

In the running project two different topics were considered. First of all drug design methods on a biological system of interest have been applied together with various theoretical methods. The main aim of the first investigation was the screening of chalcones, which have been synthesized at the Chulalongkorn University, to inhibit the Epstein-Barr Nuclear Antigen 1 protein. Additionally to that, a study on the interactions between candidate compounds and Epstein-Barr Nuclear Antigen 1 protein using molecular dynamics (MD) simulations was performed.

Epstein-Barr Virus (EBV) is the herpesvirus 4. EBV has infected a large amount of people worldwide and persists for the lifetime of these persons. EBV has induced changes to the cell, best known as the cause of infectious mononucleosis and long-term EBV infections associated with higher risk of lymphoma, ovarian cancer, stomach cancer and other types of cancer. During latent infection, EBV does express a limited set of viral gene products that promote host-cell survival and proliferation. The maintenance of the latent viral genome depends on the functions of the Epstein-Barr Nuclear Antigen 1 protein (EBNA1), which is the only viral protein that is consistently expressed in all forms of latency, essential for viral genome maintenance and for infected-cell survival. Previous studies have shown that chalcone derivatives potentially inhibit EBV.

In the present study, we aim to screen chalcones, plant-derived polyphenolic compounds, which generally exhibit several biological activities including anticancer activities. These inhibitors disrupt the EBNA1-DNA binding. The EBNA1 structure is available as X-ray crystal structure deposited in the protein data bank (PDB), with the entry code 1B3T. A series of chalcone derivatives were in silico screened toward EBNA1 by the use of molecular docking using CHARMM based docking software (CDOCKER) of the Discovery Studio suite program 2.5 (Accelrys Inc) as well as MD simulations using AMBER 16 software package. In particular the ligand-protein interactions have been studied in detail. All structural analyses have been performed by the cpptraj module, while the binding free energy was determined by the MMGBSA.py module. Combined MD simulations with pharmacophore-based screening have been used to find novel potent compounds against EBNA1 protein using LigandScout program together with the program package KNIME.

The obtained results suggested that one particular chalcone derivative (Figure 1) displays a significantly greater binding affinity than compounds reported earlier as anti-EBV agents. The EBNA1 residues K477, I481, N519, K586 and T590 mainly contribute for the best fitting chalcone derivative at the recognition helix site. Altogether, this chalcone derivative might be introduced as a lead compound acting against EBNA1. The results of this investigation have been collected in a publication which has been submitted recently.

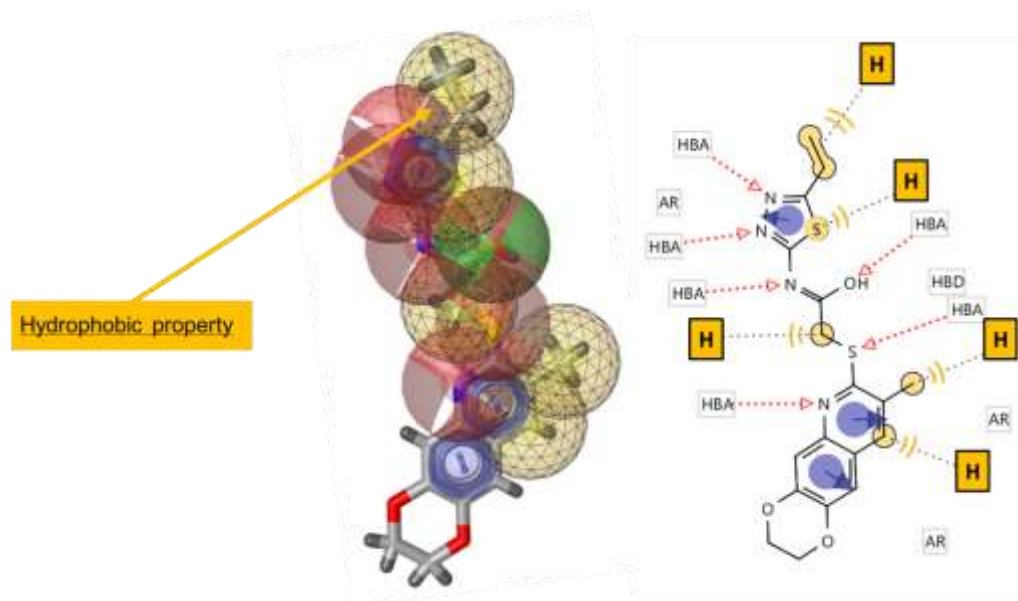


Figure 1: Pharmacophoric points of the best chalcone derivative and the specific interactions with the surrounding

In a second part of the running project a MD study of a single-wall carbon-nanotube (CNT) wrapped with polypropylene (PP) was performed. The objective of the investigation was to demonstrate how amylose (AMY) and chitosan (CS) could support such problems by non-covalent modifications on the outer surface of single-walled CNT using molecular dynamics (MD) simulations.

Nowadays, the nanocomposite materials are widely used in various applications due to their unique properties in particular thermal and electrical properties. Polymer/carbon nanotube (CNT) nanocomposite is one the important nanocomposite materials that are manufactured for improving thermal conductivity and electrical properties of polymers. Unfortunately, polypropylene (PP)/CNT preparation is difficult because of CNT dispersion and aggregation. Accordingly, AMY and CS are selected in the present study in order to demonstrate how AMY and CS could influence by non-covalent modifications on the outer surface of single-walled CNT using MD simulations. The MD results reveal that AMY wrapped on CNT could induce the binding efficacy of PPs (a tactic polypropylene (aPP), isotactic polypropylene (iPP) and a syndiotactic polypropylene (sPP)) toward CNT by a significant reduction of distance between the center residue located on each amylose spiral and the adjacent one, especially for iPP and sPP systems. The radius of gyration shows that PPs is wrapped around CNT. Additionally, the electrostatic attraction is found to be the main interaction force inducing PPs to become spirally contacted with CNT. In case of CS modification, it can induce PPs binding but not in a spiral-shape on CS outer surface. The radius of gyration of PPs in CS modified CNT system conflicts with that of AMY model due to the fact that it interacts with CNT/CS in a snake-like shape caused by electrostatic interactions.

The project is still in progress, the results will be published later.

Publications:

- [1] N. Darai, P. Mahalapbutr, K. Sangpheak, C. Rungnim, P. Wolschann, N. Kungwan, T. Rungrotmongkol
In silico screening of chalcones against Epstein-Barr virus nuclear antigen 1 protein
submitted

Theoretical Methods in Drug Design

Project cooperation

Prof. Dr. Supot Hannongbua

Department of Physical Chemistry, Faculty of Science, Chulalongkorn University, 254 Phayathai Rd., Patumwan, Bangkok
PhD in Physical Chemistry, Former Head of the Austrian Thai Center, former dean of the Faculty of Science Chulalongkorn University
Material Science, Molecular Dynamics of proteins and catalysts

Prof. Dr. Thanyada Rungrotmongkol

Department of Biochemistry, Faculty of Science, Chulalongkorn University, 254 Phayathai Rd., Patumwan, Bangkok,
PhD in Physical Chemistry, University lecturer since 2011, Advisor for several PhD students, member of organizing committees for several international conferences
Molecular Dynamics and Drug Design

Chonnikan Hanpaibool, M.Sci

Department of Biochemistry, PhD-Program: Biochemistry and Molecular Biology
Department of Biochemistry, Fl.5, Klum Watcharobol Bld. Faculty of Science, Chulalongkorn University, Phayathai Rd., Bangkok 10330 Thailand
Molecular Dynamics, Drug Design, RNA-protein interactions

Miss Wanwisa Panman, M.Sci

PhD-Program Petrochemistry and Polymer Science
Multidisciplinary program of Petrochemistry and Polymer Science Faculty of Science, Chulalongkorn University, Phayathai Rd., Bangkok 10330 Thailand
Advisor: Professor. Supot Hannongbua, Ph.D.
Co-Advisor: Assistant Professor Thanyada Rungrotmongkol, Ph.D.

Miss Kamonpan Sanachai, M.Sci

Department of: Biochemistry Program: Biochemistry and Molecular biology
Department of Biochemistry, Fl.5, Klum Watcharobol Bld. Faculty of Science, Chulalongkorn University, Phayathai Rd., Bangkok 10330 Thailand
Advisor: Assistant Professor Thanyada Rungrotmongkol, Ph.D.

In modern Drug Design strategies the application of theoretical methods is of increasing importance. The identification of targets for the interaction of drugs with biomolecules, protein structures, DNA or carbohydrates which are important for the binding of biologically active compounds is the first step for drug development. Subsequent virtual screening of large amounts of compounds from libraries are used to identify so-called lead compounds, which are necessary for the further development of derivatives for the optimization of the biological activities of potent drug candidates by proper quantitative-structure activity relationships (QSAR) and related methods. Subsequent preclinical and clinical tests can lead to products with enhanced biological activity and diminished side effects. Beyond compound collections based on natural products of individual countries, large databases (e.g. the ZINC data base or the ChEMBL data base) are available which can be applied for relative fast

virtual screening after some preselections of compound classes. Drug protein complexes with highest fitting scores can be investigated by molecular calculations, which can deliver additional information about the drug protein interaction necessary for the knowledge of the details of the binding affinities of drug molecules and their dynamic behavior in the association complexes. Quantum chemical calculations give the most accurate results, but they are limited to smaller systems only. Empirical methods like Molecular Docking, Molecular Dynamics (MD) and Monte-Carlo simulations are also rather convenient techniques for theoretical studies on drug target complexation. The combination of both strategies can be applied also on larger systems by combined quantum chemistry and molecular mechanics (QMMM) methods. In particular Molecular Dynamics is widely used to investigate the structures and the dynamical behaviour of proteins, nucleic acids, carbohydrates as well as the association complexes of drug molecules with proper binding sites of these biomolecules. More sophisticated, extended Molecular Dynamics techniques, like Umbrella-Sampling, Steered Molecular Dynamics and Replica-Exchange together with Metadynamics are nowadays used for the estimation of conformational spaces and reaction pathways.

In one part of the present project new theoretical methods have been developed and tested and, subsequently, they have been applied on several biological systems of running interest. In particular, the development and application of Molecular Dynamics methods based on AMBER14 using various force fields have been tested, considering the calculation of the interaction energies between protein and biological active substances, firstly in gas phase, but also in solution for the estimation of solvation energies and entropic terms. The accurate calculation of the latter one is a challenging task, which could not be solved up to now in a sufficiently satisfying way. Program packages, implemented in AMBER (MM-GBSA, MM-PBSA, MM/3D-RISM-KH and QM-GBSA and QM-PBSA) should be considered for a critical comparison, in particular with experimental evidences.

The first system, where various force fields have been applied, was an investigation of the cavity closure of 2-hydroxypropyl- β -cyclodextrin. Cyclodextrins are cyclic oligosaccharides and they are widely used for pharmaceutical application as solubility increasing recipients, as well as for the stabilization of drugs. The reason for that is the ability of the cyclodextrin ring to form inclusion complexes with small or medium-sized molecules. According to the number and the type of the glucose subunits forming the ring system, various properties of the interior can be observed and used for different applications.

2-Hydroxypropyl- β -cyclodextrin (HP β CD) has unique properties to enhance the stability and the solubility of low water-soluble compounds by inclusion complexation. An understanding of the structural properties of HP β CD and its derivatives, based on the number of 2-hydroxypropyl substituents at the α -D-glucopyranose subunits is rather important. In this investigation, replica exchange molecular dynamics simulations were performed to study the conformational changes of single- and double-sided hydroxypropyl-substitution, called 6-HP β CDs and 2,6-HP β CDs, respectively. The results show that the glucose subunits in both 6-HP β CDs and 2,6-HP β CDs have a decreased chance of flipping than in β -cyclodextrin. Also, hydroxypropyl (HP) groups occasionally block the hydrophobic cavity of HP β CDs, thus hindering drug inclusion. It was found that HP β CDs with a high number of HP-substitutions are more likely to be blocked, while HP β CDs with double-sided HP-substitutions have an even higher probability of being blocked. Overall, 6-HP β CDs with three and four HP-substitutions are highlighted as the most suitable structures for guest encapsulation, based on the

conformational analyses, such as structural distortion, the radius of gyration, circularity, and cavity self-closure of the HP β CDs. [1]

According to the pharmaceutical applications of cyclodextrins, the following complexes were investigated in detail:

Pinostrobin (PNS) belongs to the flavanone subclass of flavonoids that demonstrates several biological activities such as anti-inflammatory, anti-cancerogenic, anti-viral and anti-oxidative effects. Similarly to other flavonoids, PNS has a relatively low water solubility. The purpose of the investigation was to improve the solubility and the biological activities of PNS by forming inclusion complexes with β -cyclodextrin (β CD) and its derivatives, heptakis (2,6-di-*O*-methyl)- β -cyclodextrin (2,6-DM β CD) and HP β CD. According to the phase solubility diagram of PNS, ideal solubility (A_L -type solubility) of PNS with β CD and its derivatives, occurred at a 1:1 molar ratio. The inclusion complexes were prepared with the freeze-drying method and were characterized by differential scanning calorimetry (DSC). Two-dimensional nuclear magnetic resonance (2D-NMR) and steered molecular dynamics (SMD) simulation revealed two different binding modes of PNS, *i.e.*, its phenyl- (*P*-PNS) and chromone- (*C*-PNS) rings preferably inserted into the cavity of β CD derivatives whilst only one orientation of PNS, where the *C*-PNS ring is inside the cavity, was detected in the case of the parental β CD. All PNS/ β CDs complexes had a higher dissolution rate than free PNS. Both PNS and its complexes significantly exerted a lowering effect on the IL-6 secretion in LPS-stimulated macrophages and showed a moderate cytotoxic effect against MCF-7 and HeLa cancer cell lines *in vitro*. [2]

Molecular dynamics (MD) simulations with umbrella sampling together with the third-order density-functional tight-binding method (DFTB3) were applied on genistein-cyclodextrin inclusion complexation in order to understand the structural dynamics and the encapsulation mechanism. Genistein, one isoflavone, has a high pharmaceutical potential, which is weakened by its low water solubility. Inclusion complexation with cyclodextrins leads to an enhanced water solubility and subsequently to a higher bioavailability. The MD results showed that genistein is inserted into the CD's cavity mainly with the phenol ring. While the interactions with the water accessible solvation shell is reduced and a hydrogen bond between genistein and CD is established. Additionally, using the DFTB3 approach, spontaneous keto-enol tautomerization was detected within hundred picoseconds time scale, suggesting the encapsulated genistein as an enol is likely more stable than the keto form. From the calculated charge distribution, it can be concluded that beyond the hydrogen bond, electrostatic interactions partially support the formed inclusion complex. [3]

Another compound inserted into the CDs cavities is daidzein. Daidzein is an isoflavone of the group of phytoestrogens extracted from soybeans and other legumes. As its structure is relatively similar to that of the hormone estrogen, daidzein is able to bind with estrogen receptors leading to a reduced postmenopausal women symptom. A common problem of the compounds of this group is again the rather low water solubility with the consequence of limited pharmaceutical applications. Inclusion complexation between daidzein and two β CDs (β CD and DM- β CD) was investigated by both theoretical and experimental techniques. Based on multiple MD simulations in combination with different binding-free energy calculations, the most preferred mode of daidzein binding to cyclodextrins is the insertion of the chromone ring fitting well into the hydrophobic cavity. All four methods of binding free energy calculations (MM/PBSA, MM/GBSA, QM/PBSA and QM/GBSA) predict the binding affinity of daidzein/DM β CD complex significantly higher than the daidzein/ β CD associate. Following

the same trend, the experimental results also indicated the enhancement of solubility and stability of the daidzein/DM β CD complex. Moreover, it was found that the complexation was favourably enthalpy driven. [4]

The binding affinity of α -mangostin (MGS) inside β -cyclodextrin (β CD) and its derivatives, 2,6-dimethyl- β -cyclodextrin (DM β CD), 2-hydroxypropyl- β -cyclodextrin (HP β CD), was investigated by using molecular dynamics (MD) simulations. Firstly, the reaction pathways starting from free MGS and the corresponding CDs were simulated. During the simulation of the reaction pathway, several association complexes (“intermediate states”) of lower energy than calculated for the starting geometries could be observed. The inclusion complexes themselves show even lower binding energies. Moreover, the MM-PBSA calculations reveal that van der Waals forces mainly contribute to the total energies of the complexation and that MGS might exist in two energetically similar orientations in the CDs cavities. Experiments based on phase solubility methods support the theoretical investigation and show that DM β CD is most convenient for the solubility enhancement of MGS. [5]

Polyphenolic compounds, chalcones or 1,3-diphenyl-2-propene-1-ones, are precursors for flavonoids and isoflavonoids. They consist of two aromatic rings connected by an α,β -unsaturated carbon atom chain. Chalcones are ingredients of several plants. Natural and synthetic derivatives of chalcones have attracted attention because of their promising therapeutic effects. Targeted cancer therapy has become a high potential cancer treatment. Epidermal growth factor receptor (EGFR), which plays an important role in cell signaling, enhanced cell survival and proliferation, has been suggested as molecular target for the development of novel cancer therapeutics. In the present study, a series of chalcone derivatives was screened by in vitro cytotoxicity against the wild type (A431 and A549) and mutant EGFR (H1975 and H1650) cancer cell lines, and, subsequently, tested for EGFR-tyrosine kinase (TK) inhibition. From the experimental screening, all chalcones seemed to be more active against the A431 than the A549 cell line, with several chalcones showing a more than 50% inhibitory activity against the EGFR-TK activity and a high cytotoxicity with IC₅₀ values of < 10 μ M against A431 cells. Moreover, five chalcones showed more potent activity on H1975 (T790M/L858R mutation) than against H1650 (exon 19 deletion E746-A750) cell lines. Only three chalcones had an inhibitory activity against EGFR-TK with a relative inhibition percentage that was close to the approved drug, erlotinib. Molecular dynamics studies on their complexes with EGFR-TK domain in aqueous solution affirmed that they were well-occupied within the ATP binding site and strongly interact with seven hydrophobic residues, including the important hinge region residue M793. From the above information, as well as ADMET (absorption, distribution, metabolism, excretion, and toxicity) properties, all three chalcones could serve as lead compounds for the development of EGFR-TK inhibitors.[6]

Chalcones are also considered to be human topoisomerase (hTopoII α) inhibitors. In order to diversify the pharmacological activity of chalcones and to extend the scaffold of topoisomerase inhibitors, a series of chalcones was designed in six groups (47 compounds) and screened against hTopoII α by molecular docking. Salvicine, a known inhibitor, was used as a reference for the prediction of possible binding conformations of designed chalcones. Three selected docked chalcones show the best rank of lowest interaction energies with values of -61.08, -60.68 and -59.27 kcal/mol, respectively, which are somewhat stronger than that of salvicine (-58.72 kcal/mol). Then, these three potent chalcones were synthesized, and their cytotoxicity against cancer cell lines were tested using MTT assay. From experimental IC₅₀ values of the three chalcones against the HT-1376, HeLa and MCF-7 cancer cell lines, one chalcone shows a high cytotoxicity on HT-1376, HeLa and MCF-7 cell

lines, accordingly. This chalcone derivative exhibited hTopoII α -ATPase inhibitory activity similar to salvicine. Furthermore, molecular dynamics simulations of the selected chalcone in the binding pockets of hTopoII α were performed and compared with that of salvicine to understand the binding affinity and dynamic properties of this chalcone. The observed ligand-protein interactions affirm that the chalcone derivative interacts with the ATP binding pocket stronger than those of salvicine. Altogether, the newly synthesized chalcone has high potential to serve as a lead compound for topoisomerase inhibitors in anti-cancer drug development. [7]

Another system under investigation concerns the association of systemic sclerosis with anti-Topoisomerase 1 (anti-Top1) antibody (ATASSc) with specific alleles of human leucocyte antigen (HLA) –DR. The anti-Topoisomerase 1 antibody (ATA) is common autoantibody in systemic sclerosis with diffuse cutaneous scleroderma (dcSSc) which is one of the clinical subtypes of systemic sclerosis. On the other hand, an immunodominant peptide of Top1 self-protein (residues 349–368) was reported to have strong association with ATASSc by Rizou C et al. In this study, molecular dynamics simulation was performed on the complexes of Top1 peptide with various HLA-DR subtypes divided into ATASSc-associated alleles (HLA-DRB1*08:02, HLA-DRB1*11:01 and HLA-DRB1*11:04), suspected allele (HLA-DRB5*01:02), and non-associated allele (HLA-DRB1*01:01). The unique interaction for each system was examined and compared to the others by dynamical behaviors, binding free energies and solvation effects. The simulation results showed that three HLA-DR/Top1 complexes of ATASSc association mostly exhibited high protein stability and increased binding efficiency without solvent interruption, in contrast to non-association. Interestingly, a suspected case (HLA-DRB5*01:02/Top1) had the strongest binding strength, which implied a highly possible risk for ATASSc development. However, this achievement has yet to be confirmed by clinical and immunological studies. The distinguished differences in the interaction for the Top1 epitope binding with various alleles were primarily related to polymorphic residues on HLA beta chain at 13, 30, 70 and 74 positions. This finding might support ATASSc development mechanism leading to a better understanding and to a guideline for the treatment and avoidance of pathogens like Top1 self-peptide risk for ATASSc. [8]

Molecular dynamics investigations have been applied on Dengue virus infection. These infections lead to a disease in particular dangerous for children, which may even cause death. No effective prevention or therapeutic agents to cure this disease are available up to now. The Dengue viral envelope protein was discovered to be a promising target for inhibition of viral replication. Structure-based virtual screening became an important technique to identify first hits in a drug screening process, as it is possible to reduce the numbers of compounds to be assayed and therefore allows to save resources. In our study, pharmacophore models were generated using the CHA approach starting from trajectories obtained from MD simulations of the E protein complexed with the flavone FN5Y. Subsequently, compounds present in various drug databases were screened using the LigandScout 4.2 program, available from the research group Prof. Thierry Langer from the Department of Pharmaceutical chemistry of the University of Vienna. The obtained hits were analyzed in more detail by molecular docking followed by extensive MD simulations of the complexes. The highest ranked compound from this procedure was then synthesized and tested on its inhibitory efficiency by experimental assays. [9]

The rather successful cooperation of the Institute of Theoretical Chemistry and several institutions at the Chulalongkorn University (Prof. Supot Hannongbua and Prof. Thanyada Rungrotmonkol) will be continued in the future, as several research projects are still under consideration. It should be mentioned that many calculations and simulation were performed using the Vienna Scientific Clusters (VSC2 and VSC3).

Project Publications

- [1] K. Kerdpol, J. Kincuntod, P. Wolschann, S. Mori, C. Rungnim, M. Kunaseth, H. Okumura, N. Kungwan, T. Rungrotmongkol
Cavity closure of 2-hydroxypropyl- β -cyclodextrin: Replica Exchange Molecular Dynamics Simulations
Polymers 11, 145 (2019)
- [2] J. Kicuntod, K. Sangpheak, M. Mueller, P. Wolschann, H. Viernstein, S. Yanaka, K. Kato, W. Chavasiri, P. Pongsawasdi, N. Kungwan, T. Rungrotmongkol
Theoretical and experimental studies on inclusion complexes of pinostrobin and β -cyclodextrins
Scientia Pharmaceutica 86, 5 (2018)
- [3] Ch. Hanpaibool, T. Chakcharoensap, Arifin, Y. Hijikata, St. Irle, P. Wolschann, N. Kungwan, P. Pongsawasdi, P. Ounjai, T. Rungrotmongkol
Theoretical analysis of orientations and tautomerization of genistein in β -cyclodextrin
J Mol Liquids 265, 16-23 (2018)
- [4] T. Rungrotmongkol, T. Chakcharoensap, W. Khuntawee, P. Pongsawasdi, N. Kungwan, P. Wolschann
The inclusion complexation of daidzein with β -cyclodextrin and 2,6-dimethyl- β -cyclodextrin - A theoretical and experimental study
Mh.Chem 149, 1739-1747 (2018)
- [5] W. Hotarat, S. Phunpee, Ch. Rungnim, P. Wolschann, N. Kungwan, U. Rukta Ruktanonchai, T. Rungrotmongkol, S. Hannongbua
Prediction of binding processes of inclusion complexes between alpha-mangostin and hydrophilic β CD-derivatives: A molecular dynamics simulation
J Mol Liquids, published online
- [6] K. Sangpheak, L. Tabtimmai, S. Seetaha, Ch. Rungnim, W. Chavasiri, P. Wolschann, K. Choowongkamon, Th. Rungrotmongkol
Biological Evaluation and Molecular Dynamics Simulation of Chalcone Derivatives as Epidermal Growth Factor-Tyrosine Kinase Inhibitors
Molecules 24, 1092 (2019)
- [7] K. Sangpheak, M. Mueller, N. Darai, P. Wolschann, Ch. Suwattanasophon, R. Ruga, W. Chavasiri, S. Seetaha, K. Choowongkamon, N. Kungwan, Ch. Rungnim, T. Rungrotmongkol
Computational screening of chalcones acting against topoisomerase II α and their cytotoxicity towards cancer cell lines
Journal of Enzyme Inhibition and Medicinal Chemistry 34, 134-143 (2019)
- [8] S. Kongkaew, T. Rungrotmongkol, Ch. Punwong, H. Noguchi, F. Takeuchi, N. Kungwan, P. Wolschann, S. Hannongbua
Interactions of HLA-DR and Topoisomerase I Epitope Modulated Genetic Risk for Systemic Sclerosis
Scientific Reports 9, 745 (2019)
- [9] K. Hengphasatporn, A. Garon, P. Wolschann, T. Langer, Thao Huynh Nguyen Thanh, W. Chavasiri, T. Saelee, S. Boonyasuppayakorn, T. Rungrotmongkol
Multiple Virtual Screening Strategies for the Optimization of the Novel Compound Against Dengue Virus: A Drug Discovery Study.
Submitted

Borderlands and spaces - Exploring spheres of inclusive education in Bangkok and along Thai-Myanmar borderlands

Project leader:

Ass. Prof. Dr. Michelle Proyer obtained a PhD in education and holds a position as Tenure Track Professor at the Center of Teacher Education and Department of Education at the University of Vienna in the area of inclusive education. Her research and teaching focus on inclusion, with special focus on disability and forced migration. Her research has mainly been focusing on cultural and societal factors that affect the realization of inclusion on a global scale. Michelle Proyer is representative of emerging researchers with ÖFEB, convenor of NW 4 of EERA, and member of DGFE.

Assistant Professor Dr. Siriparn Sriwanyong received B.A.(hons.) in Linguistics from Thammasat University, Thailand , M.B.A. (General Management) from University of Central Missouri, M.S. (Communication Disorders) from University of Wyoming, and Ed.D.(Special Education) from Srinakharinwirot University , Thailand. He is currently teaching at the Department of Special Education, Srinakharinwirot University. His interests are in the area of Audiology, Speech-Language Pathology, and Special Education emphasizing on Deaf Education and Learning Disabilities. He has been conducting researches collaboratively with the University of Vienna, and Gifu University, Japan. In addition to teaching and conducting researches, he also provides services in hearing testing, fitting of hearing aids, and speech and language therapy.

Further colleagues involved: **Dr. Tamala Boonyakarn, Mag. Simon Reisenbauer**

Project background (partly taken from application text): Mapping Borderlands - Migration - Disability - Identity – Education:

Research activities focus on the exploration of lives of so-called refugees with disabilities along the Thai -Myanmar border(-lands) as well as across Thailand - as many migrants move to the bigger cities due to employment options. Drawing from findings of the ongoing data collection along the Thai – Myanmar border, the research team explores the educational conditions of ‘refugees’ with and without disabilities from other countries moving or having moved or having had to move to Thailand. Due to the complex legal position of ‘refugees’ in Thailand - not being a signatory to the UN Refugee Convention - and current political developments in Myanmar, the situation presents itself patchy and intertwined. Thus further research is needed, especially in the area of education and especially considering the fact that refugees/migrants with disabilities are to be considered an especially vulnerable group.

Data collected (following a Grounded Theory regime) during this and an earlier trip funded through means of ASEA Uninet first-hand accounts of ‘refugee camp’-based experts in the area of rehabilitation, advocates for the rights of ‘refugees’, and teachers in out of camp facilities catering for families of children with disabilities living outside or around borderlands. So far data in and around Bangkok, Mae Sot, and Chiang Rai have been collected. The data set consists of school visits, interviews as well as desk research into historical, political, geographic as well as legal details related to movements around borderlands and beyond.

Research activities focused and will further focus on mapping the availability and design of education services along the Thai-Myanmar borderlands: Taking the numbers of people on the (forced) move and global tendencies to enforce or tighten restrictions in accessibility to social services for certain so-called vulnerable groups into account, the situation along Thai-Myanmar borderlands presents itself as scattered. It should not be considered an isolated case as complex patterns of life histories and movement as well as infrastructure and legal status do have an impact.

The localized case study of Thailand and the Thai-Myanmar border introduces a broader context thus unfolding questions related to the danger of exclusion of certain groups in complex life situations. This will be framed against the background of countries' responsibilities to provide adequate and equal access to education as signatories to international and ratified national standards. Implications for the agenda of inclusive education especially in terms of teacher training will be elaborated as those educational contexts where access is being granted need to be discussed in the context of the provision of high quality inclusive education.

Details on exchange activities:

Visit to the University of Vienna, March 8 – March 19, 2018

Ass. Prof. Siriparn Sriwanyong (Dr. Tamala Bonnyakarn was able to join through means of Bernd Rhode Award of Michelle Proyer) to University of Vienna. Overview of activities:

Data collection and analysis for the project:

- Work on data collected during earlier phases of field research along the Thai Myanmar border (Mae Sot) and preparation for research activities in August.

Further networking and research exchange:

- Meeting with Dr. Tobias Buchner preparatory work with Tobias for his stay in Bangkok in November 2018 (was cancelled due to time-restraints).
- Work on data analysis and exchange the ideas with Mag. Simon Reisenbauer under "Construction and Management of Difference in Pedagogical Practices in Bangkok (Thailand), Addis Ababa (Ethiopia) and Vienna (Austria)" (Dissertation project).

Dissemination of preliminary findings:

- Preparation of contents for exchange with student groups and colleagues at the Department of Education and Center of Teacher Education.
- Work on application for BRA 2019 (not successful) and WERA conference 2019
- Discussion of publication strategy.

Participation in two workshops:

- Participation in Workshop on Gender and Disability at the Department of Education, University of Vienna.
- Participated in the workshop 'Detoxing Narratives'. at the Department of Education, University of Vienna.

Visit to Srinakharinwirot University August 6 – 26, 2018

Ass Prof. Michelle Proyer to Srinakharinwirot University. Overview of activities:

Research activities:

- Planning and organizing research activities.
- Preparation of data collection in a school in a district close to Bangkok, further research activities in Chiang Rai and further research in Mae Sot (along borderlands).
- Data collection.
- Work on preparation of data (joint transcription and translation sessions).
- Initial data analysis (sequential coding).

Dissemination:

- Presentation of research activities at SWUICE – Conference at the Faculty of Education of Srinakharinwirot University, exchange with local stakeholders in education, colleagues, and students.
- Plan of future activities, scheduling of future conference participations and dissemination strategy.

Publications and conference participations:

Proyer, M. (2019): "Die Guten ins Töpfchen, die schlechten ins Kröpfchen" - Von willkürlichen Demarkationen, Grenzziehungen und Zuordnungen in der Integration. In: von Stechow, E., Hackstein, P., Müller, K., Esefeld, M. & Klocke, B. (Hrsg.). Band I: Grundfragen der Bildung und Erziehung. Bad Heilbrunn: Verlag Julius Klinkhardt, 184 – 194 und gleichnamiger Beitrag an der 32. Internationale Jahrestagung der Inklusionsforscher*innen 2018: Inklusion im Spannungsfeld von Normalität und Diversität - Justus Liebig-Universität Gießen, Gießen, Deutschland
Dauer: 21 Feb 2018 → 24 Feb 2018

Proyer, M. (2018): Disability, forced migration, and education in comparative perspective using the examples of Thailand and Austria. Presentation at the CESE Conference Identities and Education: Comparative Perspectives in an Age of Crisis, May 29 - June 1, 2018, Nicosia, Cyprus

Proyer, M., Atanasoska, T. & Sriwanyong, S. (2017): Forces in Non-Linear Transitions: On the Impact of Escape on Educational Pathways in Young Refugees' Lives. In: Inklusive Übergänge: (inter)nationale Perspektiven auf Inklusion im Übergang von der Schule in weitere Bildung, Ausbildung oder Beschäftigung. Fasching, H., Geppert, C. & Makarova, E. (Hrsg.). Bad Heilbrunn: Verlag Julius Klinkhardt, S. 211-228

Planned activities:

Submission at WERA Focal Meeting in August 2019 in Japan (answer pending).

Successful application of the project ProITEM with Kommission für Entwicklungsforschung (KEF).

Successful application with ENITAS 2018 for Dr. Tamala Boonyakarn.

Work on publications (Disability & Religion, Social Inclusion).

Next tentative visit to Bangkok in June 2019 via Erasmus+ (teaching exchange).

Nutrition, microbiota and Epigenetics

Leading scientist in charge for the visit, and the cooperation was Assistant Professor Sathaporn Ngamukote, Chulalongkorn University, Faculty of allied health sciences. She was replacing Asst. Prof. Tipyanate Ariyapitipun, who was changing her working place for a special project.



The aim of the visit was to continue the contact with the Nutrition Group of the Faculty of Life Sciences, which has been going on for many years. This cooperation always concerned the field of epigenetics and led to the joint publication of a book in the field.

The main topic of the visit was the topic of obesity, which is a growing health problem in Thailand. Incorrect diet leads to an imbalance of the intestinal microbiota and to epigenetic malfunctioning. The influence of fiber-rich food or prebiotics could counteract this. The Thai hosts

reported experiments with phytonutrients influencing the cell cycle of fat cells. I reported on projects and results of individualized preventive health care through nutrition and the analysis of epigenetic markers.

In particular, the regulation of the cell cycle of 3T3 cells and the necessary epigenetic regulation should become a joint research project. A special point of discussions and lectures was the regulation by sirtuins. Sirtfoods is a generic term for foods that have ingredients that stimulate sirtuin activity in the human body. Sirtuins are enzymes that perform certain tasks in the cells. In the human body so far seven sirtuins are known. Essentially, they perform functions related to cell protection or cell metabolism. So if you activate the sirtuins in your body, you crank up your metabolism, you do something for cell protection, you slow down cell aging; You can lose weight and keep yourself fitter and younger. Our Vienna research group is investigating the epigenetic effect of sirtuins and 2 PhD works in the field. Possibilities of investigation of sirtuins also by the Thai group were discussed and should be carried out. A further exchange of results and samples as well as a possible visit of Thai working group members to our working group was decided.

A subsequent visit to the University of Singapore (not ASEA partner) also focused on the use of epigenetic markers for individualized, preventive nutrition counseling. Special research applications in this area were also discussed at the University of Singapore. (Dr Foong Ee Khong)

Tourism between Disaster and Heritage in Indonesia

Project partners:

Dr. Gabriele Weichart (Project leader)

University of Vienna, Department of Social and Cultural Anthropology

Email: gabriele.weichart@univie.ac.at

Gabriele Weichart is a Senior Lecturer at the Department of Social and Cultural Anthropology at the University of Vienna. She completed her PhD at the University of Vienna in 1997. Her current research interests include the anthropology of material culture, especially vernacular architecture and cultural heritage; environment, disaster and social/cultural resilience; as well as food and consumption.

Dr. Bambang Hudayana

Gadjah Mada University, Department of Anthropology

Email: bambang.hudayana@ugm.ac.id

Bambang Hudayana is Head of Department of Anthropology at Gadjah Mada University. He received his MA degree at the Australian National University and his PhD at Gadjah Mada University in 2011. His main research interests are in local politics and civil society movements, the anthropology of development and economic anthropology. Since 2011, he has also carried out extensive research on the economic and socio-cultural consequences of natural disasters.

Prof. Dr. Ir. Happy Ratna Santosa

Institut Teknologi Sepuluh Nopember, Department of Architecture

Email: happysumartinah@gmail.com

Happy R. Santosa is Professor of Architecture and Head of the Laboratory of Housing and Human Settlements at the Institut Teknologi Sepuluh Nopember in Surabaya, Indonesia. She completed her PhD at the University of Queensland, Australia, in 1988. Her main research has been on settlement, housing and the environment in urban and rural areas, and the management of coastal areas.

Project description:

Due to the fact that the trip in Indonesia had to be postponed for several months, it was necessary to make some adaptations to the scope and organisation of the research project.

The project carried out in 2018 is part of an ongoing interdisciplinary research programme and collaboration which started in 2011 and connects various fields such as post-disaster rehabilitation, architecture and regional planning, tourism and heritage studies as well as the politics of remembrance.

During the four-week research period in November 2018, the focus was on disaster tourism and cultural heritage. The research methods applied in the ethnographic fieldwork were guided as well as narrative interviews, informal conversations, photography and participant observation. The research was carried out in two areas of Indonesia:

1) 5-17 November 2018: D.I. Yogyakarta

2) 18 Nov. – 1 Dec 2018: South Bali (Denpasar, Kuta, Sanur, Ubud)

Ad 1) Collaboration partner: Gadjah Mada University (UGM), Department of Anthropology (contact: Dr Bambang Hudayana)

The purpose of the research is to investigate “**disaster tourism**” on the slopes of the volcano Merapi which is located approx. 25 km north of the city of Yogyakarta in central Java.

Since Mount Merapi’s last major eruption in 2010, which caused a wide destruction and forced approx. 400.000 people to evacuate, the area has become a popular tourist destination. The local population has actively participated in establishing tourism projects relating to the eruption and its consequences. In the beginning, the main attraction for visitors was the lava flow and its impact on the environment. With the tropical vegetation gradually taking over again and nature becoming less spectacular, the focus of the guided tours shifted to the ‘cultural sites’ in the area. While some of them, e.g. theme parks, were erected for public entertainment with no connection to the disaster itself, the aim of the main sites is to illustrate the dramatic event and to keep the memory of it alive. For this purpose, the original and partly destroyed houses of victims have been turned into two museums and a memorial of the spiritual guardian Mbah Maridjan who had been killed by a pyroclastic flow on 26 October 2010. Photographs and damaged objects form the largest parts of the exhibitions.

Since 2011, extensive research on the effects of the eruption on the local population and its reactions has been carried out by the Anthropology Department at UGM as well as by a Master student from the University of Vienna. However, it was only in the last few years, that a few Indonesian researchers, among them Bambang Hudayana, became interested in the commodification of the disaster and its value in the tourism industry.

The mobility in November 2018 enabled the collaboration partners to discuss the previous research and results, specify emerging gaps and questions and plan the next steps. In order to get a better understanding of the situation on site, G. Weichart spent five days with anthropological fieldwork in several sub-villages in the Desa Umbulharjo at the southern slope of Mt. Merapi where most of the disaster tourism projects have been installed. On the first day she was accompanied by anthropology students from UGM who, between August and October 2018, had done research on disaster tourism for their BA theses.

The fieldwork, together with the discussions, have led to the following preliminary results:

The eruption of Mt. Merapi was not only a major natural disaster with many victims and great material destruction, but it also appeared as an opportunity for creative enterprises, a new start and economic prosperity for a significant number of local residents. However, some people have been more successful than others and social inequalities have therefore become more prominent.

The great increase of visitor numbers within a relatively short time has also resulted in significant changes in the living conditions and lifestyles of the local population. Many of them now work in the tourism industry. The impact most noticeable from an outsider’s perspective is the heavy traffic and noise which is a side effect of transporting the visitors up and down the mountain and taking them to the different sites. Although the latter are all situated in relative vicinity to each other, the most common way to get around is by jeep which can be rented from one of the 30 base camps where approx. 700 jeeps are located. Villages that not long ago were quiet, laid-back and relatively isolated,

are now bustling, noisy and have to adapt to the demands of modern tourism. The organisation of tours and the rise in tourist numbers, therefore, has had a direct impact on the quality of life of the local population.

The most interesting development from an anthropological perspective, however, is the erection of sites of memory which are core elements of the offered tours. They serve a double purpose, namely to remember the tragic event and the victims as well as to teach about the past and learn for the future. While the politics of remembrance have an already long tradition in human-made disasters, e.g. war memorials), they are still rather new and exceptional in the context of natural disasters. As in the latter cases the general aims in the past were to get back to a state of 'normality' as quickly as possible, little attention was given to individual and collective traumata. What distinguishes the Merapi case further is that initiatives to remember and cope with the trauma go hand in hand with the commodification of the disaster. This may seem to be unethical to a Western observer but was acceptable or even a smart way to secure an income for the local residents, as we have gathered in our research. This juxtaposition invites to further reflect about cultural differences in dealing with and responding to calamities and loss that go beyond the context of disaster. By constructing sites of remembrance at specific locations, these new meanings become inscribed in the places and in people's memories. Hence, a very short-term event, however dramatic it may have been, is being turned into a long-term history that may be preserved for future generations and eventually become part of a particular local or even regional heritage.

For this research, it is planned to undertake more research in East Java (mud volcano) and Aceh (tsunami).

Ad 2) Collaboration partner: Institut Sepuluh Nopember (ITS), Department of Architecture (contact: Prof. Dr. Ir. Happy R. Santosa)

Tourism and heritage formed also the framework of this second stage of research which was carried out in southern Bali. The focus was on **Javanese vernacular architecture in the tourism context in Bali**.

'*Joglo*' and '*limasan*' are two common types of 'traditional' vernacular architecture in central and eastern Java. Although the majority of buildings today follow more 'modern' styles, *joglo* and *limasan* can still be found, especially in the rural areas where some old wooden houses have survived from previous generations. With a growing interest in cultural traditions in Indonesia in the past few decades, these houses have become important elements of Javanese cultural heritage. While government and private heritage organisations have made great efforts to preserve the local heritage, a vivid trade in *joglo* and *limasan* has started at the same time. Due to their construction techniques, the buildings can be dismantled and moved to other places which facilitates the trade.

Many buyers today belong to the urban middle-classes who either choose to live in an adapted *joglo* and *limasan* or use them as second houses to be used mainly for representational purposes. It has also become common to buy single building elements only, e.g. wooden poles or doors, in order to give their modern houses a distinctive and exclusive appearance. Much of this trade is fairly local and the houses remain in the region or at least on the island. However, there is also a demand outside Java and even abroad in Australia, Europe and America. Traditionally, the *joglo* were reserved for noble families. Today anyone who can afford it, can buy or a *joglo*. Hence, the former prestigious building that indicated the high social status of its owner, has become a fairly ordinary object and its ownership has less to do with rank than with wealth.

During G. Weichart's mobility in November 2018, the research focus was on the trade of *joglo* to the neighbouring island of Bali and their use in the local tourism industry. The research was limited to the south of the island, especially to North Kuta and Sanur, which is the area most densely populated and with the largest number of tourists and tourism enterprises. Most *joglo* that can be seen in Bali have been turned into restaurants, hotels, galleries and showrooms. Therefore, the bulk of information was gathered through interviews with owners/managers/staff of these establishments, workshops and trading companies. The ethnographic research was done by G. Weichart and then analysed and discussed with the ITS collaboration partners who have ample experience in studying vernacular architecture in Java and tourism in connection with local heritage. For this, Prof. Happy R. Santosa and four junior researchers of her team spent five days in Bali. All team members spent two days at the ICCCS¹¹-ISVS¹² Conference hosted by Udayana University in Denpasar from 28 to 29 November 2018. This event presented further opportunities for exchange and to discuss the project with Indonesian and international scholars who are experts in the field.



Joglo house for sale in southern Bali; photo: G. Weichart, Nov. 2018

Preliminary results:

In the last few years, a number of shops and workshops that deal with *joglo* and *limasan* have opened in southern Bali. They sell whole houses or individual parts that have been imported from Java. Some workshops also build new houses, by using new wood and other materials, on the basis of these Javanese models and modify them according to the customers' wishes and depending on the supposed usage of the buildings.

Bali has its own distinctive vernacular architecture despite some similarities with Javanese architecture. While most buildings in the hospitality industry still take their inspiration from Balinese traditions, the Javanese *joglo* has become a cheaper, quicker to build and more flexible alternative to the heavier Balinese constructions. The buyers are especially, but not exclusively, non-Balinese,

¹¹ The 1st Conference on Cultural Communication and Space

¹² The 9th International Seminar on Vernacular Settlements

mostly Javanese or expatriates, who are open to new influences and eclecticism, and for whom authenticity is less of an issue.

Although the term *joglo*, and to a lesser degree *limasan*, has been applied to many of these buildings in the tourism industry, not all are equally 'authentic' and follow the traditional construction techniques and rules. Experts on vernacular architecture in Java and Bali speak of an 'Ikea version' of *joglo*, in which only some characteristic features have been kept but many details have been changed. The advantage for the buyer is that these modified constructions are simpler and therefore easier to dismantle and re-assemble, they need less of an expert craftsmanship and consequently the prices are lower. Authenticity also seems not to be much of a concern to the average international visitor. None of the few tourists we talked to had ever heard of the meaning of the term *joglo* before and knew how that was related to the architecture of the hotel where they stayed. The interviewed hotel owners and staff confirmed that their guests never asked any questions on that topic. This is particularly interesting as a number of hotels and restaurants in South Bali use '*joglo*' in their name: e.g. '*Umah Joglo Bali*', '*The Joglo*', '*Joglo Villa*', '*Waroeng Joglo*', '*Kampoeng Joglo Abangan*' and '*The Rice Joglo*'. But not all names keep what they promise and a few places called '*joglo*' are actually different buildings and have nothing to do with Javanese architectural traditions. Hence, not only the buildings themselves and their meanings but also the meanings of the term '*joglo*' have changed. '*Joglo*' has become a brand.



Gallery '*Omahku Memoriku Merapi*' (= *My house, my memory, Merapi*; trans. G. Weichart); photo: G. Weichart, Nov. 2018

Despite its commodification and distribution far beyond the borders of its region of origin as well as the multiple changes in its function and meaning, *joglo* is still a strong element of Javanese cultural heritage. As the trade keeps flourishing and *joglo* seem to fit into a wide range of environmental and cultural settings, its unique appearance could eventually be integrated into other architectures and other settings of cultural heritage. For some tourists to Bali, for instance, the *joglo* probably is just

another form of Balinese tradition. The growing mobility of *joglo* and *limasan* houses leads us to the next questions: How important is place to heritage and what happens if objects of heritage are 'out of place' or moved to another place? It is perhaps most pertinent in the case of houses which are heritage objects that in the past would not have been moved easily and frequently. Besides, in most cases the *joglo* and *limasan* change owners when they travel to other destinations. Further research about (re-) conceptualizations of heritage should therefore be carried out in Java, among original owners and new owners as well as among dealers.

Both research projects described above deal with forms of **heritage and its commodification**. In the case of the Merapi eruption, localised heritage is being created by the objectification of a traumatic event, while in the case of the *joglo*, a geographically and culturally bound object of heritage is being displaced or even becoming 'placeless'.

Publications:

As both sub-projects were started towards the end of 2018 only, the preliminary research results have not been published yet.

G. Weichart presented the case of the Merapi disaster tourism at two occasions in Vienna in early 2019:

- Invited lecture at the Institute for Social Anthropology at the Austrian Academy of Sciences in January 2019
- Invited lecture at the Anthropological Society at the Museum of Natural History in Vienna in April 2019

G. Weichart has been invited to present the case of the Javanese joglo at the SAHANZ Conference 2019 in Sydney; a publication of the proceedings is envisaged.

Further Steps:

A major aim is to continue with the research that was started in 2018, especially extend the fieldwork locations to Aceh and East Java (regarding disaster tourism) and to central Java (regarding joglo houses).

Collaboration with Gadjah Mada University (Department of Anthropology and Department of Architecture) and the Institut of Teknologi Sepuluh Nopember (Department of Architecture) shall continue.

A plan for 2020 is to offer, in collaboration with Indonesian partners, Austrian students (esp. of Social/Cultural Anthropology) internships with Indonesian organisations. Such a programme could be particularly interesting and useful for those students who already have completed one or several Indonesian language courses which have been offered since the summer term of 2018 and meanwhile have been integrated in the curriculum.



Development of New Electrochemical Sensors Based on Nanoparticles with Thai Universities

project # ASEA 2018/Uni Graz/1

Applicant: ao.Prof. Dr. Kurt Kalcher

General Evaluation:

The project included one outgoing (K. Kalcher, project funded) and two incoming mobilities (A. Samphao, Ubon Ratchathani University, Ubon Ratchathani and Sudkate Chaiyo, Chulalongkorn University, Bangkok; both SP 24 funded).

The envisaged aims of the project had been defined as

- Continuation, intensification and prolongation of the well-working scientific cooperation with the two Thai universities
- Development, characterization and application of new nano-sized materials with electrocatalytic or otherwise new characteristics
- Design of new sensors for the detection of analytes who play an important role in environmental, biological or medicinal chemistry

The project was performed in close connection to project **ASEA 2018/Uni Graz/ 2**, “Development of New Electrochemical Sensors Based on Nanoparticles with Hue University” by synergistically combining outgoing mobilities.

It can be concluded that due to the mobilities all the goals have been achieved.

The existing scientific collaboration with Thai universities (Ubon Ratchathani University, Ubon Ratchathani, and Chulalongkorn University, Bangkok) was intensified with respect to advising, guiding and supervising students in the field of developing new electrochemical sensors and related topics.

Four common publications including authors and co-authors from Thailand have appeared already and represent the main scientific outcome of the project. In this respect it is worth to mention that (i) was published in one of the highest ranking analytical chemical journals devoted to sensors (Biosensors and Bioelectronics, IF 8.173).

- (i) S. Chaiyo, E. Mehmeti, W. Siangproh, T. L. Hoang, H. P. Nguyen, O. Chailapakul, K. Kalcher. „Non-enzymatic electrochemical detection of glucose with a disposable paper-based sensor using a cobalt phthalocyanine–ionic liquid–graphene composite”. **Biosensors and Bioelectronics** **102** (2018) 113-120 (IF 8.173)

- (ii) A. Samphao, P. Butmee, P. Saejuenga, C. Pukahutac, L. Svorc, K. Kalcher. "Monitoring of glucose and ethanol during wine fermentation by bienzymatic Biosensor". **Journal of Electroanalytical Chemistry** **816** (2018) 179-188 (IF 3.235)
- (iii) P. Butmee, G. Tumcharern, P. Saejueng, D. Stankovic, A. Ortner, J. Jitcharoen, K. Kalcher, A. Samphao. "A direct and sensitive electrochemical sensing platform based on ionic liquid functionalized graphene nanoplatelets for the detection of bisphenol A". **Journal of Electroanalytical Chemistry** **833** (2019) 370-379 (IF 3.235).
- (iv) A. Jerkovic, S. Abou-Ahmed, P. Ertl, B. Stoeßl, V. Lengauer, A. Samphao, K. Kalcher, G. Leitinger, S. Wernitznig, A. Ortner. Development of a cobalt(II) phthalocyanine-MWCNT modified carbon paste electrode for the detection of polyunsaturated fatty acids. **Analytica Chimica Acta** **1038** (2018) 52 – 58 (IF 5.123)

For publication (i) the first author (Dr. Sudkate Chaiyo, staff member of Chulalongkorn University, post-doc mobility funded by this project) was awarded a prize (Metrohm-CST Young Chemist Award 2017) by Prof. Dr. Her Royal Highness Chulabhorn Mahidol within PACCON 2018 – Pure and Applied Chemistry Conference - in Songkhla (Thailand), a special honor for the universities in Bangkok and Graz, and particularly for ASEA-UNINET for laying the fundament of this success.

Three posters were presented at international conferences, namely

- (i) C. Damphathik, K. Kalcher, G. Raber, A. Samphao. "Application of an electrochemical sensor for the determination of artemisinin in drug and plant samples", presented at the Pure and Applied Chemistry Conference (PACCON 2018) in Songkhla (Thailand)
- (ii) P. Pakhate, J. Duangtong, P. Butmee, K. Kalcher, A. Samphao. "An electrochemical sensor based on hemin composite for the determination of carbaryl", presented at the Pure and Applied Chemistry Conference (PACCON 2018) in Songkhla (Thailand)
- (iii) C. Damphatik, G. Raber, A. Ortner, K. Kalcher, A. Samphao. „The determination of artemisinin in drug and plant samples by high performance liquid chromatography and a developed electrochemical sensor“, presented at the 14th International Conference on Flow Analysis, 2-7 December 2018, Bangkok (Thailand).

Poster (iii) was honored with the Outstanding Poster Presentation Award.

The outgoing mobilities covered lectures, seminars, management of publications, discussion, evaluation and planning of the ongoing projects at the target universities in Thailand. Lectures were mainly addressed to graduate students as well as for staff members presenting up-to-date technologies of electrochemical sensor manufacturing. Advisory seminars for students (bachelor, master and PhD) seemed particularly positive and prospective because they provided substantial material for existing projects and new directions for future research. All these activities were extremely well appreciated by the partner universities.

The incoming mobilities served mainly as a training in nanomaterial technology, electrochemical investigations and research as well as characterization of new materials and reference determinations by non-electrochemical reference methods.

Mobility Details:

(i) **Outgoing Kurt Kalcher 28.01.2018 – 13.02.2018**

This mobility was funded by project ASEA 2018/Uni Graz/1, but served partly also to perform activities within project ASEA 2018/Uni Graz/2 at Hue University (Hue, Vietnam) from 30.01. - 05.02.2018.

Activities in Hat Yai (06.02.2018 – 10.02.2018)

- *Participation in Pure and Applied Chemistry Conference PACCON 2018*
- *Poster presentation (with Anchalee Samphao and co-workers): „Application of an electrochemical sensor for the determination of artemisinin in drug and plant samples”*
- *Poster presentation (with Anchalee Samphao and co-workers): „An electrochemical sensor based on hemin composite for the determination of carbaryl”*

Activities in Bangkok (10.02.2018 – 12.02.2018)

Mobility and project planning (with Dr. Sudkate Chaiyo and Prof. Dr. Orawon Chailapakul) für Ms. Kingkan Pungjunan (7 Monate Scholarship of the Chulalongkorn University, Mobility to Graz)

Publication management

Funding mobility granted with this project, ASEA 2018/Uni Graz/1

Short CV Kurt Kalcher (*10.02.1955): associate professor at the Karl-Franzens University Graz, Austria; special research interests: electrochemical sensors and biosensors

(ii) **Outgoing Kurt Kalcher 26.08.2018 – 18.09.2018**

This mobility was funded by project ASEA 2018/Uni Graz/2 (dedicated to an analogous cooperation with Hue University, Hue, Vietnam), but served partly also to perform activities within this project, ASEA 2018/Uni Graz/1, in Thailand from 27.08. – 01.09.2018 (Ubon Ratchathani) and from 09.09. – 17.09.2018 (Bangkok).

Activities in Ubon Ratchathani (27.08.2018-01.09.2018)

- *Lecture “Voltammetry – Basics and Modified Electrodes”*; 12 Stunden, 8-10 graduate Studenten
- *Co-Supervision of Master and PhD Students (Prof. Anchalee Samphao)*: Discussion on current results in determination of pesticides, of artemisinin; additional project and work planning (immunosensors)
- *Advice, planning and discussion on future research*
- *Planning of mobilities*

Activities in Bangkok (09.09.2018-17.09.2018)

Research and work planning (with Dr. Sudkate Chaiyo and Prof. Dr. Orawon Chailapakul) for Ms. Kingkan Pungjunan (7 months scholarship of the Chulalongkorn University, mobility to Graz)

Publication draft Determination of Bisphenol A

Funding by project ASEA 2018/Uni Graz/2

(iii) Incoming Anchalee Samphao, 21.11.2018 – 25.12.2018

Activities

- Practical work on the simultaneous detection of carbofuran and cabaryl with metal oxide nanoparticles (SnO₂ and CuO) decorated on graphene nanoribbons as modifiers for glassy carbon electrode
- Experimental work on the design of immunosensors

Funding mobility granted with ASEA-UNINET SP 24

Short CV *Anchalee Samphao* (*22.02.1974): assistant professor at the Ubon Ratchathani University, Ubon Ratchathani, Thailand; special research interests: electrochemical sensors and biosensors

(iv) Incoming Sudkate Chaiyo 01.12.2018 – 02.01.2019

Activities

- Design of a new concept for multi-layered revolvable paper-based analytical devices and experimental work

Funding mobility granted via SP 24

Short CV *Sudkate Chaiyo* (*22.02.1987): accomplished his PhD in 2016 after 8 months' practical work in Graz under supervision of K. Kalcher; special research interests: electrochemical sensors and biosensors, microfluidic systems, paper-based analytical devices

Publications:

- (i) S. Chaiyo, E. Mehmeti, W. Siangproh, T. L. Hoang, H. P. Nguyen, O. Chailapakul, K. Kalcher. „Non-enzymatic electrochemical detection of glucose with a disposable paper-based sensor using a cobalt phthalocyanine–ionic liquid–graphene composite”. **Biosensors and Bioelectronics** **102** (2018) 113-120 (IF 8.173)
- (ii) A. Samphao, P. Butmee, P. Saejuenga, C. Pukahutac, L. Svorc, K. Kalcher. “Monitoring of glucose and ethanol during wine fermentation by bienzymatic Biosensor”. **Journal of Electroanalytical Chemistry** **816** (2018) 179-188 (IF 3.235)
- (iii) P. Butmee, G. Tumcharern, P. Saejueng, D. Stankovic, A. Ortner, J. Jitcharoen, K. Kalcher, A. Samphao. “A direct and sensitive electrochemical sensing platform based on ionic liquid functionalized graphene nanoplatelets for the detection of bisphenol A. **Journal of Electroanalytical Chemistry** **833** (2019) 370-379 (IF 3.235).
- (iv) A. Jerkovic, S. Abou-Ahmed, P. Ertl, B. Stoeßl, V. Lengauer, A. Samphao, K. Kalcher, G. Leitinger, S. Wernitznig, A. Ortner. Development of a cobalt(II) phthalocyanine-MWCNT modified carbon paste electrode for the detection of polyunsaturated fatty acids. **Analytica Chimica Acta** **1038** (2018) 52 – 58 (IF 5.123)

Conference Contribution

- (i) C. Damphathik, K. Kalcher, G. Raber, A. Samphao. "Application of an electrochemical sensor for the determination of artemisinin in drug and plant samples", presented at the Pure and Applied Chemistry Conference (PACCON 2018) in Songkhla (Thailand)
- (ii) P. Pakhate, J. Duangtong, P. Butmee, K. Kalcher, A. Samphao. "An electrochemical sensor based on hemin composite for the determination of carbaryl", presented at the Pure and Applied Chemistry Conference (PACCON 2018) in Songkhla (Thailand)
- (iii) C. Damphatik, G. Raber, A. Ortner, K. Kalcher, A. Samphao. „The determination of artemisinin in drug and plant samples by high performance liquid chromatography and a developed electrochemical sensor“, presented at the 14th International Conference on Flow Analysis, 2-7 December 2018, Bangkok (Thailand).



Development of New Electrochemical Sensors Based on Nanoparticles with Hue University

project # ASEA 2018/Uni Graz/2

Applicant: ao.Prof. Dr. Kurt Kalcher

General Evaluation:

The project included one outgoing mobility (K. Kalcher, project funded).

The envisaged aims of the project had been defined as

- Intensification and prolongation of the scientific cooperation with the intention to stimulate the Vietnamese university to become internationally more reputed in the field of electrochemical sensors along with an increase of the research level and of the scientific output in international journals
- Development, characterization and application of new nano-sized materials with electrocatalytic or otherwise new characteristics
- Design of new sensors and particularly biosensors for the detection of analytes who play an important role in environmental, biological or medicinal chemistry

The project was performed in close connection to project **ASEA 2018/Uni Graz/1**, “Development of New Electrochemical Sensors Based on Nanoparticles with Thai Universities” by synergistically combining outgoing mobilities.

It can be concluded that due to the outgoing mobilities the goals have been achieved. The existing scientific collaboration with Hue University was intensified; research in the field of developing new electrochemical sensors and related topics was stimulated by seminars, discussions and strategic research plannings. PhD-students in analytical chemistry in Hue will be co-supervised by the project applicant.

One common publication including authors and co-authors from Thailand and Vietnam appeared representing the main scientific outcome of the project. In this respect it is worth to mention that it was published in one of the highest ranking analytical chemical journals devoted to sensors (Biosensors and Bioelectronics, IF 8.173).

S. Chaiyo, E. Mehmeti, W. Siangproh, T. L. Hoang, H. P. Nguyen, O. Chailapakul, K. Kalcher. „Non-enzymatic electrochemical detection of glucose with a disposable paper-based sensor using a cobalt phthalocyanine–ionic liquid–graphene composite”.
Biosensors and Bioelectronics 102 (2018) 113-120 (IF 8.173)

This publication was a substantial factor that two of the project partners (Dr. Thai Long Hoang, Dr. Hai Phong Nguyen) were promoted to associate professors in February 2018.

The outgoing mobilities covered lectures, seminars, discussion, scientific advice, evaluation and planning of the ongoing project at Hue University. Lectures were mainly addressed to graduate students as well as for staff members presenting up-to-date technologies of electrochemical sensor manufacturing. All these activities were extremely well appreciated by the partner universities.

Incoming mobilities: Due to the unclear funding situation in the first half of 2018 and non-flexible Vietnamese administration there were no incoming mobilities within this project.

Mobility Details:

(v) Outgoing Kurt Kalcher 28.01.2018 – 13.02.2018

This mobility was funded by project ASEA 2018/Uni Graz/1, but served partly also to perform activities within project ASEA 2018/Uni Graz/2 at Hue University (Hue, Vietnam) from 30.01. - 05.02.2018.

Aktivitäten in Hue (30.01.2018 – 05.02.2018)

- *Seminar* “Electrochemical Sensors: Biosensors – Concepts, Designs and Current Trends”
- *Co-supervision of students (Hoa Thai Long, Phong Nguyen, Quang Khieu Dinh)*: discussion on results, further planning
- *Advice in research, planning and discussion*: Characterization of nanoparticle-modified electrodes, outline of current trends and techniques

Funding mobility funded with project ASEA 2018/Uni Graz/1

Short CV Kurt Kalcher (*10.02.1955): associate professor at the Karl-Franzens University Graz, Austria; special research interests: electrochemical sensors and biosensors

(vi) Outgoing Kurt Kalcher 26.08.2018 – 18.09.2018

This mobility was funded by the project under consideration, i.e., ASEA 2018/Uni Graz/2. It served partly also to perform activities within project, ASEA 2018/Uni Graz/1 in Thailand from 27.08. – 01.09.2018 (Ubon Ratchathani) and from 09.09. – 17.09.2018 (Bangkok).

Aktivitäten in Hue (01.09.2018 – 09.09.2018)

- *Seminar: Strategies for the development of electrochemical sensors and biosensors based on nano-sized materials*
- *Workgroup Discussion (Prof. Khieu)*: Electrochemical sensor design and characterization of nano-sized materials; Arbeitsplanung für zukünftige Aktivitäten
- *Workgroup Discussion (Prof. Long, Prof. Phong)*: Screen-printed Electrodes; practical demonstration seminar on screen-printing; handing over of electrode printing supports and printable ink as a donation from the project partner in Graz;
- *Discussion* with co-supervised students

- *Further project planning*

Funding by this project

Publications:

- (i) S. Chaiyo, E. Mehmeti, W. Siangproh, T. L. Hoang, H. P. Nguyen, O. Chailapakul, K. Kalcher. „Non-enzymatic electrochemical detection of glucose with a disposable paper-based sensor using a cobalt phthalocyanine–ionic liquid–graphene composite”. **Biosensors and Bioelectronics** **102** (2018) 113-120 (IF 8.173)



**Mass spectrometry meets electrochemistry.
Development of complementary methods using elemental
and molecular mass spectrometry for performance
validation of electrochemical sensors
project # ASEA 2018/Uni Graz/3**

Applicant: Assoc. Prof. Mag. Dr. Georg Raber

Ao. Prof. Mag. Dr. Georg Raber is head of the research group Food and Water Analysis of the Institute of Chemistry at the KFUG. Though having a strong electrochemical background from his master thesis he is specialist in element quantification and speciation analysis (arsenic compounds) with mass spectrometric methods.

General Evaluation:

The project included one outgoing (G. Raber, project funded) .

The envisaged aims of the project had been defined as

- Improved educational level at the Thai partner universities
- At least two common publications in international journals
- At least one contribution to an international conference

The project was performed in close connection to project **ASEA 2018/Uni Graz/ 4**, GCMS as analytical tool for monitoring environmental pollution (PAH, PCB's) by synergistically combining outgoing mobilities.

It can be concluded that due to the mobilities the main goals have been achieved.

The existing scientific collaboration with Ubon Ratchathani University was intensified with respect to advising, guiding and supervising students in the field of mass spectrometry with special emphasis on ICPMS as powerful tool for determining metals in environmental samples. Additionally, the principles and advantages of molecular mass spectrometry were discussed in the frame of lectures and seminars.

Additionally, one shared project was intensified: We developed an analytical method for the determination of artemisinin in plant extracts based on HPLC-ESMS. This method was used as reference method to compare results from electrochemical measurements performed in Ubon Rachathani. The results were in good agreement. The outcome from these studies were presented at two international conferences (Thailand).

Two posters were presented at international conferences, namely

- (i) C. Damphathik, K. Kalcher, G. Raber, A. Samphao. "Application of an electrochemical sensor for the determination of artemisinin in drug and plant samples", presented at the Pure and Applied Chemistry Conference (PACCON 2018) in Songkhla (Thailand)

- (ii) C. Damphatik, G. Raber, A. Ortner, K. Kalcher, A. Samphao. „The determination of artemisinin in drug and plant samples by high performance liquid chromatography and a developed electrochemical sensor“, presented at the 14th International Conference on Flow Analysis, 2-7 December 2018, Bangkok (Thailand).

The outgoing mobilities covered lectures, seminars, management of publications, discussion, evaluation and planning of the ongoing projects at the target university in Thailand. Lectures were mainly addressed to undergraduate students as well graduate students presenting up-to-date technologies of mass spectrometric methods. Advisory seminars for students (master and post-doc) seemed particularly positive and prospective because they provided substantial material for existing projects and new directions for future research. All these activities were extremely well appreciated by the partner universities.

Mobility Details:

Outgoing Georg Raber 27.08.2018 – 01.09.2018

This mobility was funded by project ASEA 2018/Uni Graz/4 (dedicated to an analogous cooperation with Ubon Rachathani University, Thailand), but served partly also to perform activities within this project, ASEA 2018/Uni Graz/4, in Vietnam from 01.09.2018. – 09.09.2018 (Hue).

- *Seminar: “Spectroscopic Methods in Analytical Chemistry (ICPMS)”.*
- *Further project planning and planning for incoming mobilities for December 2018*



GCMS as analytical tool for monitoring environmental pollution (PAH, PCB's)"

project # ASEA 2018/Uni Graz/4

Applicant: Assoc. Prof. Mag. Dr. Georg Raber

Ao. Prof. Mag. Dr. Georg Raber is head of the research group Food and Water Analysis of the Institute of Chemistry at the KFUG. Though having a strong electrochemical background from his master thesis he is specialist in element quantification and speciation analysis (arsenic compounds) with mass spectrometric methods.

General Evaluation:

The project included one outgoing (G. Raber, project funded) and one incoming mobility (Dr. Dang Giang Chau Nguyen, College of Sciences, Hue University, Vietnam, SP 24 funded). The envisaged aims of the project had been defined as

- Development of analytical methods for the determination of PAH and PCB's at trace levels (Graz, Hue)
- Presentation of lectures at the Hue University for research and educational purposes (Graz)
- Supervision of students at the Hue University (Graz)

The project was performed in close connection to project **ASEA 2018/Uni Graz/ 3**, „Mass spectrometry meets electrochemistry": Development of complementary methods using elemental and molecular mass spectrometry by synergistically combining outgoing mobilities.

It can be concluded that due to the mobilities the goals have been achieved. The existing scientific collaboration with Hue University was intensified; research in the field of establishing GCMS as analytical tool for environmental monitoring of PCB's and PAH's discussions and strategic research planning. Future PhD-students in analytical chemistry in Hue will be co-supervised by the project applicant.

The outgoing mobilities covered lectures, seminars, management of publications, discussion, evaluation and planning of the ongoing projects at the target universities in Vietnam. Lectures were mainly addressed to graduate students as well as for staff members presenting up-to-date technologies of GCMS for monitoring PCB's and PAH in environmental samples. Advisory seminars for students (master and post-doc) seemed particularly positive and prospective because they provided substantial material for existing

projects and new directions for future research. All these activities were extremely well appreciated by the partner universities.

The incoming mobility served mainly as a training in modern GCMS techniques including sample preparation and SPE-cleanup methods for the determination of PCB's in Vietnamese food samples. The report of Dr. Nguyen Dang Giang Chau is attached to this report.

Mobility Details:

Outgoing Georg Raber 26.08.2018 – 18.09.2018

This mobility was funded by project ASEA 2018/Uni Graz/3 (dedicated to an analogous cooperation with Ubon Rachathani University, Thailand), but served partly also to perform activities within this project, ASEA 2018/Uni Graz/4, in Vietnam from 01.09.2018. – 09.09.2018 (Hue).

- *Seminar: "Method development in GCMS: from the analytical problem to reliable results".*
- *Further project planning and planning for incoming mobilities for December 2018*

Incoming Dr. Nguyen Dang Giang Chau 06.12.2018 - 28.12.2018

- *Development of a GC-MS method for quantification of ten new-generation pesticides*
- *GCMS Masshunter Software instruction*
- *Instruction for development of single ion monitoring GCMS measurements*



Optimization of extraction methods of active compounds from plants through „green chemistry“ combined with the response-surface method

PI: Assoc. Prof. Dr. Adelheid Brantner

University of Graz, Institute of Pharmaceutical Sciences

adelheid.brantner@uni-graz.at

Graduated with a PhD at the University of Graz; Assistant Professor specialized in phytochemistry and microbiology; Associate Professor. Post-doc fellowships e.g. Swiss Federal Institute of Technology (ETH), Zuerich, University of Munich, University of Illinois, Chicago, Istituto di Farmacologia e Farmacognosia of the University of Trieste, Dipartimento di Scienze Farmaceutiche, University of Florence. Establishing research cooperations and coordinating international student exchange programs. About 200 publications in international journals; reviewer for the most leading journals in the field of medicinal plant research. *Main fields of scientific interests:* bioassay-guided isolation of active metabolites of medicinal plants and quality assurance; standardisation of herbal medicinal products and functional food. Prof Brantner acts also as principle investigator in international research projects with universities and research institutions in China and Thailand. Supervision of 110 Master and 16 PhD students. Among her numerous professional affiliations her membership of the European Society of Phytotherapy, the Society for Medicinal Plant and Natural Product Research (GA) and the Phytochemical Society of Europe should be especially mentioned. Prof Brantner was negotiating Memoranda of Understanding between the University of Graz and Thai Universities e.g. Mahidol University, as well as Chinese Universities. She is also acting as coordinator of Eurasia-Pacific UNINET for the University of Graz. *Awards:* 2010 The Federal President of the Republic of Austria was conferring the Grand Decoration of Honor in Gold upon Prof Brantner for her special services to the Republic of Austria. 2011 Honorary Professorship from the Pharmaceutical Science University of Mongolia for her outstanding contribution to the development of the pharmaceutical research in Mongolia.

Assoc. Prof. Dr. Pongtip Sithisarn

Mahidol University, Bangkok, Faculty of Pharmacy, Department of Pharmacognosy,
pongtip444@yahoo.com

Studies at Mahidol University: B.Sc. in Pharmacy (second class Honors), M.Sc. in Pharmacognosy) and Ph.D. in Phytopharmaceutical Sciences. About 20 publications in International Journals

Assist. Prof. Dr. Bancha Yingngam

Ubon Ratchathani University, Department of Pharmaceutical Sciences, Thailand
banchaying@yahoo.com

Dr Bancha Yingngam finished his Ph.D. in 2011 at the Department of Pharmaceutical Chemistry and Technology, Faculty of Pharmaceutical Sciences, Ubon Ratchathani University. From 2011 to present he is working as lecturer at the Faculty of Pharmaceutical Sciences, Ubon Ratchathani University. 2006-2009 Dr Yingngam held a fellowship at the Thai Graduate Institute of Science and Technology (TGIST) from the National Science and Technology Development Agency (NSTDA). Since 2012, he

published about 15 papers in international peer-reviewed journals and 14 presentations at international conferences. Dr Yingngam is applying phytochemical analysis and working with tissue and mammalian cell cultures, with *in vitro* bioassays, H₂O₂-induced oxidative stress in cell cultures and with the Anti-type I collagen glycation assay. He is also optimizing the process of the production of nanoparticles.

Assist. Prof. Dr. Panupong Puttarak

Prince of Songkla University, Department of Pharmacognosy and Pharmaceutical Botany, Thailand

panupong.p@psu.ac.th

Dr Panupong Puttarak was graduated Ph.D. from the Faculty of Pharmaceutical Sciences, Prince of Songkla University (PSU), Thailand in 2012. After graduation, he was working as lecturer at the Department of Pharmacognosy and Pharmaceutical Botany, PSU. His research fields are phytochemistry and the application of *in vitro* bioassays, standardization of herbal extracts and evidence-based herbal medicines. Since 2010, he published 18 papers in international peer-reviewed journals and 12 presentations at international conferences. Additionally he holds 6 patents.

Report

During February 3 to February 19, 2019 Assoc Prof Dr Adelheid Brantner visited in the frame of an ASEA UNINET project several universities in Thailand for lecturing and discussing the cooperations in the future. The topics of the lectures were dealing with quality markers of medicinal plants and herbal medicinal products. This is a very important topic concerning different aspects of quality issues of medicinal plants. Possible factors for decreasing the quality were mentioned and methods for increasing the quality were discussed. Quality is not only an essential aspect for the activity of medicinal plants but also for the safety of the application by the patients. Some examples of the traditional Thai and European herbal medicine were presented.

Assoc Prof Dr Mullika Chomnanang, Deputy Dean for Research and International Relations of the Faculty of Pharmacy welcomed Prof Brantner at the Mahidol University in Bangkok. An intensive scientific discussion followed the lecture for staff and graduate students. Then Prof Brantner was visiting Ubon Ratchathani University (UBU). The new Dean of the Faculty of Pharmaceutical Sciences, Assoc Prof Dr Saksit Sripa and his Vice Deans welcomed her. Assist Prof Dr Chutinun Prasitpurip, the President of the University, also welcomed Prof Brantner. At UBU Prof Brantner delivered a lecture for graduate students about research in pharmacognosy and the third lecture was for staff and graduate students. Additional there was a discussion on the topic of "Optimization of extraction methods of active compounds from plants through „green chemistry“ combined with the response-surface method". Two Master students of pharmacy of the University of Graz had the opportunity to spend a research stay at UBU in the year 2018. The research topics of the students were fitting to the interests of the Institutes in Thailand as well as in Graz. UBU as well as the University of Graz strongly supported this project. Optimized extraction methods for plants are important for herbal medicinal products of good quality. Environmental

aspects are also essential nowadays. Therefore, a special focus was put on this matter. Together with her colleagues, Prof Brantner prepared the draft of a paper on this interesting topic during her stay at the UBU. In 2019, four other Master students of the University of Graz will perform research at UBU. Therefore, their research topics and plans had to be discussed in detail.

The last stop of the visit of Prof Brantner in Thailand was the Prince of Songkla University (PSU) in Hat Yai. It started with a welcome meeting with Prof Dr Sirirat Pinsuwan, the Dean of the Faculty of Pharmacy. With Assist. Prof. Dr. Panupong Puttarak Prof Brantner discussed the content of a common paper.

Mutual visits of the Thai and Austrian researchers were planned for the upcoming years to deepen the cooperation and enhance scientific ideas, innovations and expertise.

Publications

Bancha Yingngam, Karnnuttha Tantiraksaroj, Thitima Taweetao, Wandee Rungseevijitprapa, Nuttapun Supaka, Adelheid H. Brantner

Modelling and Stability Study of the Anthocyanin-Rich Maoberry Fruit Extract in the Fast-Dissolving Spray-Dried Microparticles

Powder Technol. 325, 261–270 (2018) doi.org/10.1016/j.powtec.2017.10.059

Bancha Yingngam, Adelheid Brantner, Damrongsak Jinarat, Rawiwun Kaewamatawong, Wandee Rungseevijitprapa, Apichart Suksamrarn, Pawinee Piyachaturawat, and Ratchanaporn Chokchaisirirue
Determination of the Marker Diarylheptanoid Phytoestrogens in *Curcuma comosa* Rhizomes and Selected Herbal Medicinal Products by HPLC-DAD

Chem. Pharm. Bull. 66, 65–70 (2018)

Adelheid Brantner, Pongtip Sithisarn, Bancha Yingngam, Panupong Puttarak, Haiyu Zhao, Bian Baolin
Modern Approach to Quality Assurance of Complex Herbal Formulations

Abstract; 5th Current Drug Development and 3rd Herbal and Traditional Medicine Conference 2018 (CDD & HTM2018); Proceedings 43 - 48

Rattanamanee Chomchan, Panupong Puttarak, Adelheid Brantner, Sunisa Siripongvutikorn
Selenium rich ricegrass juice improves antioxidant properties and nitric oxide inhibition in macrophage cells

Antioxidants 2018, 7, 57; doi:10.3390/antiox7040057

Brantner Adelheid, Puttarak Panupong, Rachpirom Mingkwan, Tscharre Stephanie, Zhao Haiyu, Baolin Bian

Anti-inflammatory effect of a Traditional Chinese Formulation tested on macrophages

66th International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA 2018), Shanghai, China; Book of Abstracts

Bancha Yingngam, Adelheid Brantner

Boosting the Essential Oil Yield from the Rhizomes of Cassumunar Ginger by an Eco-Friendly Solvent-Free Microwave Extraction combined with Central Composite Design

Essential Oil Research 2018; DOI: 10.1080/10412905.2018.1503099



Grey energy transitions in South-East Asia – The case of Thailand

Project report, ASEA-Uninet project Nr. ASEA2018/Uni-Graz/8
October – November 2018

Ass.-Prof. Dr. Thomas Brudermann

University of Graz

Institute of Systems Sciences, Innovation & Sustainability Research

Merangasse 18/I, A-8010 Graz, AUSTRIA; Phone: +43 (0)316 380-7336;

E-Mail: Thomas.Brudermann@uni-graz.at; Web: homepage.uni-graz.at/thomas.brudermann/

1 Main researchers involved in the project

Dr. Thomas Brudermann (project leader) is an assistant professor at University of Graz, and academic coordinator of the Joint International Master's Programme in Sustainable Development. His research deals with interfaces of systems sciences, sustainability and innovation research, and has a focus on decision making and decision analysis. Details: <http://homepage.uni-graz.at/de/thomas.brudermann/>

Dr. Warangkana Jutidamrongphan is an assistant professor at Prince of Songkla University, Faculty of Environmental Management. She has been deputy dean in quality assurance at her faculty, and a research member in the center of excellence for hazardous waste management at Prince Songkla University. E-Mail: wjenvipsu@gmail.com

Dr. Kuaanan Techato is the dean of the Faculty of Environmental Management, Prince of Songkla University. Dr. Techato's research focuses on energy management and energy policy issues; he also is cooperating closely with the Energy Planning Policy Office of Ministry of Energy, Thailand. Email: kuaanan.t@psu.ac.th; Web: <http://www.perin.psu.ac.th>

2 Project Summary

2.1. Motivation and Aim of the Project

High-income countries increasingly aim for phasing out fossil fuels such as oil and coal, and to engage in a socio-technical transformation towards carbon-neutral or more sustainable energy sources such as wind, photovoltaics and hydro power (Araújo 2014; Sovacool 2017). As the recent climate change conference COP24 in Katowice has shown, such transitions are a slow and painful process, even in high-income countries, which have the financial and technological capabilities that theoretically make quick transitions towards low-carbon energy systems possible.

Several developing countries on the other hand currently see an extension of fossil fuels, mainly coal in their energy mixes. Increasing energy demands require extension of capacities, and often these extensions are based on coal power plants. In India, coal will account for almost 80% of the projected capacity additions; in Thailand, coal is projected to constantly contribute 20-25% to the growing electricity generation in the upcoming two decades; in Malaysia, Indonesia and Vietnam coal is expected to be the leading fuel in the generation mix up to the 2040ies (Zaman et al., 2018a).

A significant share of the coal power extension in developing countries is fueled by foreign investments, mainly from China and Japan (Zaman et al., 2018b); these countries committed to a reduction of greenhouse gases under the Paris agreement. Thus, as business opportunities for coal companies diminish in high-income countries, developed countries with growing energy demand, and weak governance structures offer convenient business opportunities (Zaman & Brudermann, 2018).

Such aspects however are entirely neglected in academic discussions around “sociotechnical transitions for deep decarbonisation” (Geels et al. 2017). Existing studies are more or less limited to first world countries; studies which include the perspective of developing countries (e.g. Marquardt, Steinbacher, & Schreurs, 2016) acknowledge the influence international donors do have on renewable energy projects on a niche level, but do not consider the parallel ongoing extension of fossils.

The aim of this project was to address this gap; in particular, the project aimed to collect data and information regarding the status of a potential energy transition in Thailand; a particular focus was placed on a critical analysis of Thailand’s energy policy in theory and practice. Thailand signed the Paris agreement under the United Nations Framework Convention on Climate Change and agreed to so-called “intended nationally determined contributions” (INDCs) to reduce greenhouse gas emissions. The energy sector is one of largest contributors to emissions, but also bears significant reduction potential.

2.2. Method and Approach

The cornerstones of the projects were a detailed review of literature, official reports and policy documents, as well as interviews with academics, energy experts, and one representative of the energy ministry. Interviews and data collection were done during a research stay in Thailand (Bangkok, Pathum Thani and Hat Yai) from October 28 to November 17, 2018. Relevant data was gathered and analyzed in cooperation with the cooperation partners from Prince of Songkla University (who in addition helped with the translation of relevant Thai sources). General and specific information was also gathered from interviews and discussions with energy policy experts as well as academics from Asian Institute of Technology and Valaya Alongkorn Rajabhat University under Royal Patronage

2.3. Findings

In overall, the status quo regarding sustainable energy generation and use in Thailand is worrisome. On paper, there are definitely efforts from policy side to meet the INDCs outlined in the Paris agreement. In practice, two main problems become apparent: (1) the current policy direction for

emission reductions is not entirely clear and to a certain degree lacks consistency; (2) observations made during the research stay and information provided by experts raise doubts whether policies will be effectively implemented.

Current policy direction

The NDCs by Thailand foresee a 20% emission reduction by 2030. To implement these reductions, the ministry of energy developed an action plan. According to this action plan, 20.8% of emissions (slightly more than the necessary 20%) should be saved in total; the highest share of reduction according to this plan should be contributed by the energy and transport sectors (-20.4%); relatively small shares are expected from the waste sector (-0.3%) and industry (-0.1%).

The pillars of this aimed reduction are supposed to be improved energy efficiency measures, outlined in the Energy Efficiency Development Plan (EEDP) plus the alternative energy power development plan 2015-2036 (AEDP) under the Power Development Plan 2015-2036 (PDP 2015). The 2030 electricity generation goals were as of November 2018 still in the discussion phase; the expected capacities contributed by renewable energies in a draft document foresaw the highest contributions from photovoltaics (6,000MW), biomass (5,570 MW), wind (3,000MW) and large hydro (2,900MW); smaller contributions are expected from MSW (municipal waste to energy projects, 500MW) and small hydro plants (376MW). In addition, electricity imports will be necessary.

EGAT, the national electricity provider, seems not very active towards renewable energy projects, but continues to invest in coal power plant projects; environmental impact assessments are required for such projects, and local resistance occurred. Local resistance e.g. hindered or at least delayed a planned coal power plant in Songkhla province, Thepa district. “Clean coal” technologies, which in fact are not very clean, and CCS (carbon capture and storage) technologies, which are expensive and academically debated in terms of feasibility, are mentioned by project promoters as arguments pro coal; these arguments do not hold after careful consideration. Coal reserves in Thailand are likely not sufficient for self-dependency; coal imports from Laos will be necessary, this increasing import dependency.

The INDC for the reduction of emissions until 2030 had been set to 126.85 MtCO₂ p.a.; this target has been revised afterwards to less ambitious 117 MtCO₂. From the intended electricity generation shares for different energy carriers it is not clear how these reductions will be achieved; while a decrease of gas in the electricity mix is assumed, an increase of coal will significantly add to the emissions. The increased share of coal and higher generation levels in total will more than offset the reductions achieved by an increase of hydro power and other renewable energy. Engaging in nuclear energy is currently considered as well.

Energy efficiency improvements and energy conservation targets are detailed in the 20-year Energy Efficiency Development Plan 2015-2036: the aim is a reduction of 30% in energy intensity by 2036. Possibilities like phasing out inefficient technologies are currently only partly addressed, e.g. by promoting LED lamps. Instantaneous water heaters are apart from electric individual AC another energy-intense device in the residential sector to which policy makers do not pay a lot of attention; there has been an academic discussion on their necessary phase out (Jingjit & Techato, 2017), but no implementation is in sight due to financial and practical barriers.

Implementation doubts

Green energy does not play a relevant role in Thailand’s current electricity mix. Ongoing projects so far often rather have showcase character, and there is a lot of *greenwashing*, i.e. misleading of

consumers regarding the environmental practices of a company or the environmental benefits of a product or service¹³. The following examples illustrate the difficulties and limitations of policy plans:

According to one academic energy expert, solar PV companies often offer only limited solutions to their customers; e.g. solutions which are limited to self-consumption of electricity generated from PV, without option to feed in surplus electricity to grids; surplus electricity in such a case is wasted. Solar cooling options are currently barely considered; one expert from ministry of energy stated that “solar cooling does not work well in Thailand’s hot climate”. Despite recently released building standards for energy efficient buildings, newly constructed buildings continue to ignore basic energy efficiency rules (e.g. passive shading, smart cooling solutions, insulation, north-direction of rooms, solar thermal water heating) but instead e.g. include inefficient glass-facades directed to the south without shading but individual, electrical cooling of rooms.

Fossil fuel companies do outright greenwashing, e.g. when PTT Public Company Limited, Thailand’s national oil and gas company, hijacks the term “sustainability” and misuses terms like “Sustainable Petroleum” or “Sustainable Petroleum Supply”. The same can be said about airports joining the Airport Carbon Accreditation initiative; this initiative claims to follow the “ultimate goal” of making flying carbon neutral¹⁴; current attempts however are not credible and rather resemble aims to greenwash the flying business, e.g. by producing posters and feel-good video clips¹⁵. While the Airport Carbon Accreditation initiative is not a Thai initiative, airports in Thailand like Dong Mueang (DMK) have joined and prominently advertise their membership in the airport area next to fake plants (Picture 1).

Awareness of climate change and energy efficiency seems to be rather limited in the general population; Thai population meets the partly terrible energy efficiency and waste of energy with indifference. One example are large AC units used in open air, e.g. in the open-air area in EmQuartier and other shopping malls (Picture 2).

Small steps and showcase projects however are being implemented; Thammasat University (TU) started to install solar PV modules on their premises at Rangsit campus via a public private partnership; TU also operates a solar bus and a solar-powered electric motorcycle charging station; electric motorcycles are offered for rent (Picture 3). Other universities, like Prince of Songkla University, have not yet considered the installation of PV modules for electricity generation; the necessary investments for such projects easily face a variety of barriers. Biogas projects are still on a very small scale and on experimental level; Asian Institute of Technology e.g. is operating a small biogas plant based on food waste; Valaya Alongkorn Rajabhat University is undertaking biogas generation experiments with wastewater. Commercially, these projects are not relevant.

This short list of examples illustrates a few of the challenges Thailand will face when engaging in a transition towards a low-carbon energy system: On paper, even airports and petroleum companies can be “green” and coal power plants are no contradiction to emission reductions. In practice, low problem-awareness, green-washing and nested interests of policy makers will be challenging the ambitious targets.

2.4. Conclusions

Like other growing economies, Thailand struggles in balancing energy security and environmental sustainability; in the light of a growing economy, environmental concerns receive less attention than

¹³ See <http://sinsofgreenwashing.com> for definitions and examples of greenwashing.

¹⁴ See <https://www.airportcarbonaccreditation.org/about/what-is-it.html>

¹⁵ For an example, see <https://www.airportcarbonaccreditation.org/component/content/article/83.html> (All URLs were accessed on 15 December 2018)

securing energy provision and economic growth. Thai energy policy appears to be double-sided; policy documents for alternative energy and emission reductions look ambitious at first, but lack clarity on how to achieve the intended emission reductions. Contradictions like increasing the share of coal while reducing emissions are currently not being resolved, but instead we see a renaissance of one of the dirtiest and most climate-unfriendly energy carriers. Unlike in other Asian countries (Zaman et al. 2018b), this uptake seems not be driven by foreign investments, but by state-owned companies: While the ministry of energy is drafting policy plans for emission reductions, the Electricity Generating Authority of Thailand (EGAT) is putting forward plans for carbon-intense energy projects.

Such double-pronged strategies counteract national global efforts to reduce greenhouse gas emissions; at the same time, investment in carbon-intense projects can easily be justified with ethical arguments such as energy justice and the moral right of Asian countries to improve living standards to western levels by using fossil fuels – a dilemmatic deadlock that yet has to be broken.

2.5. References

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2.6. Pictures

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Picture 1: “Greenwashing” at DMK airport, Bangkok. The airport claims to reduce CO₂ emissions and directs passengers to public transport – which here means “individual public transport”, i.e. taxi. Fake plants round up the greenwashing measure.



Picture 2: Strong cooling engines cool the open-air area of the shopping mall “EM Quartier” in Bangkok and waste energy.



Picture 3: Electric motorcycles for rent at Thammasat University, Rangsit campus.



Picture 4-5: Academic writing with PhD students at Prince Songkla University, Faculty of Environmental Management, November 15, 2018



Mathematical Theory and Applications of Stabilisation by Noise of Partial Differential Equations

*ASEA 2018/Uni Graz/9
Outgoing: 08/07/2018 – 22/07/2018*

Project members

1. Univ.-Prof.Dipl.-Ing. Dr.techn. **Klemens Fellner** - Projektleiter
Institute for Mathematics and Scientific Computing, University of Graz
Email: klemens.fellner@uni-graz.at

Prof. Fellner obtained his PhD in Applied Mathematics with highest distinction in 11/2002 at TU Vienna, and his Habilitation in 03/2010 at University of Vienna. Since 06/2011, he is Professor of Mathematics and Computational Sciences at University of Graz. Prof. Fellner is a leading expert in analysis of kinetic equations and reaction-diffusion equations and their applications in physics and biology.

2. Dr.rer.nat. **Quoc Bao Tang**
Institute for Mathematics and Scientific Computing, University of Graz
Email: klemens.fellner@uni-graz.at

Dr. Tang obtained his PhD in Applied Mathematics in 05/2015 under the supervision of Prof. Fellner at University of Graz. From 9/2015-12/2015 he was a postdoc at Medical University of Graz and since 12/2015 he is a University assistant at University of Graz. Dr. Tang's research focus is regularity and large time behaviour of reaction-diffusion systems arising from biology and chemistry. His works also deal with infinite deterministic and stochastic dynamical systems.

3. Dr. **Do Duc Thuan**
School of Applied Mathematics and Informatics, Hanoi University of Science and Technology
Email: thuan.doduc@hust.edu.vn

Dr. Do obtained his PhD in 04/2012 at Hanoi University of Science and Technology where he is a lecturer and researcher since 09/2007. He was promoted as Associated Professor in 2017 at Hanoi University of Science and Technology. Dr. Thuan's research focuses on stabilisation and control theory of differential and difference equations.

Project description

The project is carried out in two weeks visit of Dr. Quoc Bao Tang from 08/07/2018 to 22/07/2018, to Hanoi University of Science and Technology. It is a continuation of Dr. Do Duc Thuan's visit to Graz in 2017, where some partly pioneer results concerning *stabilisation by boundary noise for partial differential equations* had been established. More precisely, we focus on studying how to *stabilise unstable systems with random noise acting on the boundary*. The phenomena of stabilising using random noise seems at first glance to be counterintuitive. However, the unstable systems under consideration still have stable modes, which are not dominating in the deterministic case, and the noise somehow mixes these modes with the unstable ones and eventually stabilises the systems. In other words, the suitable noise helps to drive the systems from unstable directions to stable ones. This research has started in the sixties with focus first on finite dimensional systems and in the last decades on infinite dimensional systems, thanks to the rapid development of dynamical systems and partial differential equations. It is usual desirable in practice to stabilise a system by random noise perturbing only on the boundary, yet, up to our knowledge, it has not been done. During Dr. Do's visit to Graz in 2017, together with Prof. Klemens Fellner, Dr. Stefanie Sonner and Dr. Bao Quoc Tang, we obtained some first results in this research direction. More precisely, the stabilisation by boundary noise was established for a Chaffee-Infante equation with dynamical boundary conditions. The equation and the corresponding boundary condition were chosen specifically for their properties which help to derive pioneer results of stabilisation by boundary noise, which surprisingly differ from the existing literature concerning stabilisation by domain noise. The goal of Dr. Tang's visit to Vietnam in 2018, among others, is to continue to investigate the research with other important equations and boundary conditions, such as Dirichlet or Neumann boundary conditions.

Project results

1. *10/07/2018*: A mini-workshop on “Dynamical systems and Partial differential equations” co-organised by the Vietnam Institute of Advanced Studies in Mathematics.
<http://viasm.edu.vn/hdkh/dpde2018>

The mini-workshop brings together experts in Dynamical systems and Partial differential equations to discuss recent advances in the fields as well as to establish new research directions, especially on the bridge connecting these two closely related fields.

Morning session

9.00 – 9.10: Opening

9.10 – 9.50: **Cung The Anh** (Hanoi National University of Education)

“Global stabilization of three-dimensional Navier-Stokes-Voigt equations”

9.50 – 10.30: **Trinh Viet Duoc** (Hanoi University of Science)

“Navier-Stokes-Oseen flows in the exterior of a rotating and translating obstacle”

10.30 – 10.50: Coffee break
10.50 – 11.20: Doan Thai Son (Vietnam Institute of Mathematics) “Bifurcation theory of monotone random maps”
11.20 – 11.50: Le Thi Thuy (University of Electric Power) “On the existence and stability of solutions to 3D convective Brinkman-Forchheimer equations with delays”
<i>Afternoon session</i>
14.00 – 15.00: Tang Quoc Bao (University of Graz) “Regularity and large time behaviour of reaction-diffusion systems I”
15.00 – 15.30: Coffee break
15.30 – 16.30: Tang Quoc Bao (University of Graz) “Regularity and large time behaviour of reaction-diffusion systems II”

2. 20/07/2018: A seminar research talk at Hanoi University of Science and Technology
<https://seminarbk.wordpress.com/seminar/>

Dr. Tang presents the joint-work with Prof. Fellner, Dr. Sonner and Dr. Do obtained from Dr. Do’s visit to Graz in 2017.

14:00 – 15:30: Tang Quoc Bao (University of Graz) Stabilisation by boundary noise of Chafee-Infante equations with dynamical boundary conditions
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3. Group working with Dr. Do Duc Thuan (HUST) and Dr. Doan Thai Son (Vietnam Institute of Mathematics) about possible extensions of the recently obtained results to other important equations and boundary conditions.
4. A side result of the visit is to establish new collaboration with Dr. Do Lan (Hanoi Water Resources University), Dr. Le Thi Thuy (University of Electric Power) and Dr. Dang Thanh Son (Telecommunications University, Nha Trang) in which we work on the project of systems in a domain which changes in time.

A tentative joint publication is being written “*Quasilinear parabolic equations in moving domains with L^1 data*”.



GEOCHEMISTRY AND GEOCHRONOLOGY OF GRANITOIDS IN THE SOUTHWEST OF VIETNAM, IMPLICATION FOR THE MESOZOIC PACIFIC MAGMATISM

Dr. Christoph Hauzenberger; Nong Thi Quynh Anh, MSc; Dr. Nguyen Kim Hoang; Dr. Dinh S

Dr. Hauzenberger und Nong, MSc are members of the University of Graz. Mrs Nong is currently doing her PhD, funded by ASEA-Uninet/OEAD. Dr. Nguyen is from the VNU-HCMC and cooperates closely with Mrs Nong, who did her Master degree with him. Dr. Dinh joined the team and helped recovering samples. He is familiar with the local geology and helped recovering the needed samples for further investigations

The aims of this project/study are to point out the genesis and to define the time period of magmatism as well as the magmatic evolution in the southwest of Vietnam and additionally, associated mineralization within these granitoits. Below is a general overview and detailed report of our activities.

INTRODUCTION

Southwestern Vietnam and southeastern Cambodia area (SWVN-SEKH) is around 100,000 km² in size, located in the southern Indochina block, likely in the central of Sundaland which can be considered as a junction between the Indian–Australian, Philippine and Eurasian Plates ([Simons et al., 2007](#), [Metcalf, 2017](#)). It borders the Dalat zone to the northeast, Phuquoc-Kampot Som Basin to the west and southwest, and is adjacent northwestward to the Khorat basin (Thailand). Mesozoic magmatism observed in southwestern Vietnam and southeastern Cambodia (SWVN-SEKH) can be divided into five groups based on their petrological feature: (1) The Hon Khoai suite predominantly consisting of biotite-hornblende granodiorite and quartz diorite; (2) the Dinhquan intrusive magmatic suite comprising mainly gabbro-diorite, monzogabbro, monzodiorite, monzonite, and syenite which are visibly altered by intensive K-feldspar metasomatism leading to a noticeably high amount of potassium; (3) the Deoca-

Phnom Den magmatic suite, the major magmatic group consisting mainly of granodiorite and granite; (4) the Ankoet-Ba Phnom suite composed of fine to medium-grained granite; and (5) the Pha Aok-Ta Mao suite composed of muscovite-bearing porphyritic granite and coarse-grained biotite granite. These rocks exhibit in **Figure 1** by the corresponding numbers.

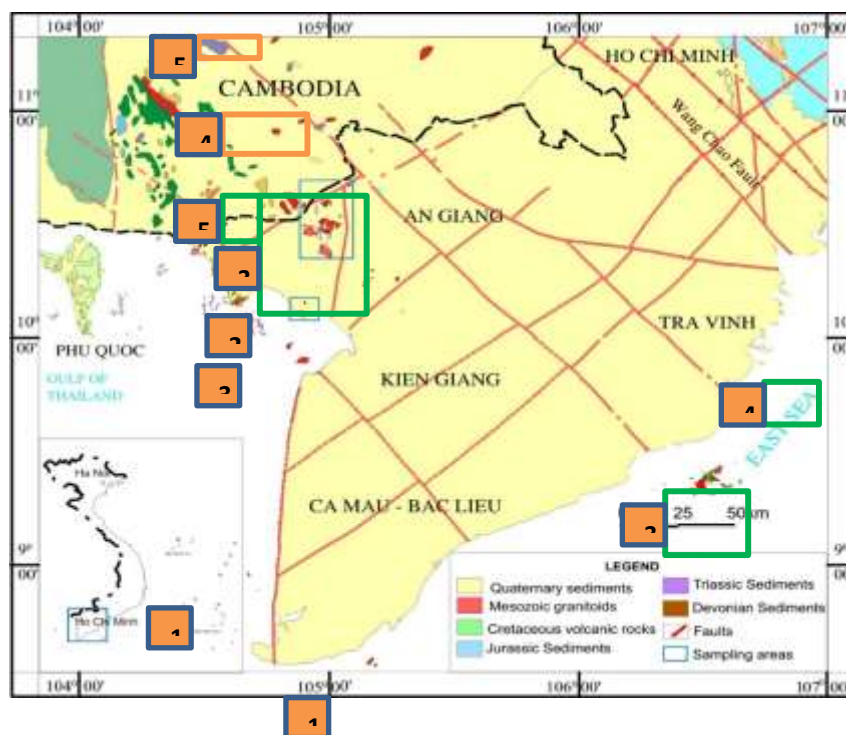


Figure 1: Simplified geological map and sampling areas.

PETROGRAPHY

Igneous rocks in the SWVN-SEKH area present a wide range in lithological composition, from basic to felsic rocks (i.e. gabbro-diorite to granite) with the predominance of the intermediate-felsic composition

Honkhoai suite (group 1 on the map)

Rocks from the suite mainly comprise biotite-hornblende granodiorite dispersedly outcropping at small islands in southernmost Vietnam. They consist of two different phases: phase 1 presents a darker color granodiorite with medium grain size and higher amount of mafic mineral (i.e. biotite and amphibole) and phase 2 showing a brighter color and higher K-feldspar. Several outcrops exhibit slight orientation texture with a parallel arrangement of mafic minerals. Rock deformation especially the fracture systems are commonly found in many intrusive outcrops. Rock-forming mineral composition include plagioclase (30-40%), k-

feldspar (10-25%), quartz (10-25%), biotite (8-15%), amphibole (5-10%). Mafic enclaves are commonly found in many plutonic intrusions (Figure 2).



Figure 2: Outcrop of the rocks from Hon Khoai island, enclaves fairly mafic in composition

Dinhquan suite (group 2 on the map)

The suite distributes mostly in the southeast of the Baynui and Bahon area, especially concentrated in the Ba Hon area (SW Vietnam), on the coastline adjoining the Thailand gulf. Many of them distribute as small bodies interfering with the Deoca intrusions or as small enclaves in Deoca rocks. Petrologically, the Dinhquan suite is composed of the medium to weakly mafic rocks, of which the main compositions are monzogabbro, monzodiorite, mozonite, diorite, and syenite. They are generally grey to dark grey in color, coarse- to medium-grained in size, and prevalently altered by intensive K-feldspar metasomatism (Figure 3). A notable petrological component of this suite is syenite which crops out as an intrusive body of around 500m² in size and has an ambiguous connection with the surrounding intrusions. These rocks are predominantly composed of plagioclase (40-70%), K-feldspar (20–35% up to 50-60% in syenite), amphibole (5–20%), biotite (5–15%), and quartz (0-5%). The common accessory minerals include apatite, sphene, and ore minerals. The k-feldspar metasomatism can be observed in monzogabbro (Figure 3) as veins between 20 and 40 cm wide. Mafic minerals are generally wrapped by anhedral large of K-feldspar megacrysts.



Figure 3: Monzogabbro exhibiting intensive K-feldspar metasomatism.

Deoca – Phnom Den suite (group 3 on the map)

The suite constitutes the major rock assemblages in the SWVN-SEKH area, distributes dominantly north of southwestern Vietnam, Bay Nui area (SW Vietnam), Phnom Den (SE Cambodia), and is the main component in sparsely small islands (Con Dao and Hon Son island, Vietnam). The rocks are grey to pinkish-grey in color, mainly comprise medium- to fine-grained hornblende - biotite granodiorite, quartz monzonite, granite, and the late vein phases including pegmatite and aplite. Rock assemblages are made up of plagioclase (25-35%), high content of K-feldspar (35-40% up to 55% in pinkish granites), quartz (20–30 %), biotite (5–10 %), and minor hornblende (4 - 6 %). Accessory minerals including sphene, zircon, allanite, and apatite dispersedly present in granodiorite and granite where allanite occur as zoning crystals.



Figure 4: *Pinkish granite showing a high content of K-feldspar, samples from Honson island and Seven Mountain (Bay Nui) area*

Ankroet-Ba Phnom suite (group 4 on the map)

Rocks of the suite expose minorly as equant-shaped disconnected intrusions in the SWVN-SEKH area. They are petrologically composed of leucocratic fine to medium-grained granites. The major minerals include quartz (35–50 %), K-feldspar (30-35%), plagioclase (20-25%), biotite (3-5 %). They occasionally display weakly porphyritic texture where quartz and K-feldspar are the common phenocrysts. Accessory phases are zircon, apatite, fluorite.



Figure 5: *Coarse-grained granite and occurrence of porphyritic texture.*

Pha Aok – Tamao suite (group 5 on the map)

The suite rocks are typical for a coarse-grained granitic assemblage. They commonly present porphyritic texture where quartz (up to 4.4mm), K-feldspar (up to 4.6 mm) reveal as phenocrysts. Biotite is reddish-brown in color. Accessory minerals include muscovite, zircon, apatite, and opaque.



Figure 6: *Coarse-grained granite and occurrence of porphyritic texture.*

© Fig. 1 – Fig. 6: VNU-HCMC / Thi Quynh Anh Nong

SAMPLING

A total of more than 120 lithological samples (~8x15x20cm in size) were collected from the different outcrops ranging from slightly mafic to felsic in composition. Beside samples were obtained in person from the fieldwork, nearly other 20 samples were provided by colleagues from Petrovietnam University and stone mining companies. Samples were taken on both intrusive and extrusive types, not only from onshore but also islands and offshore sites. Furthermore, borehole samples were taken by drilling to the depth of 3000 m in the area of the White Tiger oilfield, southern Vietnam (see attached sample list).

FIELDWORK TIMEFRAME

The field trip was started and completed as intended timeframe within 8 working days. The simplified schedule of working in the field and sampling is exhibited as below table. On February 26th

Date	Activities	Sample and geological unit
Day 1 26/02	Arrival in HCMC, drive south to the field area	
Day 2 27/02	Surveyed and sampled Hon Da Bac island (Rach Gia, Kien Giang, SW Vietnam)	Sample S45...S56 (granite, granodiorite, diorite, mafic dyke) – Honkhoai suite
Day 3 28/02	Surveyed and sampled Honkhoai island (Ca Mau, SW Vietnam), transportation using canoe between mainland and Honkhoai island	Sample S57...S73 (granodiorite, quartz diorite, cataclasite) – Honkhoai suite
Day 4 01/03	Surveyed and sampled Honson (Lai Son island, Kien Giang, SW Vietnam), transportation by ferry between mainland and Honson island	Sample S74...S95 (pinkish fine to medium-grained granites, high k-feldspar) – Deoca suite
Day 5 02/03	Surveyed and sampled Seven Mountain area (Bay Nui, SW Vietnam)	Sample S96...S112 (diorite, monzodiorite, granodiorite, granite, andesitobasalt, tuff andesite) – Dinhquan suite, Deoca suite and Deobaoloc Formation
Day 6 03/03	Surveyed and sampled Phnom Den and Pha Aok area (SE Cambodia)	Sample S113...S122 (medium to coarse-grained granites, porphyritic texture – Phnom Den suite (consistent with Deoca suite, Vietnam)
Day 7 04/03	Surveyed and sampled Tamao and Ba Phnom area (Angkor Borei, SE Cambodia)	Sample S123...S130 (medium to coarse-grained granites, porphyritic texture – Tamao suite (compatible with the Pha Aok suite) and Ba Phnom suite (consistent with Ankroet suite, Vietnam)
Day 8 05/03	Return trip to HCMC	
Days 9-11 06/03-08.03.	Visit of geology department of VNU-HCMC, scientific discussions, preparation of sample transport	

RESULTS AND FURTHER ACTIVITIES

Results of this research stay are nearly all available and a publication regarding the timing and tectonic setting of granitoid activity in S-Vietnam is in preparation. I expect that the manuscript will be submitted in autumn 2019.

Further activities in petrology and mineralogy are planned and PhD students will apply for the ASEA-Uninet/OEAD scholarship programme.



The influence of daylight and natural air-flow in the architecture of the Museum-Affandi, Yogyakarta, Indonesia

Involved persons

Dr. habil Mag. Akad. Rest. **Patricia Engel**

Danube University Krems, Department for Building and Environment, European Research Centre for Book and Paper Conservation-Restoration; patricia.engel@donau-uni.ac.at

Head of the European Research Centre for Book and Paper Conservation-Restoration

Habilitation in Conservation-Restoration: University of Fine Arts Warsaw, Poland

Doctorate in Conservation-Restoration: University of Fine Arts Warsaw, Poland

Magisterium in Conservation-Restoration: University of Fine Arts Vienna, Austria

DI Dr. **Ulrike Herbig**

Faculty of Architecture and Spatial Planning, Institute of Art History, Building Research and Historic Preservation Technical University of Vienna; ulrike.herbig@tuwien.ac.at

DI Dr. Ulrike Herbig is Senior Scientists at the Faculty of Architecture and Planning at TU Wien and in charge for the coordination and support of research projects, as well as for international affairs at the faculty. Dr. Herbig studied geodesy and has a research interest in the interdisciplinary recording, documentation and analysis of the built environment.

Arch. DI **Gregor Radinger**, MSc,

Danube University Krems, Department for Building and Environment, gregor.radinger@donau-uni.ac.at

Architectural studies at the Technical University Vienna, civil engineer examination

Study renovation and revitalization at the Danube University Krems

Head of Center for Environmental Sensitivity

Main research: climate-friendly building, building exposure and daylighting, architectural history, interdisciplinary research on human-building interactions

DI **Wolfgang Stumpf**, Donau-Universität Krems

Department for Building and Environment, wolfgang.stumpf@donau-uni.ac.at

Architectural studies at the Technical University Vienna

Research associate at Danube University Krems

External lecturer at various Austrian universities of applied sciences

Head of the International Summer School "Climate Friendly Buildings - then and now" at the INNES Institute Vienna

Main research: Buildings, technology and energy for climate-friendly building, building life cycle, building in existing buildings

Ass. Prof. DI Dr. **Gudrun Styhler-Aydin**

Faculty of Architecture and Spatial Planning, Institute of Art History, Building Research and Historic Preservation Technical University of Vienna; gudrun.styhler@tuwien.ac.at
Teaching and research in the field of history of architecture, building archaeology, historic constructions, cultural heritage, building in existing structures
Assistant professor at TU Wien, Institute of History of Art, Building Archaeology and Restoration
Scientific project member at the Austrian Academy of Sciences, Institute for the Study of Ancient Culture
PhD study at TU Wien
Practice in architecture offices with focus on projects in historic building contexts and listed buildings
Diploma in Architecture, Technische Universität Berlin, Germany
Diploma in Civil Engineering, University of Applied Sciences Magdeburg, Germany

M. Eng., Ph.D. Ikaputra, Universitas

Universitas Gadjah Mada, Department of Architecture and Planning, Faculty of Engineering;
ikaputra@ugm.ac.id

Dr. Ikaputra studied at the Gadjah Mada University (UGM), Yogyakarta, Indonesia and at the Osaka University, Japan. He works as the program director for architecture at the Faculty for Architecture and Planning at UGM. His research interest are city and environmental planning, cultural heritage and building for disaster.

Dr. Ir. Jatmika Adi Suryabrata, M.Sc.

Universitas Gadjah Mada, Department of Architecture and Planning, Faculty of Engineering;
jatmika@ugm.ac.id

lecturer for building physics at the Department of Architecture and Planning, Gadjah Mada University, Yogyakarta

Seminars at professional societies and universities on Green Building Concepts and applications

Green Consultant at IFC – The World Bank Groups

Practice in architecture, urban design and lighting design (National and ASEAN awards in Green Buildings and Energy Efficient Buildings and projects certified by Green Building Council Indonesia)

Post graduate education in architectural science, especially in Building Physics, at University of Sydney, Faculty of Architecture

Study of bioclimatic designs / passive designs, College of Architecture and Environmental Design, Arizona State University, USA

Graduated from Gadjah Mada University, Yogyakarta, Department of Architecture and Planning

Introduction

The building research project is based on previous art conservation works by Patricia Engel (Department for Building and Environment, Danube University Krems) in cooperation with Ulrike Herbig (Department of Architectural History and Building Research, Vienna University of Technology) and Kartika Affandi (Museum Affandi) to protect the oeuvre of the Indonesian artist Affandi (1907-1990). The objective of the present activities is the analysis of building physics properties of components and building climate characteristics of gallery buildings of the Affandi-Museum in Yogyakarta, Indonesia. The results of the study serve as a basis for structural measures for optimizing the interior conditions in various objects in a climate-friendly manner in order to support the long-term preservation of the museum and the art exhibits shown. In addition, the results will be discussed with students of the University of Yogyakarta (UGM) and planning-strategies for climate-sensitive buildings in different climatic zones will be shown and compared.

Project schedule

Site- and building-analyses of the Affandi museum were carried out in June 2018 on scale models in the light-laboratory of the Danube University Krems. The findings were the basis for object investigations in situ.



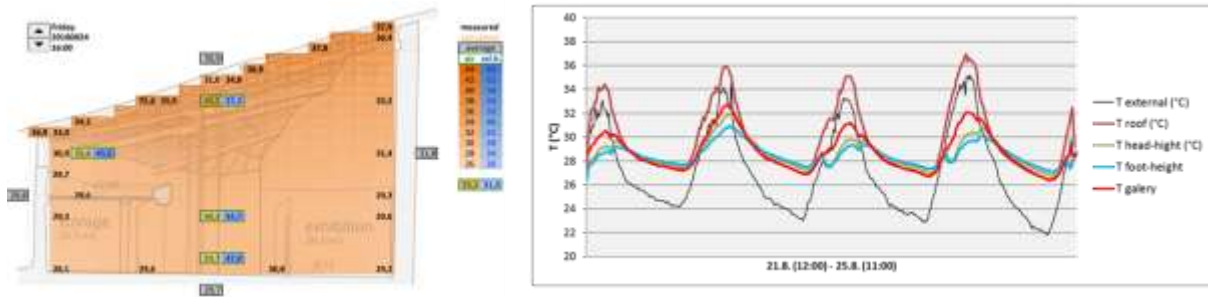
Figure 1: Lightlab-investigations in the light-lab of the Danube-University Krems

The travel to Indonesia started on 17th of August 2018. After inspections of the museum premises, time- and workflow-concepts for the implementation of the building climate measurement campaigns were prepared and presented to the museum management. After their release, the installation and commissioning of data logging devices for temperature and humidity levels in gallery building 1 as well as in the outdoor area was carried out. Hand measurements of light input and surface temperatures as well as determination of the condensate potential were carried out over the following days at three fixed times of the day, in the morning, at noon and in the afternoon. After four measuring days, the installed measuring devices were transferred to the gallery buildings 2 and 3. Data collection in these additional objects allow confrontations of building climate characteristics of several exhibition rooms.



Figure 2: Gallery building 1, surface temperatures in gallery 1, installation of measuring devices

Analysis of the collected data were carried out at the end of the first week of residence, Sunday, August 26. The results were prepared for the planned lecture at the Gadjah Mada University Yogyakarta (UGM) on the following day. Within the scope of the presentation, the building climate measurement results were explained. In addition, current and traditional principles of climate-friendly building in temperate climates were presented and differences to planning measures in a tropical environment were discussed.



At the same time, historical research results, which were based on the analysis of original recordings and sketches by the artist Affandi, interviews and reports of persons involved and other data searches, were presented by Gudrun Styhler-Aidyn (Vienna University of Technology). In the course of second lecture on Wednesday, August 29th, employees of the Affandi Museum were informed about the work results and recommendations to optimize the building climate characteristics of the various gallery buildings were addressed.

Following the building analyses the private property of Kartika Affandi (the artist's daughter), who was educated in Austria as a restorer and also creates art, was visited. In the course of visits of the world heritage sites of Prambanan- and Borobudur-temples the directorate and senior research staff were briefed on the activities of the Danube University Krems and Technical University Vienna at the Affandi Museum. There, contacts were established and opportunities for cooperation were discussed. The return journey from Yogyakarta took place on Friday the 31st of August.

In autumn 2018 concept considerations for future cooperation were given by Prof. Jatmika from Gadjah Mada University within the framework of his stay in Austria. A visit of the light laboratory and a guided tour to selected projects in Vienna were part of the program of his visit.



Figure 6: Visit of Prof. Jatmika from Gadjah Mada University at the Danube University Krems

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List of publications

Lecture Dr. Gudrun Styhler-Aydin:
Development of an integrated restoration concept for the sustainable future use of the Affandi Museum
Affandi Museum, Yogyakarta, August 28th 2018

Lecture Arch. DI Gregor Radinger, MSc:
Daylight planning and indoorclimate-analysis
Affandi Museum, Yogyakarta, August 28th 2018

Lecture DI Wolfgang Stumpf:
Building Energy Standards in Austria. Thermal Behavior of Affandi Gallery's Construction
Affandi Museum, Yogyakarta, August 28th 2018

Lecture Dr. Ulrike Herbig:

Development of an Integrated Restoration Concept for the Sustainable Future Use of the Affandi Museum

Affandi Museum, Yogyakarta, August 28th 2018

Lecture Arch. DI Gregor Radinger, MSc:

Lightlab-analysis

Collection studies and Management

Danube University Krems, January 17th 2019

Expected results

For the year 2019, a further ASEA-UNINET proposal from Danube University Krems was accepted. Dr. Patricia Engel will lead this project „Thermal Comfort Criteria in Indonesia and Europe – TCC IN EU“. DI Wolfgang Stumpf and DI Gregor Radinger are project members. Co-partners are TU Wien, Universitas Gadjah Mada and Affandi Museum in Yogyakarta.

Presentation will be shown at Forum Building Science, Donau-Universität Krems, May 8th, 2019

Planned cooperations

Cooperations with UGM and Technical University Vienna on capacity building and construction in earthquake areas are in preparation.



Sustainable Hygiene Concept as a mandatory conservation aspect for people, paintings on paper and drawings and the buildings of Museum Affandi and the Influence of Daylight and natural airflow in the architecture of the museum Affandi, Yogyakarta

Patricia Engel (dr habil Mag.) DUK (project lead)
Kartika Affandi, (Dr hc. Museum Affandi)
Suastiwi (Dr. Dean of ISI)
Sri Wahzuni (Dr. Vice Dean of ISI)
Selarti Venetsia Saraswati (Museum Affandi)
Ikaputra (Prof. Dr. UGM)
Ulrike Herbig (Dr. TU Wien)
Fransiska Dian Ekarini (Mag. Baley Borobudur Konservasi)
Rzani Palje Disi Silaba (Mag. Baley Borobudur Konservasi)
Mutia Bunga Student of conservation at ISI to be built up chair for conservation
Ryani Silaban Student of conservation at ISI to be built up chair for conservation
Harald Ried (Dr. habil previous Naturhistorisches Museum Wien)
Alicia Allue (ERASMUS Student University Barcelona at DUK,

Patricia Engel holds magister, doctorate and habilitation degrees in conservation-restoration of cultural heritage of the universities of Fine Art in Vienna and Warsaw. She worked as assistant professor in Hildesheim HAWK, Germany and from 2010 on is heading the European Research Centre for Book and Paper Conservation-Restoration affiliated to ZKGS/DBU/University for continuing Education, Krems, Austria. Her focus is on key questions in written heritage conservation. She initiated and lead international projects (Getty, EU, FFG) on mould, paper-deacidification and ink corrosion. She also attempts to identify alteration in historical material by wrong conservation measures and ways to avoid them. She installed a new university chair for continuing education on interdisciplinary methods of written heritage conservation.

A considerable number of plants' and herbs' names as well as distinct actions to protect cultural heritage items and human health from microorganisms and insects in Indonesia could be brought together by making interviews with elder persons and from the literature. Single plants roots, leaves and seeds as well as mixtures both applied as unprocessed plant elements (Akar wangi or Pandan), oils (Cengkeh/clove) and water extracts (Sereh/lemon grass) were found. For human health and disinfection countless mixtures are used. Some of the plants are used for both human health and heritage preservation. Some plants and substances used in Sri Lanka and *neem* from India was included in the tests which were executed on the basis of the information collected. The tests were designed in such a way as to make sure that the effect of disinfection is sufficiently proven.

The active substances in the plants were identified from the literature. Some are known as being disinfective against mould, others, as effective remedies against bacteria.

Most of the substances are meant to be preventive, so they are used not to allow an infestation to happen.

Insects and mould species prevalent in Indonesian wet humid environment were identified by collecting and identifying them and by browsing the literature for relevant information. This work, however, focused on species that can harm the heritage items or the museum building in one or other way. Rodents are an added problem that was kept in mind. Several plants are used to keep rats away.

The effect of the leaves, fruits and roots as dry stuff or brews or oils was discussed.

Additionally, effective measures of house design were brought together for the benefit of the design of future museum buildings and appropriate health facilities in the area.

While only a few hazardous species of moulds were identified (*Stachybotrys chartarum*, *Curvularia lunata*, *Aspergillus niger*, *Metarhizium anisopliae*, *Paecilomyces spec.*), the termites seem to be the biggest threat for the cultural heritage items. This was confirmed in an e-mail communication with Julia M Brennan (August 2017) who, based on the experience of her work in Rwanda and Australia, also considered termites the biggest problem.

Nilam and clove oil have been proven to be effective for getting rid of termites, both in the case of heritage items and buildings. However, this requires permanent control, repeated application and good housekeeping. But the same can be said for the use of any substance including industry disinfectants as *Lentrek*, as it could be shown that within 3 years the effect of *Lentrek* obviously was gone and new termite infestation was found in the paintings.

Lentrek was found to be the most widely used amongst modern disinfectant substances.

In Indonesia still many servants keep households and work at museums. This kind of repeated insecticide treatment could be made one of their routine obligations. In Europe, the reapplication might be needed less frequently as the weather is cooler and drier and thus insect and mould growth is slower. Clove pose no health hazard to people, nilam is good against insects, bacteria and mould.

This research work was the very first step in a promising direction. It is clear that

- More search for plants will bring up further old knowledge of traditional herbal disinfection. Therefore this search shall be established as a long-term survey. A database of such substances will be created that could benefit from the already existing database compiled by the team of PROSEA – Plant Resources of South-East Asia;
- Biochemists should be involved in identifying all working substances in the plants brought together;
- Medical staff should be involved to estimate the potential hazards for humans;
- The collection of mould that can be found on heritage items in Indonesia shall be completed and a second attempt to find relevant literature shall be made;
- Ingredients of mixtures of unknown substances such as *ratu*s shall be identified;
- Intense cooperation with all institutions which search on termites shall be established:

Purdue University India, <https://extension.entm.purdue.edu/publications/E-4.pdf> and Australian institutions as well as NL Sri Lanka to give only a few examples;

- Cooperation on the plants and microorganisms shall be extended with Bogor and Singapore botanical garden and Leiden and, for mould, with the Centraalbureau voor Schimmelcultures in Utrecht. For applied botanics and ethnobotanics, Wageningen University (PRODEA) should be contacted.

More tests must be designed and performed in known environment as well as in real life settings. The main question would be how the material of the heritage would react with various substances of the art works and for how long those, which can be applied because they do not cause any harm to the material of the heritage, would keep up their positive effects. Long term tests and artificial aging of the substances shall be done. Testing ginger and other substances, which were mentioned to be good for human health should be included in the tests for the heritage items, even if the substances have not so far been mentioned in lists of insecticides and fungi-killing measures for cultural heritage items.

Boxing was found to be not always a good measure, as termites can destroy boxed items unseen.

While mould can be kept under control by the traditional house design with a constant air flow through the building and over the heritage items, termites could be killed with boiling water, a method which cannot be applied to works of art on canvas or paper. Use of clove oil and nilam was found to be effective as a preventive measure.

Contextual Search for Indonesian Language

Project leader

Ismail Khalil is the deputy head of the institute of telecooperation, Johannes Kepler University Linz, Austria, since October 2002 and Adjunct Full Professor at Faculty of Science and Technology (FST), Syarif Hidayatullah State University Jakarta, Indonesia. He holds a PhD in computer engineering and received his habilitation degree in applied computer science in May 2008.

Project Partners

- Johannes Kepler University Linz, Austria
- Gadjah Mada University, Indonesia

Project Description

Indonesian language, the language of more than 220 million people, is quite simple and has a very limited vocabulary. It is difficult for search engines to accurately search Indonesian to provide precise results. Keyword search which is done by most search engines is not adequate, so we need to develop a contextual search engine which search based on concept not keyword. This concept is captured by the context of the word than its meaning or semantics. The ambiguity in searching the Indonesian language comes from Synonyms, hypernyms, antonyms, hyponyms, homonymy.

Project Results

The main objective of this research is to develop a contextual search engine based on the concepts derived from Indonesian language in order to improve the performance of the search engine and provide information needed by the user.

This research is executed with the following steps: pre-processing Indonesian text, selection of word senses, use of external knowledge sources for word sense disambiguation, representation of the context, apply of classification methods, and building the system. Word sense disambiguation (WSD) is the ability to identify the meaning of words in context in a computational manner. This research applied WSD classification methods; supervised machine learning, thesaurus/ dictionary methods, semi supervised learning.



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A Workshop on Ubiquitous Web Applications

Involved Researchers

Ismail Khalil is the deputy head of the institute of telecooperation, Johannes Kepler University Linz, Austria, since October 2002 and Adjunct Full Professor at Faculty of Science and Technology (FST), Syarif Hidayatullah State University Jakarta, Indonesia. He holds a PhD in computer engineering and received his habilitation degree in applied computer science in May 2008.

Gabriele Anderst-Kotsis is university professor of Computer Science at JKU Linz. She heads the Department of Telecooperation since 2002, and was Vice Rector for Research from 2007-2015. She holds the Heinz-Zemanek-Award for outstanding scientific publications in Computer Science (1996) and has been recognized as ACM Distinguished Scientist in 2014.

Hesti Sudjana is a scientific staff member at the institute of telecooperation, Johannes Kepler University Linz, Austria, since October 2018. She is working on the organization of DEXA series of conferences and workshops. She holds a BSc. in media communications.

Project Partners

- Johannes Kepler University Linz, Austria
- Gadjah Mada University, Indonesia

Project Description

The goal of the workshop is to provide an international forum for scientists, engineers, and industry, to address recent research results and to present and discuss their ideas, theories, technologies, systems, tools, applications, work in progress and experiences on all theoretical and practical issues arising in the field of ubiquitous web applications. Specific goal of IWA2018 is to further advance the state of the art and to stimulate additional research in the field of ubiquitous web applications. In this, IWA2018 aims at supplementing other conferences and workshops in the field of web engineering by its distinct focus on the engineering, technology and evaluation aspects of ubiquitous web applications.

Project Results

We planned the workshop report and a publication of the workshop papers in ACM digital library. Distinguished papers, after further revisions, will be published in special issues of international journals. The workshop resulted in exchange of research, collaboration with PhD students, setting the ground for future collaborations, and joint publications.



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Medical internship Dr. Sardjito

02.07.2018 – 27.07.2018

Ursula Mauernböck

I started my first week at the international office of the Universitas Gadjah Mada, where I met all the other exchange students. It was a very mixed group – students from France, Hungary, Germany, Slovenia and the Netherlands took part in the exchange programme. An Indonesian student accompanied us to our department and I was introduced to the Doctors in the infectious ward where I spent my first two days.

Dr. Putu – the resident at the infectious ward showed me all the patients and told me anything I wanted to know about their different complaints. I was very surprised to see so many different kinds of infectious diseases on my first day - from rubella, aspergillosis, salmonella, to encephalomeningitis and bacterial caused hydrocephalus. I didn't expect to see the fathers sleeping in the corner of the patients rooms and I also realized the bad air in the patients rooms, it was very stuffy.

What I liked best about the infectious ward was the candour of the residents. We talked a lot about the health care system in Indonesia and the country itself.

The non infectious ward was also very interesting for me. I learned how to auscultate patients with tetralogy of fallot or open ductus botalli. I could also refresh the differences in nephrotic and nephritic syndrome.

I spent the second week in the outpatients clinic. I really liked the variety in this week, every midmorning and every afternoon I was at a different department. Although in the afternoon there were rarely patients, I could talk to the residents about the chief complaints children are coming to the clinic. I really liked watching echocardiography and also the day in the developmental department, there I could vaccinate a baby. All the conversations between the doctors and the parents were in Bahasa, so most of the time I could just listen to it, but afterwards the residents tried to explain me what the conversation was about.

In the third week I was at the haematology and oncology ward. Most of the children suffer from ALL, AML or different kinds of anaemia. The first three days at the Estela ward were difficult for me because after we visited the patients the residents were always very busy, so I took a book and refreshed my haematology knowledge. I really enjoyed the last two days with Professor Sutaryo, I could watch lumbar punctions and bone marrow aspirations, he showed me how to examine patients with hepatosplenomegaly and I was very involved the whole day.

The fourth week took place in the PICU and NICU – it was my favourite week. At the PICU I saw patients with craniotomy, suspected Dengue shock syndrome, tetraparesis and several burnings. I really enjoyed it because the resident, Benedictus Andries, spoke very good English, so he could answer all my questions and he accompanied me to all the patients.

The NICU was also very interesting for me, I didn't expect such a large neonatal intensive care department. It was my first time I could try the reflexes on a newborn and learn about the way of treatment in the first few days.

All in all I really enjoyed it being here. I could see a lot of the country, learned about the asian culture and tried a lot of typical indonesian food. What I really like is that in indonesian hospitals the patients are examined with very simple methods – but it works. For instance the measure of the abdominal circumference, we wouldn't do that with a simple measuring tape. I also realized the difference in treatments, we try to use antibiotics as low as possible, but here you also get it for a common cold.

What I missed in this internship was the practical experience. In four weeks I could only auscultate patients, vaccinate them once and try the reflexes. Most of the time I was just there for observation. I really would have liked to be more involved in the daily routine.

But in general I learned a lot about the different health care system, tropical diseases, way of diagnose and treatment of the patients and I could really refresh my theoretical knowledge in paediatrics. It was a very varied exchange programme and I am really happy I have made this experience.

This medical internship definitely strengthened my decision to become a paediatrician.



© both photos: Ursula Mauernböck

**ASEA Uninet Interdisciplinary Faculty Development
Workshop**

Geoinformatics for Smart Farming in Southeast Asia

29th October to 2nd November, 2018

**(smartFARMING)
www.zgis.net/smart-farming**

Project Coordinators:

Prof. Josef Strobl
Head of Department
Interfaculty Department of Geoinformatics - Z_GIS
University of Salzburg
Austria

Dr. Shahnawaz
Interfaculty Department of Geoinformatics - Z_GIS
University of Salzburg
Austria

Prof. Abdul Rashid Mohamed Shariff
Department of Biological and Agricultural Engineering
University Putra Malaysia (UPM)
Selangor, Malaysia

SHORT CVs OF THE KEY EXPERTS INVOLVED IN THE PROJECT

Professor Dr. Josef Strobl is Professor at the Interfaculty Department of Geoinformatics - Z_GIS, University of Salzburg, Austria. He held a number of prestigious leading positions at the university as well as at other institutions and organisations. Currently, he is the head of Z_GIS as well as the Chair of Commission for GIScience, Austrian Academy of Sciences. His research interests include Geographical Information Science and Systems. Remote Sensing and Image Processing, spatial analysis Internet-based distance education. Active learning in online environments and design of interactive learning materials. Learning with Geoinformation – from spatial awareness to thinking to citizenship.

Dr. Shahnawaz is Director of UNIGIS S/E Asia at the Interfaculty Department of Geoinformatics - Z_GIS, University of Salzburg, Austria. He has established cooperation for Geospatial education and capacity building with a number of leading universities in the region. For this purpose, he has implemented about 25 international projects, conducted more than 30 international workshops as well as organised about 20 capacity building sessions in various international conferences providing an opportunity to the young students, teacher and professionals for demonstrating their work, skills and competences.

Professor Dr. Abdul Rashid Bin Mohamed Shariff is Professor at the Department of Biological and Agricultural Engineering University Putra Malaysia. He held several prominent positions at the university as well as in other organisations which also includes the Head of Geospatial Information Science Research Centre (GIS RC) at the university. He is also the President of Institution of Geospatial and Remote Sensing Malaysia since 2012. He has more than 100 publications to his credit which include research articles, conference proceedings, books and book chapters.

The [Interfaculty Department of Geoinformatics](#) - Z_GIS implemented a week-long Interdisciplinary Faculty Development Workshop on '[Geoinformatics for Smart Farming in Southeast Asia](#) (smartFARMING)' at [University Putra Malaysia](#) (UPM), Selangor, Malaysia. The workshop was organised jointly by Z_GIS and UPM from 29th October to 2nd November, 2018. The smartFARMING project was co-funded by [ASEA Uninet](#) Austria.

The workshop was inaugurated by Dr. (Ms) Siti Khairunniza Bejo, Head - [Department of Biological and Agricultural Engineering](#), UPM. The session was followed by lectures delivered by Dr. Aimrun Wayayok, Dr. Rowshon Kamal and Dr. (Ms) Samsuzana Abd Aziz (all from UPM) as well as Dr. Shahnawaz from Z_GIS.

Dr. Shahnawaz (Z_GIS) conducted hands-on sessions of the workshop at [Smart Farming Technology Research Centre, Faculty of Engineering, UPM](#). He also taught the concepts of Smart Farming and Suitability Analyses to the participants as well as trained them in using a range of data sets generated by various satellites and sensors. Having backgrounds in a range of disciplines, 30 teachers and postgraduate students from 9 universities across 4 countries (i.e. Indonesia, Malaysia, Thailand and Vietnam) participated in the workshop. They developed individual projects and explored geospatial applications of various remote sensing and other data sets in a range of disciplines and completed hands-on practical tasks with GIS software ArcGIS Desktop. All the participants presented outcomes of their project work in the concluding seminar. The workshop also included a field visit to [Malaysia Agro Exposition Park Serdang](#) for training the participants in ground truthing as well as for giving first hand experience of Smart Farming activities.

Prof. Abdul Rashid Bin Mohamed Sharif (UPM) conferred the certificates of successful completion on the participants and congratulated them for having benefitted from this international and interdisciplinary workshop. He also conveyed his gratitude to Z_GIS as well as to ASEA Uninet and expressed willingness to strengthen and expand the institutional collaboration with Z_GIS.

The list of the participating institutions and number of participants is following:

S.No.	COUNTRY	INSTITUTION	PARTICIPANTS
1.	INDONESIA	Bogor Agricultural University, Bogor	3
2.	INDONESIA	Diponegoro University, Semarang	2
3.	INDONESIA	Udayana University, Badung, Bali	2
4.	MALAYSIA	Universiti Kebangsaan, Bangi, Malaysia	2
5.	MALAYSIA	University of Malaya, Kuala Lumpur	2
6.	MALAYSIA	University Putra Malaysia, Serdang	12
7.	THAILAND	Chiang Mai University, Chiang Mai	2
8.	THAILAND	Chulalongkorn University, Bangkok	2
9.	THAILAND	Naresuan University, Muang Phitsanuloke	1
10.	VIETNAM	University of Transport and Communication, Hanoi	1
11.	VIETNAM	Vietnam National University of Agriculture, Hanoi	1
TOTAL			30

The Coordinating Team acknowledges and highly appreciates various contributions of the following:

- ASEA Uninet, Austria
- Interfaculty Department of Geoinformatics - ZGIS, University of Salzburg, Austria
- Department of Biological and Agricultural Engineering, University Putra Malaysia, Selangor, Malaysia
- The participating ASEA Uninet member institutions from Southeast Asia

The details of the workshop and the Financial Report have been submitted to the OeAD Office in Salzburg. The details are also available on the project website <http://www.zgis.net/smart-farming>



The participants of the workshop, © University of Salzburg / S. Shahnawaz

ASEA 2018/TU Wien/2**SMART TRANSPORTATION MOBILITY: STATE OF ART IN ASEAN AND AUSTRIA****Report Phase 1 - Outgoing Malaysia****Information on the participants**

Name: **Günter Emberger**
Degree: Professor
University/Institute: TU Wien, Research Center of Transport Planning and Traffic Engineering
E-Mail: guenter.emberger@tuwien.ac.at
Short profile: Prof. Emberger studied Computer Science and Business Administration at the University of Vienna and has been working in the field of transport research since 1990. Today he is Ao. Univ. Professor and head of the Research Center of Transport Planning and Traffic Engineering at TU Wien. His research focus is on travel demand behaviour analyses, design and implementation of 4 stage transport models and strategic transport models on urban, regional and European level.

Name: **Takeru Shibayama**
Degree: MEng.
University/Institute: TU Wien, Research Center of Transport Planning and Traffic Engineering
E-Mail: takeru.shibayama@tuwien.ac.at
Short profile: Takeru Shibayama, MEng. studied civil engineering with focus on policy-making and transport planning at the University of Tokyo, with one-year exchange study in Vienna. Since 2011, he has been working for the Research Center of Transport Planning and Traffic Engineering as a scientific staff. He worked on various national and international research projects with topics such as mobility survey, ICT-based innovative measures, intercommunal and cross-border cooperation, railway-oriented settlement planning, and even on historical development of urban space.

Name: **Barbara Laa**
Degree: Dipl.-Ing.
University/Institute: TU Wien, Research Center of Transport Planning and Traffic Engineering
E-Mail: barbara.laa@tuwien.ac.at
Short profile: Barbara Laa studied Civil Engineering at TU Wien and INSA Lyon, France. Since 2018 she works as a teacher and researcher at the Research Center of Transport Planning and Traffic Engineering at TU Wien. Her research focus is transport modelling with System Dynamics.

Name: **Masria Mustafa**
Degree: Dr.-Ing., Associate Professor
University/Institute: UiTM, Faculty of Civil Engineering
E-Mail: masria@salam.uitm.edu.my

Short profile: Dr.-Ing. Masria Mustafa is presently an Associate Professor at Universiti Teknologi MARA. Her main areas of expertise are: Traffic Simulation and Modeling, Traffic Operation and Control, Driver Behavior, Intelligent Transport System (ITS) and Advancement of Women in Transportation. She pursued her Master Degree in Transportation and Traffic Engineering at Chulalongkorn University and her PhD at Technical University of Munich, Germany.

Introduction

The objective of the project “Smart Transportation Mobility: State of Art in ASEAN and Austria” is to bring together international researchers, transport leaders and professionals working on smart mobility issues in the ASEAN context, as well as to collaboratively learn and discuss current best practices, research needs and advances. The project is divided into two phases. The first phase took place in November 2018 when researchers from TU Wien paid a visit to Malaysia. During that visit, the activities included a seminar, internal workshops, a lecture and exercise for local students, a technical visit and exploration of Malaysian cities. The outputs are a strengthened relationship between UiTM and TU Wien, knowledge exchange about smart mobility, a concept for a jointly written conference paper, an idea for a common research project and the organization for phase 2. During the second phase, Malaysian team members are going to come to Vienna.

Activities

Preparatory Discussion

In August 2018, a meeting of the project team (including Günter Emberger, Takeru Shibayama, Barbara Laa and Masria Mustafa) took place in Vienna. At the meeting, TU Wien shared their research competencies and the team discussed possible subjects for a cooperation with UiTM. Additionally, organisation and activities for the visit to Malaysia have been discussed.

Visit to Malaysia

In November 2018, the Viennese team visited Malaysia. Prof. Günter Emberger stayed there for one week from 25th November to 2nd December. Takeru Shibayama stayed from 25th November to 7th December and Barbara Laa stayed for three weeks in total, from 25th November to 14th December. The activities that took place during that visit are described in more detail in the following sections.

Seminar

On 29th November, the seminar “Urban Sustainable Mobility” co-organized by UiTM and TU Wien took place. The seminar tried to answer the question of how future sustainable urban mobility can be achieved, with a focus on Southeast Asian cities. Rising numbers of population have caused an urban sprawl which has resulted in a car-oriented transport system. But this system entails challenges like air quality, noise, living quality, global warming, social inclusion and sustainable economic development. Three different lecturers presented possible solutions to the challenges:

- Prof. Günter Emberger (TU Wien): Sustainable Urban Mobility - State of the Art
- Prof. Ahmad Farhan Mohd Sadullah (USM): Challenges to Urban Mobility in Light of the Sustainable Development Goals
- Prof. Günter Emberger (TU Wien): Design Principles for Infrastructure Towards Sustainable Urban Mobility
- Ir. Chin Kar Keong (IEM): ITS/digitalization for Future Sustainable Urban Mobility

In addition to the lectures, two different interactive sessions were conducted to start a discussion about the challenges and solutions towards sustainability. The sessions were moderated by Dr.-Ing Masria Mustafa, Mr. Takeru Shibayama and Ms. Barbara Laa. In the first session, possible barriers for the implementation of sustainable forms of mobility have been collected from the audience and clustered by the moderators. In the second session, the modal split (in this case the percentage of travellers using a particular type of transportation) of the participants has been calculated and compared to the one in Austria. The seminar was attended by several government officers, transportation industries key player as well as local, international students and researchers. The participants who come from different agencies and industries shows the testament to the solid commitment to support the growth of networking between universities and industries in searching opportunity to create sustainable transportation atmosphere.

The seminar was officiated by the Malaysian Deputy Minister of Transportation YB Dato' Kamarudin Bin Jaffar. In his speech, he highlighted the responsibility of universities and the industry to educate the young generation in order to enable a sustainable future in the transport sector. He also highlighted that the cooperation between the two universities presents a great chance for future research projects in Malaysia and the ASEAN region.

Prof Emeritus Dato' Dr Hassan Said, UiTM's Vice Chancellor, in his welcoming speech read by his representative, Assoc. Prof. Dr. Mohd Fozi Ali, Deputy Vice-Chancellor (Development), had emphasized that this year mark the first anniversary of UiTM becoming a member of ASEA UNINET. UiTM participation in this Network outlines the seriousness and efforts as far as the research and internationalization are concerned. This seminar is indeed very appropriate in which UiTM particularly Faculty of Civil Engineering is committed to offer expertise to industry and to drive the sustainable transport development in Malaysia. Also present was Prof. Dr. Zakiah Ahmad, Dean, Faculty of Civil Engineering, UiTM.

Internal Workshops

Internal workshops have been carried out to discuss the concept of a joint paper that will be submitted to EASTS (East Asian Society for Transportation Studies) conference that will take place in September 2019 in Colombo, Sri Lanka. The objective of the paper is to explore the history of transport policies in Malaysia since the time of independence.

Wheelchair lecture and exercise

The team carried out a lecture and an exercise with local students of the Faculty of Civil Engineering at UiTM. The topic of the lecture was barrier free design. After the lecture, the students formed 5 groups. Each group took a wheelchair or a trolley and explored the campus for 1.5 hours in order to find out what kind of barriers there are for people with limited mobility. Afterwards, each group gave a short presentation with photos and talked about the barriers. The exercise included going around at campus, taking the bus, going to the library, visiting the cafeteria and buying food and drinks.

Technical Visit IT IS DBKL

On 27th November 2018, a technical visit was organized to Kuala Lumpur City Hall's (DBKL) Integrated Transport Information System (ITIS) which is located at Bukit Jalil, Selangor. Dr.-Ing Masria Mustafa and Mrs. Nor Izzah Zainuddin accompanied Ao. Univ. Prof. Dr. Günter Emberger, Mr. Takeru Shibayama and Ms. Barbara for the visit. The team was welcomed by Mr. Steven (Deputy Director of ITIS, , DBKL) and his officials. A briefing on ITIS was presented by him too. ITIS is a design-build project which was funded by the Federal Government. The ITIS project was awarded in August 2002 and started operations since December 2005. It incorporates the latest technology in traffic management to manage traffic in and around the Klang Valley / Kuala Lumpur city area and has wide reaching applications that go beyond simply gathering information on traffic conditions. The main ITS services include Traffic and Incident Monitoring, Dissemination of Information, Incident Management

and Management of Computerized Traffic Light System. With over 1000 CCTV installed for crime monitoring, traffic monitoring and data collection together with 140 variable message signs (VMS) for information dissemination ITIS forms an efficient means of gathering, processing and disseminating information on traffic situations. Information processed from ITIS is then used to improve transport efficiency, road safety/traffic conditions, emergency response times and traffic incident management.

Malaysian Cities Exploration (Shah Alam, Kuala Lumpur, Penang Island)

In the course of the visit in Malaysia, three different cities/areas have been explored by the project team in order to get to know the urban fabric of Malaysian cities and current transportation solutions.

List of publications

Mustafa, M., Laa, B., Shibayama, T., Zainuddin, N. I., Muhammad Fadhlullah Ng, N., A. (2018). Future Sustainable Urban Mobility. Seminar Report. 29th November 2018. UiTM, Malaysia.

Photos



Figure 1: Presentation by Ao. Univ. Prof. Dr. Günter Emberger (©Masria Mustafa)



Figure 2: Group photo of the team taken at TU Wien (©Masria Mustafa)



Figure 3: Group photo with Malaysian Deputy Minister of Transport, YB Dato' Kamarudin Bin Jaffar (©UiTM)



Figure 4: Malaysian Deputy Minister of Transport, YB Dato' Kamarudin Bin Jaffar giving his keynote speech (©UiTM)



Figure 5: Group picture with speakers, Deputy Minister and the Dean of faculty of Civil Engineering, UiTM (©UiTM)



Figure 6: The participants (©UiTM)



Figure 7: The participants listening to the speech (©UiTM)



Figure 8: Introduction session with representative from Faculty of Civil Engineering, UiTM (©Masria Mustafa)



Figure 9: Internal workshop session on drafting EASTS conference paper (©Masria Mustafa)



Figure 10: Wheelchair exercise (©Barbara Laa)



Figure 11: The bus driver helping the student to get on board (©Barbara Laa)



Figure 12: Group photo with students after the lecture (©Masria Mustafa)



Figure 13: Tour of the traffic control centre (©Masria Mustafa)



Figure 14: Bus station in Shah Alam (©Barbara Laa)



Figure 15: Road in Kuala Lumpur (©Barbara Laa)



Figure 16: Road in Penang (©Barbara Laa)



Figure 17: Pedestrian/Cycle lane in Kuala Lumpur (©Barbara Laa)

Expected further results

During Phase 1 of the project, we worked on a joint paper on the history of transport policies in Malaysia that is going to be submitted to the EASTS conference 2019 (Deadline 15th March 2019) that will take place in September 2019 in Colombo, Sri Lanka.

Planned future activities

In Phase 2 of the project (project no. ASEA 2018/TU Wien/3), Malaysian researchers came to Vienna. More information on that activity can be found in the separate report for Phase 2. Additionally, we are working on a proposal for a future joint project regarding sustainable transport in Southeast Asia.

ASEA 2018/TU Wien/3

SMART TRANSPORTATION MOBILITY: STATE OF ART IN ASEAN AND AUSTRIA

Report Phase 2 – Visiting Vienna

Information on the participants

Name: Günter Emberger
Degree: Professor
University/Institute: TU Wien, Research Center of Transport Planning and Traffic Engineering
E-Mail: guenter.emberger@tuwien.ac.at
Short profile: Prof. Emberger studied Computer Science and Business Administration at the University of Vienna and has been working in the field of transport research since 1990. Today he is Ao. Univ. Professor and head of the Research Center of Transport Planning and Traffic Engineering at TU Wien. His research focus is on travel demand behaviour analyses, design and implementation of 4 stage transport models and strategic transport models on urban, regional and European level.

Name: Takeru Shibayama
Degree: MEng.
University/Institute: TU Wien, Research Center of Transport Planning and Traffic Engineering
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Short profile: Takeru Shibayama, MEng. studied civil engineering with focus on policy-making and transport planning at the University of Tokyo, with one-year exchange study in Vienna. Since 2011, he has been working for the Research Center of Transport Planning and Traffic Engineering as a scientific staff. He worked on various national and international research projects with topics such as mobility survey, ICT-based innovative measures, intercommunal and cross-border cooperation, railway-oriented settlement planning, and even on historical development of urban space.

Name: Barbara Laa
Degree: Dipl.-Ing.
University/Institute: TU Wien, Research Center of Transport Planning and Traffic Engineering
E-Mail: barbara.laa@tuwien.ac.at
Short profile: Barbara Laa studied Civil Engineering at TU Wien and INSA Lyon, France. Since 2018 she works as a teacher and researcher at the Research Center of Transport Planning and Traffic Engineering at TU Wien. Her research focus is transport modelling with System Dynamics.

Name: Masria Mustafa
Degree: Dr.-Ing., Associate Professor
University/Institute: UiTM, Faculty of Civil Engineering
E-Mail: masria@salam.uitm.edu.my
Short profile: Dr.-Ing. Masria Mustafa is presently an Associate Professor at Universiti Teknologi MARA. Her main areas of expertise are: Traffic Simulation and

Modeling, Traffic Operation and Control, Driver Behavior, Intelligent Transport System (ITS) and Advancement of Women in Transportation. She pursued her Master Degree in Transportation and Traffic Engineering at Chulalongkorn University and her PhD at Technical University of Munich, Germany.

Name: **Sorawit Narupiti**
Degree: Dr., Associate Professor
University/Institute: Chulalongkorn University, Department of Civil Engineering, Faculty of Civil Engineering
E-Mail: kong@chula.ac.th
Short profile: Dr Sorawit Narupiti is an Associate Professor of Transportation Engineering, with focus on Sustainable and Smart Mobility, Intelligent Transport System (ITS), Transport Policy and Strategies, and Traffic Engineering. He has involved with many advisory committees at government, research and private organizations. He serves as president/committee posts in many professional organizations. He obtained B.Eng. and M.Eng. at Chulalongkorn University and PhD in Civil Engineering (Transportation) at Michigan State University.

Name: **Zanariah Abd Rahman**
Degree: MEng.
University/Institute: UiTM, Faculty of Civil Engineering
E-Mail: zanariah@ppinang.uitm.edu.my
Short profile: Zanariah is currently a senior lecturer at Universiti Teknologi MARA (UiTM). She graduated from Universiti Teknologi Malaysia (UTM). Her Master Degree is in Highway and Transportation Engineering. Since 2008, she teaches in Faculty of Civil Engineering, UiTM and her research focus is on modeling and simulating passenger behavioral in rail transit station.

Introduction

The objective of the project “Smart Transportation Mobility: State of Art in ASEAN and Austria” is to bring together international researchers, transport leaders and professionals working on smart mobility issues in the ASEAN context, as well as to collaboratively learn and discuss current best practices, research needs and advances. The project is divided into two phases. The first phase took place in November 2018 when researchers from TU Wien paid a visit to Malaysia. Some of the activities in Malaysia included a seminar, internal workshops, a lecture and exercise for local students, a technical visit and exploration of Malaysian cities. On the second phase of the project, the activities were prepared and planned in November 2018. In line with the objective of the project, mobility is happening in February 2019 where South East Asia (SEA) team members visited Vienna. During that visit, the activities included a kick-off seminar, a city walk around Vienna and Seestadt, an internal workshop on conference paper for EASTS, a technical visit to OBB and Bratislava train station, a workshop on research plan (grant application and proposal submission), a guest lecture delivered in TU Wien by the Malaysian team member. These outputs are a strengthened relationship between TU Wien and UiTM and for another successful collaboration in knowledge exchange of smart mobility and common research project for the organization.

Activities

Preparatory Discussion

In November 2018, a meeting of the project team (including Günter Emberger, Takeru Shibayama, Barbara Laa and Masria Mustafa) took place in Malaysia. At the meeting, UiTM shared their research

competencies and the team prepared and planned the activities that will be happening in Vienna for the second phase of the project. Therefore, the mobility happened in February 2019 where the SEA team visited Vienna.

Visit to Vienna

In February 2019, the SEA team visited Vienna. Assoc. Prof. Dr. Sorawit Narupiti stayed for one week from 24th February until 3rd March 2019 and Assoc. Prof. Dr.-Ing Masria Mustafa with Zanariah Abd Rahman stayed for two weeks from 24th February until 9th March 2019. The activities that took place during the visit are described in more detail in the following sections.

Kick-Off Seminar

On 25th February 2019, a kick-off seminar took place in TU Wien. The purpose was to share on the future sustainable urban mobility that can be accomplished, with a focus between the city of Vienna and South East Asian cities. Three research presentations were presented which were by Prof. Günter Emberger from TU Wien (Austria), Assoc. Prof. Dr.-Ing. Masria Mustafa from UiTM (Malaysia) and Assoc. Prof. Dr. Sorawit Narupiti from Chulalongkorn University (Thailand). In addition to the presentation, an interactive sharing session was conducted between all participants and the progress of the project in phase 2 were formally presented so that everyone has a common understanding of their challenges and solutions towards sustainability.

City Walk in Vienna and Seestadt

The SEA team together with TU Wien team member explored the city of Vienna and the new urban development project in Seestadt. The exploration was done by walking in the city area of Vienna and commuting by train to Seestadt. During the exploration, many discussions and ideas were exchanged especially on the key issues and questions of urban mobility plan in Vienna and how the city and the community was impacted by the redesigned of the street and transformation into shared space and pedestrian zone street.

Internal Workshop

Based from the internal workshop conducted in November 2018 in Malaysia, an internal workshop was carried out to finalize the structures and content of the joint paper that will be submitted to EASTS (East Asian Society for Transportation Studies) conference that will take place in September 2019 in Colombo, Sri Lanka.

Technical Visit to OBB and Bratislava Train Station

A technical visit was organized to OBB and Bratislava train station. OBB is the national railway system of Austria and the organization manages the infrastructures and operation of passengers and freight services in Austria. The team was welcomed by Mr. Robert Frittm (Deputy Director for Emergency Management) and a short briefing was presented by him on the structure of OBB, the corporate services, infrastructures, operation and system. The team was later brought to visit the dispatching area where the signalling man works in modern operations of OBB operational system. Continued the field trip to Bratislava train station in Slovakia, the team was then discussed on which requirement that would convince the future passengers to fully utilize on the use of public transportation either for a short distance travel or for a long distance travel and convey the possibility economically effective.

Workshop on Research Plan and Future Collaboration

The overall purpose of the workshop was to aim in improving the effectiveness of collaborative research between Austria and ASEAN countries. Therefore, the team had a fruitful discussion on

identifying a possible and suitable research grant funding, future collaborators and were able to draft a proposal in order to submit the application according to the dateline.

Public Lecture at TU Wien

TU Wien organized a public lecture and Assoc. Prof. Dr.-Ing Masria Mustafa from UiTM (Malaysia) was appointed as a guest lecture to deliver the lecture. The lecture was open to all interested persons and the topic was “Mobility in Malaysia and its Challenge of Today”. Many participants came and benefited from the lecture as the topic covers on the challenges of Malaysia in overall usage of public transportation, the plan in first-last mile connectivity, shifting from auto to non-motorized transport and in policies implementations.

List of publications

Mustafa, M., Rahman, Z., Shibayama, T., Laa, B., Emberger, G. (2019). National Transport Policy in Malaysia – from the time of independence until today. Submitted to EASTS Conference 2019, now under peer-review process

Photos



Figure 1: Opening remarks from Barbara Laa during the kick-off seminar (©Amphai Wejwithan)



Figure 2: Presentation by Prof. Günter Emberger, (TU Wien, Austria) (©Amphai Wejwithan)



Figure 3: Presentation by Assoc. Prof. Dr. Sorawit Narupiti (Chulalongkorn University, Thailand) (©Amphai Wejwithan)



Figure 4: Presentation by Assoc. Prof. Dr.-Ing. Masria Mustafa (Universiti Teknologi MARA, Malaysia) (©Zanariah Rahman)



Figure 5: The participants during the kick-off seminar research presentation (©Amphai Wejwithan)



Figure 6: Group photo with the team at FVV Institute, TU Wien (©Amphai Wejwithan)



Figure 7: City walk around Vienna (shared space and pedestrian zone) (©Amphai Wejwithan)



Figure 8: Field trip to the new township in Seestadt (©Zanariah Rahman)



Figure 9: Internal workshop session to finalize a joint paper for EASTS conference (©Zanariah Rahman)



Figure 10: Technical visit to OBB, the national railway system of Austria (©Zanariah Rahman)



Figure 11: A visit into the OBB dispatching area
(©Zanariah Rahman)



Figure 12: A signalling man monitor and manage deviations of train (©Zanariah Rahman)



Figure 13: Field trip to Bratislava train station using the City Shuttle Train (©Zanariah Rahman)



Figure 14: Arrived at the Bratislava train station
(©Sorawit Narupiti)



Figure 15: Workshop for research grant funding application (©Masria Mustafa)



Figure 16: Group photo with potential collaborator from Università Iuav di Venezia (©Zanariah Rahman)



Figure 17: Public lecture delivered by Assoc. Prof. Dr.-Ing. Masria Mustafa (©Zanariah Rahman)

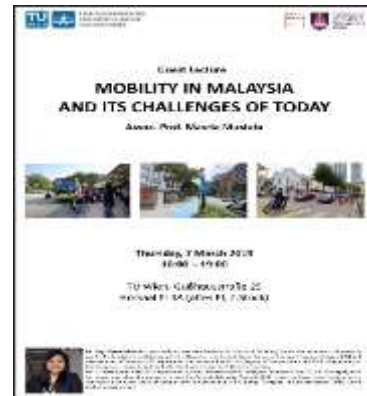


Figure 18: Poster announcing the guest lecture held on 7 March 2019 (©Barbara Laa)



Figure 15: A short visit to the office of Prof. DI. Dr. Ronald Blab, Dean of Faculty of Civil Engineering, TU Wien (©Zanariah Rahman)



Figure 16: A meeting with the Malaysian Ambassador, Dato Ganeson Sivagurunathan (©Zanariah Rahman)



Figure 17: A short visit to meet Martina Rahberger, Head Regional Office Vienna for OeAD (©Zanariah Rahman)



Figure 18: A short visit to meet Niina Maarit Novak, Senior Project Manager for ASEA-UNINET Head Office, Vienna (©Zanariah Rahman)

Expected further results

During Phase 2 of the project, we finalized on a joint paper on the history of transport policies in Malaysia that was submitted to the EASTS conference 2019 that will take place in September 2019 in Colombo, Sri Lanka. Other than that, we drafted a proposal for a research grant funding application that will be submitted to MSCA – RISE 2019 programme funded under Marie Skłodowska-Curie Actions with an addition of a new potential collaborators.

Planned future activities

A short visit to the office of Prof. DI. Dr. Ronald Blab, Dean of Faculty of Civil Engineering, TU Wien was made to discuss on a future collaboration in other subject in civil engineering expertise. Other than that, the Malaysian team had a meeting with the Malaysian Ambassador, Dato' Ganeson Sivagurunathan in the Malaysian Embassy's office in Vienna, Austria. The meeting highlighted the visibility of research collaboration between UiTM (Malaysia) and TU Wien (Austria) through Austrian-South-East Asian Academic University Network (ASEA-UNINET) programme. This strengthens the diplomatic relationship between Malaysia and Austria with more ASEA UNINET activities to extend cooperation and collaboration that already in discussion.

Head in the Clouds – Digital Learning in Indonesia

Project partners:



Dr. Ir. Inggriani Liem joined ITB as a lecturer in 1978. She has been participating in the development of the Informatics department in 1981, the first informatics study program in Indonesia. She received her bachelor degree from ITB in the field of Engineering Physics. Then she pursued her study in France, for DESS Informatique Double Compétence from Université Grenoble I France and DEA from Institute National Polytechnique de Grenoble. She obtained her Docteur en Informatique from Université Joseph Fourier, Grenoble, France with specialization in Programming Pedagogy. After returning from her study from France, she joined the ITB Data and Software Engineering Research Group, School of Electrical Engineering and Informatics. She was assigned by ITB as the advisor to Del Institute of Technology, Balige, Sumatera during its initiation phase, and she was Director of the school from 2007 until 2011. Her research interest is in the field of pedagogy programming and the development of the platform and tools for automated grading for programming assignment and competition. She is one of the members of coaches and judges for the Indonesian Olympiad in Informatics (IO) since 2004 until now, preparing high school students for national selection and IOI. She was also coaching and advising the Bandung Institute of Technology's team for ACM-ICPC International Collegiate Programming Contest between 2012-2013. She is now the leader of Bebras Indonesia NBO, and part of the team who develops the K-12 Indonesian informatics curriculum. © Inggriani Liem, ITB (Institut Teknologi Bandung), Indonesia



Dipl. Ing. Niina Maarit Novak, MSc BSc joined the Vienna University of Technology (TU Wien) as Research Assistant in 2015 and the Linked Data Lab of TU Wien in 2017. She received her Dipl. Ing. from the University of Vienna in Business Informatics with a specialization in business intelligence. Previously she received a Master degree in International Business Administration from the University of Vienna with a specialization in innovation management and spent one semester at the Concordia Universities, John Molson School of Business in Montréal, Canada. Her current research topics are located at the intersection of economy, society and computer science, focusing on sustainability, digitalization and business intelligence. She edited three books and co-authored more than 15 papers in refereed venues. Besides working as a researcher at the Vienna University of Technology, Ms. Novak is also working as Assistant to the executive board and senior project manager for the ASEAN-European Academic University Network (ASEA-UNINET) since 2015. In this function, she coordinates more than 100 research project and scholarship applications on an annual basis, with a special focus on internationalization in research as well as knowledge and technology transfer between the 85 ASEA-UNINET member universities from Europe and Southeast Asia. © Niina Novak, TU Wien (Vienna University of Technology), Austria



Dr.techn. Fajar J. Ekaputra, S.T., M.T., is a Postdoctoral researcher at TU Wien. His research focuses on Semantic Web Technologies for data integration and knowledge change management in several application domains, including Industrie 4.0, Personal Data Management, and Smart City. During his time in TU Wien, he took part in implementing both practical and research use cases for industry partners in several domains. Concretely, he was involved in developing analytic and management tools for AutomationML models and building a common concept ontology for a Hydro Power Plant production system as part of the CDL-

Flex project in the Automation System Engineering domain. He was recently leading the development of the STAR project prototype, where he designed and integrated semantic search capabilities for software architectural knowledge in a large organization. He co-authored 5 book chapters and more than 25 papers in refereed venues out of which 2 won best paper awards. One of his recent publication in the area of knowledge change management was selected as one of the best paper nominations. He is actively involved in research communities as a scientific reviewer for several international conferences and workshops, e.g., ISWC, SEMANTiCS, IFAC, ICoDSE, and BigScholar.

© Fajar Ekaputra, TU Wien (Vienna University of Technology), Austria

Background:

From 2015-2018 the Vienna University of Technology, together with six partners from five European countries, implemented a strategic partnership targeting ICTs in education entitled “Head in the Clouds – Digital Learning to overcome School Failure” (see also <https://brainsinthecLOUDS.eu/>). This project dealt with the prevention of early school leaving, the development of basic and transversal skills and the enhancement of digital literacy and education, primarily targeting children from families with minority backgrounds. In the frame of the Head in the Clouds project, the researchers developed a total of six educational modules, following the MINIMAX Approach (Minimal teacher invasion, Maximum learner autonomy), originally inspired by Sugata Mitra’s SOLE approach (Self-Organized Learning Environments) and constructionist learning theory, both supporting an individual learning process according to a student’s abilities, needs and interests.

Project Initiation and planning:

During a visit from Prof. Inggriani Liem (ITB) to the Vienna University of Technology’s Institute of Information Systems Engineering in 2017, Dipl.-Ing. Niina Novak, MSc (TU Wien) who was leading the three-year Head in the Clouds project introduced Prof. Liem to the project, the alternative educational MINIMAX approach and the developed educational modules. As a result, of this initial meeting, Prof. Liem, Dipl.-Ing. Novak and Dr. Ekaputra (TU Wien) developed a plan to implement a selection of the educational modules (e.g. English, EKOPOLIS, IT 101 and Programming Module) with students of different school levels in different locations in Indonesia and to furthermore introduce and train local teachers and researchers in this alternative educational approach and the use of the developed educational modules.

The planned training and implementation in Indonesia is crucial as Prof. Liem is currently working in a team with colleagues from leading universities in Indonesia, including ASEA-UNINET members: UI, IPB and ITS, for "Puskurbuk" with the purpose of developing a new IT and Informatics curriculum for all levels of school (preschool, elementary school, middle school, high school). "Puskurbuk" is short for "Pusat Kurikulum dan Perbukuan", which is the "Center of Curriculum development and books" of the Indonesian Ministry of Education. Noting that the current focus of this team lies on designing implementation methods, the developed educational modules of the Head in the Clouds project are perfectly in line with the team's work on Informatics curriculum improvement in Indonesia and will thus contribute to the improved implementation model for villages outside Java, and other areas of Indonesia in the following years.

Project implementation:

The project implementation in Indonesia took place from March 21st to 31st, 2019, with workshops and seminars in three different cities: Bandung, Jakarta and Balige and over 300 teachers, researchers, children and youth in attendance.

On Monday March 25th, 2019 the first seminar for teachers and researchers took place at ITB Bandung. The morning seminar was split into two parts "Introduction to new Informatics Curricula in Indonesia" by Prof. Liem and "Introduction to Head in the Clouds Project" by Dipl.-Ing. Novak. During the presentation Dipl.-Ing. Novak focused especially on the characteristics and implementation setting of the developed educational MINIMAX approach, the content and background of the individual learning modules and shared a lot of first hand experiences and lessons learned from the implementation of the modules in different locations across Europe. In the afternoon, the participants at ITB had the possibility to experience and work with three of the educational modules: EKOPOLIS, IT 101 and Programming in the frame of a workshop. During the workshop, the participants also got to know, some of the devices and materials used within the boxes including the educational board game EKOPOLIS, focusing on environmental education and awareness raising for issues related to sustainability, the "Ozobot" robots and MaKey MaKey boards.



Head in the Clouds Seminar participants at ITB in Bandung



Head in the Clouds Workshop at ITB: EKOPOLIS Module



Head in the Clouds Workshop at ITB:
Programming Module (MaKey MaKey)



Head in the Clouds Workshop at ITB:
IT 101 Module & Programming Module (Ozobots)

On Tuesday March 26th, Prof. Liem, Dipl.-Ing. Novak and Dr. Ekaputra travelled to Jakarta by train to hold a four hours seminar at the "Center of Curriculum development and books" of the Indonesian Ministry of Education ("Puskurbuk"). The seminar was again split into three parts, (1) the introduction to the new informatics curricula in Indonesia. (2) Presentation of the Head in the Clouds project and educational approach as an example of how computer science can be also taught in a non-traditional school setting and in a student-centred approach and (3) experiencing the Head in the Clouds educational modules.



Seminar on new Indonesian Informatics Curriculum and Head in the Clouds Project in Jakarta, Indonesia
(Left picture: Speakers, Right picture: Seminar participants)



Participants of the Seminar at the Center of Curriculum development and books,
Indonesian Ministry of Education in Jakarta, Indonesia

On Wednesday March 27th, Prof. Liem, Dipl.-Ing. Novak and Dr. Ekaputra travelled to Balige, Sumatra, Indonesia. In the afternoon Dipl.-Ing. Novak and Dr. Ekaputra gave a guest lecture on the topic of “Studying in Austria” and “Introduction to Semantic” web for senior students of IT Del, in Balige. On Thursday March 28th, Prof. Liem, Dipl.-Ing. Novak and Dr. Ekaputra introduced the teachers of IT Del and surrounding schools to the new informatics curricula in Indonesia and the Head in the Clouds project. The presentation of the Head in the Clouds project was bilingual in Bahasa Indonesia and English language.



Participants of the Seminar for Teachers at IT Del in Balige, Indonesia

On Friday March 29th, in total three consecutive workshops took place all introducing selected modules of the Head in the Clouds project (EKOPOLIS, IT 101, Programming and English) including devices such as Raspberry Pis, Ozobots, the EKOPOLIS board game and MaKey MaKey boards. The first one was exclusively designed for teachers of IT DEL and surrounding schools. The second workshop, was designed for elementary school students and in the third workshop junior and high school students participated. Notably teachers were given the opportunity to observe how the kids interact and work with the modules during the second and third workshop-round.



Head in the Clouds Workshop for teachers at IT DEL: EKOPOLIS Module



Workshop for elementary school students with teachers observing - Programming Module (Ozobots)



Workshop for elementary school students at IT DEL: IT 101 & Programming Module (MaKey, Makey)



Workshop for elementary school students at IT DEL: EKOPOLIS Module



Participants of the Workshop for Junior and Senior High School students at IT Del in Balige, Indonesia



Workshop for junior and senior high school students at IT DEL: Work with the IT 101 & Programming Module (Raspberry Pis, MaKey Makey, Ozobots and presentation of the tasks of the English Module)



Head in the Clouds workshop participants and student volunteers from IT Del, Balige, Indonesia

*© of all photos, unless otherwise stated:
Vienna University of Technology (TU Wien), Austria
Niina Novak*

Outlook and further plans:

Based on the very positive feedback of participating teachers and students. The Indonesian partners are currently working on the translation of selected tasks of several of the educational modules, which are available as Open Educational Resources (OER) and plan to make them available across Indonesia. In addition, the Indonesian partners are planning to develop a local version of the EKOPOLIS board game for environmental education. The project partners from TU Wien will support with consultation services in the development and translation of the educational modules. Moreover, the implementation of the developed educational materials in a different location in Sanga-Sanga (Borneo, Indonesia), as well as additional seminars and workshops for training teachers and youth workers is envisioned.

Sustainable Hygiene Concept as a mandatory conservation aspect for people, paintings on paper and drawings and the buildings of Museum Affandi

Experts involved

Herbig, Ulrike, DI Dr, TU Wien, Institute for History of Art, Building Archaeology and Restoration.
herbig@tuwien.ac.at.

Dr. Ulrike Herbig is Senior Scientists at the Faculty of Architecture and Planning at TU Wien and in charge for the coordination and support of research projects, as well as for international affairs at the faculty. Dr. Herbig studied geodesy and has a research interest in the interdisciplinary recording, documentation and analysis of the built environment.

Ikaputra, Dr M.Eng., Universitas Gadjah Mada, ikaputra_2001@yahoo.com,

Dr. Ikaputra studied at the Gadjah Mada University (UGM), Yogyakarta, Indonesia and at the Osaka University, Japan. He works as the program director for architecture at the Faculty for Architecture and Planning at UGM. His research interest are city and environmental planning, cultural heritage and building for disaster.

Engel, Patricia, Dr habil, Donau Universität Krems , European Research Centre for Book and paper Conservation-Restoration, Patricia.engel@donau-uni.ac.at,

Dr Engel holds a habilitation in paper conservation and restoration from the University of Fine Arts Warsaw, Poland. She is working as the head of the European Research Centre for Book and Paper Conservation-Restoration in the Department for Building and Environment at the University for Continuing Education, Krems, Austria. Dr. Engels research is focused on the conservation and restoration of historic books and artwork on paper.

Grandits, Doris, Dipl.-Ing., Institut für Kunstgeschichte, Bauforschung und Denkmalpflege, Department für Denkmalpflege, Doris.grandits@tuwien.ac.at,

Doris Grandits completed her Master in architecture in 2016 and works now at an assistant at the Department for restoration at the Institute for History of Art, Building Archaeology and Restoration at TU Wien. In her young research career she focused restoration and design within existing structures, as well as on the surveying of buildings with laser scanning.

Stampfer, Lukas, Dipl.-Ing., Institut für Kunstgeschichte, Bauforschung und Denkmalpflege, Department für Baugeschichte und Bauforschung, Lukas.stampfer@tuwien.ac.at,

Lukas Stampfer is completed his Master thesis on earthen buildings in northern European regions at the Department for History of Architecture and Building Archaeology. Already during his studies he gained in depth expertise in the architectural survey using laser scanning and has been involved in different projects on the recording and documentation of historic and contemporary buildings in Europe and Asia.

Report

The interrelation of restoration and preservation of the art and architecture of the Museum Affandi in Yogyakarta has been topic of two preliminary research projects within the frame of the ASEA Unmet. After the documentation of the buildings and the art work on paper the concepts of short and long-term measures have been outlined and are under development. Still some particularities have not been studied in detail so far. One of those is the threat by pests which can harm both the art as well as the architecture the Museum Affandi.

Several biological hazards were identified: rodents, termites, moulds. Whereas there are a number of measures used to reduce or even prevent the threats most of them are also dangerous for humans. Brief information on traditional less harmful measures could be gathered with the frame of the preliminary projects at the Museum Affandi, but there are no comprehensive systematic surveys about traditional Indonesian available so far.

Still, there is a growing literature on traditional plant disinfection in Asia and South America, many of those based on traditional knowledge. (Before they are gone expanded: Capturing traditional textile presentation knowledge in Southeast Asia and Latin America, Julia M Brennan presented at ICOM CC Copenhagen 2017; Mould on Books and Graphic Arts -A Report on Latest Research Results, Boudalis etc al ed. Berger Horn, 2016; Traditional Preventive Conservation of Paper in India, Patil Ashish and Singh Neelam in ERC Newsletter 1/2015 pp. 2-7, etc.) Even if the problem is the same in many places approaches differ and are very much depending on local environment, local plants and the species of the pests.

Measures for controlling vermin appear to mostly be based on poisonous substances that are not only possibly unhealthy to humans, for instance visitors and staff of the museum, but are also unclear in their reaction with artwork, possibly destroying valuable and irretrievable paintings and sculptures. Therefore a search for traditional and therefore hopefully natural and less harmful methods of dealing with these threats was appointed the main focus of this project.

Discussions about the topic started within the frame of meetings with colleagues at UGM. As the restoration of wooden architecture is not a core topic within the curricula of the faculty of architecture information of the topic was limited. Still some personal remarks have been given. State of the art is the use of chemicals, accepting the negative impact inhabitants, animals, but also on the constructions. As described pesticides used in the moment are change the character of the wood in color and surface. Most people state that they remember traditional methods, but not in detail.

Leadoff discussions on the subject with local contacts reaffirmed the impression, that traditional methods are barely or not at all at use today and the go-to approach now is the use of toxic agents. In conversation with Dr. Ikaputra from the Architecture department of Gadjah Mada University in Yogyakarta (UGM) it was possible to gather some first hand insights on common practice in the case of dealing with termites in wooden buildings. With his private home being recently exterminated he was able to share side effects like continuous headaches throughout the family possibly being caused by the toxins at use.

To gather ideas of possible alternative approaches it was fortunately possible to visit the compound of Mr. Dimas Faosi. With him being a well-known salesman for traditional Javanese Joglo- and Limasan-buildings, he was already consulted during last years project on reuse and translocation of traditional architecture. Learning from him that an infusion of cloves and optionally tobacco sprayed on wood was used in earlier times to hold off as well as exterminate termites a series of test was planned. Infusions with different concentrations as well as clove oil have been prepared to be tested on termite-infested wood. Within the premises of Mrs. Kartika Affandi and her collection of traditional buildings several affected areas could be identified. Through her kind hospitality these were made accessible as testing grounds for the fresh brewed infusions as well as several pieces of waste wood with termites were placed within disposal to be used for an experimental series.

During an observation time of 20 days different affected areas have been treated with clove water and showed some effect. For a long time test representatives of the Affandi family have been introduced in the treatment procedure and continued the test after the stay of the TU Wien team.

With this approach another very interesting cooperation with the renowned institution Balai Konservasi Borobudur (Borobudur Conservation Center) could be established. In 1991 this institution has been established under the name the Borobudur Study and Conservation Center and focussed on the restoration of the Borobudur temple. Today the Borobudur Conservation Center is the institution for conservation and restoration of cultural heritage throughout Indonesia in addition to handling the World Heritage of the Borobudur Temple. The use of traditional approaches for the restoration of wooden constructions is a part of the center which is in development. In this way the request for discussion was appreciated and will be the base for further collaborative activities in the future. Aside of the monument preservation representatives of the center are also interested in the restoration, preservation and management of archive materials in paper, celluloid and historic photographs. In 2017 the Borobudur Conservation Archives containing material documenting the history of the restoration of the Borobudur since the beginning of the endeavours have been enlisted in the UNESCO Memory of the World Register. But the material needs urgent maintenance, thus the interest with the on-going project of the integrated restoration and conservation of art and architecture of the Affandi museum aroused great interest. Discussions about similar project at the Borobudur Conservation Center have been discussed can be the base for further endeavours for integrative restoration and conservation measures in the next years.

Aside of the main project the time could also be used to continue a long-term research project on the recording and documentation of the temples around Yogyakarta. This project established in 2011 by Prof. Erich Lehner and intensified last year within the frame of a joint course of students of UGM and TU Wien. Within the frame of this joint workshop 12 temples around Yogyakarta could be surveyed using 3D laser scanners and photogrammetric methods. This year the aim was to complete the recordings of last years measurements

With the help of drone photography a variety of 6 temples within the special region of Yogyakarta where surveyed to then be processed into 3D models with photogrammetry software Agisoft Photoscan. As in previous years laser scanning as well as hand-held photography and photogrammetry was used to assemble a three-dimensional model of these temples, the use of these drones could now help to increase coverage, especially in the otherwise inaccessible higher levels and roof areas. A local drone pilot was hired to collect the pictures under guidance of members of TU Wien while at the same time a closed traverse was laid out between ground targets to assure the ability to later scale the model to its correct proportions.

The temples documented using this method included Candi Sari, Candi Kalasan, Candi Ijo as well as Candi Banyunibo. To test the efficiency of the method Candi Sari was already processed on spot and combined with the laserscan-model measured in 2016 after documenting Museum Affandi and showed very promising results in combining these two methods. Especially in the use of both tools the advantages of each of them could be brought to use best. While laserscan allows higher precision and easier documentation of interior spaces in connection with the exterior, the photogrammetry using a drone gave access to areas the laser scanner could not see and also increased density of the model in less time. Not only was the closed traverse used to scale the model, but with the combination of the two mentioned methods, the point cloud of the laserscan could be used to scale the data from photogrammetry to a perfect fit.

In addition to the described activities severe earthquakes that hit Lombok before and during the stay of the team influenced the work.

Representatives of the faculty of architecture and planning of UGM got involved in the first relief and reconstruction efforts. Dr. Ikaputra of UGM contacted the team of TU Wien to possibly assist with the documentation of buildings worth preserving. Within one specific case a row of buildings already suffered the collapse of two out of five buildings and documentation could help the reconstruction at a later time. With time being limited and the risks of travelling to an area of natural disaster it was decided that instead of a personal assistance with limited coverage focus should be put on establishing a manual for the use of photogrammetry by any layperson. The idea was to allow anyone with a camera and measuring tape that is already on site collecting data that can later be processed by professionals, possibly by TU Wien, to 3D-models or plans of buildings at risk.



Figure 1: Infusion prepared for the test. Left: Preparation, middle: after one day; right after 2 days © Ulrike Herbig, 2018-12-21



Figure2: Test series at Omahe Kartika in Pakem, © Ulrike Herbig, 2018-12-21

Results expected from described work in Indonesia are expected to be:

- Traditional / natural methods of pest control as they are known by local craftsmen and exterminators
- Information on the efficiency of different ways of using traditional methods as knowledge on recipes and means of use appear unclear / lost
- New Collaboration possibilities with the Balai Konservasi Borobudur (Borobudur Conservation Center)
- The base for the layout for curricula of integrated methods in restoration and preservation at universities for art as well as for architecture
- 3D models on 6 temple buildings in the Special Region of Yogyakarta or additional data to complete such completion of plan material of temples measured in recent years and previous projects
- Enlargement of the cooperation with Balai Pelestarian Cagar Budaya DIY
- Booklet on how to collect photogrammetric data by a layperson and processed by professionals to be used in areas of natural disasters with measuring devices such as laser scanners as well as researchers operating them unavailable

Results of the described will be the base for further collaborative activities. The aim is to apply for the funds to develop curricula introducing integrated methods for the restoration of art and architecture at university level and to develop an outline for trainings within this frame.

In addition to that a maintenance system will be developed to provide a base for a sustainable management of art and artwork at museums under challenging conditions.

Furthermore the work of recording of temples will be continued with the aim to establish a monitoring system for this part of the cultural heritage.

The unexpected involvement in the relief operations after the earthquakes will be used to continue the work already started within the frame of a FWF funded project (ASSIP Architecture, Space and Society in Post disaster Built Environments in Indonesia) and will be also an part of the efforts to apply for a FWF Special Research project on the Transformation of Traditional Architecture in Indonesia.

Transformation of Traditional Architecture for a Sustainable Development in Flores, Indonesia

Participating Researchers:

On Site:

Herbig, Ulrike, DI Dr, TU Wien, Institute for History of Art, Building Archaeology and Restoration.
herbig@tuwien.ac.at.

Dr. Ulrike Herbig is Senior Scientists at the Faculty of Architecture and Planning at TU Wien and in charge for the coordination and support of research projects, as well as for international affairs at the faculty. Dr. Herbig studied geodesy and has a research interest in the interdisciplinary recording, documentation and analysis of the built environment.

Doubrawa, Irene, Dipl.-Ing., Institut für Kunstgeschichte, Bauforschung und Denkmalpflege, Department für Baugeschichte; irene.doubrawa@tuwien.ac.at

Dipl.-Ing. Doubrawa studied architecture at the TU Wien, where she is now working as university lecturer at the Department for the History of Architecture and Building Research at the Institute for History of Art, Building Archaeology and Restoration. She has conducted research in the region from 2009-2012 and is currently completing her PhD on a topic dealing with the vernacular architecture of Flores.

Lechner, Christine, Mag. Dipl.-Ing., Institut für Kunstgeschichte, Bauforschung und Denkmalpflege, Department für Baugeschichte; christine.lechner@tuwien.ac.at

Christine Lechner studied International Business Administration at the University of Vienna and the University of Illinois. She was educated in architecture at the TU Wien, where she is now working as university lecturer at the Department for the History of Architecture and Building Research at the Institute for History of Art, Building Archaeology and Restoration. Her research focus is on traditional and contemporary earth architecture and several economic issues in the building industry.

Adhisakti, Laretna Trisnantari, Dr. Eng. Ir., M.Arch., Jurusan Teknik Arsitektur dan Perencanaan Fakultas Teknik Universitas Gadjah Mada (UGM); laretna@ugm.ac.id

Dr. Adishakti received an engineering degree from Gadjah Mada University in her native Yogyakarta (1982), a master's in architecture from the University of Wisconsin (USA, 1988) and a doctorate in engineering from Japan's Kyoto University (1997). Employed as a lecturer in several disciplines at Gadjah Mada University since 1983, with a focus on heritage conservation. She is engaged in the Indonesian heritage, a member of UNESCO-ICCROM's Asian Academy for Heritage Management and of the International Council on Monuments and Sites.

Hadi Rahmi, Dwita, Dr. Ir., M.A., Jurusan Teknik Arsitektur dan Perencanaan Fakultas Teknik Universitas Gadjah Mada (UGM); dwitahr@ugm.ac.id

Dr Hadi Rahmi completed her Master Degree in Geography at Department of Geography, Faculty of Environmental Studies, University of Waterloo, Waterloo, Canada. With the work on her PhD thesis in Environmental studies at the Universitas Gadjah Mada she focused on the research of cultural landscapes. Working at the department of Architecture and Planning at the UGM she is highly involved in research concerning the preservation and sustainable development of cultural landscapes.

Drake, Campbell, BArch MArch PhD, Faculty of Design, Architecture & Building; University of Technology Sydney; campbell.drake@uts.edu.au

Educated in Australia and the UK, Campbell Drake is an architect, researcher and a senior lecturer in the School of Design. His research is focused on intercultural creative practice and participatory design strategies for sustainable development within regional contexts. Campbell is the co-founder of Regional Associates, an

architecture practice specialising in sustainable eco tourism development in environmentally sensitive locations.

In preparation:

Ikaputra, , Dr M.Eng., Universitas Gadjah Mada, ikaputra_2001@yahoo.com,

Dr. Ikaputra studied at the Gadjah Mada University (UGM), Yogyakarta, Indonesia and at the Osaka University, Japan. He works as the program director for architecture at the Faculty for Architecture and Planning at UGM. His research interest are city and environmental planning, cultural heritage and building for disaster.

Pont, Ulrich, Dipl.-Ing. Dr, Institut für Architekturwissenschaften, Department für Bauphysik und Bauökologie; ulrich.pont@tuwien.ac.at,

Dr. Pont studied architecture at the TU Wien, where he is now working as assistant professor at the Department for Building Physics and Building ecology at the Institute for Architectural Science. His main research interests are the recording and analysis of building performance, and the retrofitting of buildings to improve their indoor environment.

Erb, Maribeth, Associate professor, Department of Sociology, National University of Singapore,

Maribeth Erb joined the Department of Sociology in 1989. She had taught for a year in the Department of Anthropology at the State University of New York at Stony Brook after finishing her Ph.D. there, before coming to Singapore. Her research for her Ph.D. was on Kinship and Ritual among the people of Manggarai in Western Flores, Eastern Indonesia. She has continued to pursue research in Western Flores over the years. When the villagers of one old village in Manggarai decided to rebuilt their traditional house for tourism purposes, she was asked to help in researching out the history and symbolism of this house. Since then she has been interested in the influence that growing tourism has had on Manggaraian culture.

Report:

The UGM of Yogyakarta, UNIVIE and TU Wien (Department for the History of Architecture and Building Research at the Institute for History of Art, Building Archaeology and Restoration) have been working together on traditional architecture in Indonesia since 2004 and have conducted successful projects studying the changes of architecture, space and society after the earthquakes in 2004, 2005 and 2006 and held joint workshops on the recording and analysis of architecture in Indonesia since then.

The current project, Transformation of Traditional Architecture for a Sustainable Development in Flores, Indonesia, is focusing on the island of Flores (Eastern Indonesia), especially on Labuan Bajo, a small town that is situated on the western edge of the island and is known as the starting point of visits to the Komodo National Park. Vernacular architecture on Flores demonstrates a broad variety of styles by different ethnic groups. On Flores, architectural heritage in different states of preservation and transformation coexists.

In 2016 the government of President Joko Widodo started a plan to focus on ten tourist destinations away from the Island of Bali. Such development is envisaged to attract around 500,000 tourists by 2019, up from the 54,147 tourists that visited Labuan Bajo in full-year 2013. In 2016 the Komodo national park welcomed already 107,000 visitors and the numbers are rising, whereas it is doubtful that the numbers promoted by the government for 2019 can be reached. With this development the population is facing a number of problems, with the massive growing numbers of constructions being one of them. This development makes it even more important to document architectural traditions and at the same time provide knowledge to communities for a positive transformation process. The main interest of tourists visiting the island, especially Labuan Bajo, is scuba diving and a tour to see the Komodo dragon, a species of lizard.

The townscape of Labuan Bajo and the neighbouring settlements is changing, with a high number of hotels being built without any overall concept altering the face of the area. Just a small

number of locals in integrated in the process, as investments are coming from other parts of Indonesia or from abroad using also manpower from other areas in construction and also later on hospitality service. There is a growing need to empower the local population to show their skills and also their identity.



Fig. 2: Construction site of an international 5 stars hotel
© Ulrike Herbig, 2018



Fig. 3: Building mix in Labuan Bajo
© Christine Lechner, 2018

The goal of the research project was to provide knowledge to local communities for a deeper understanding of the traditional concepts in order to enable a self-determined and positive transformation process in the development of contemporary architectural concepts, including the reflection of various traditions including gender and gender roles. The project work was done in an interdisciplinary collaboration of architects, planners and social and cultural anthropologists from Asia and Europe tackling issues und architecture and planning in combining views from the perspective of different cultural backgrounds and levels of experience.



Fig. 3: Traditional Bugis stilt house
© Christine Lechner, 2018



Fig. 4: Women meeting for working collaboratively
© Christine Lechner, 2018

Research was mainly done in the town of Labuan Bajo, including influencing factors from other parts of Flores, respectively Indonesia. The research team was focusing on a previous project, in which the idea of creating a “Flores Friendly” label was developed. This label should include all live aspects. In terms of cultural heritage it should give recommendations how to design architecture based on traditional concepts and how to strengthen and respect the heritage. All research done on-site was taking that labelling into account.

One research activity was concentrating on two selected kampungs (villages) in the centre of Labuan Bajo, situated right beside the sea and therefore a very interesting and sensitive area in

terms of tourism development. The first international hotels and restaurants are being built in the area, not necessarily respecting the traditional building style and therefore changing the face of the kampungs significantly. The villages are mainly inhabited by Bugis people, an Islamic fishermen ethnic originally from Sulawesi. Research has shown that traditional Bugis houses can still be found in different states and conditions in the kampungs of Labuan Bajo. Moreover the case studies left no doubt about the importance of traditional architecture for the Bugis as it is considered to be one of the last remaining identification symbols for this ethnic group. Therefore one of the main goals is to develop different approaches to keep the vernacular architecture alive by involving the local communities, especially making sure to incorporate the knowledge and traditions of the female population, as they are very strong in keeping the communities together. In terms of a “Flores Friendly” label, it would be a great opportunity for the kampungs to increase the interest on local heritage-based tourism and it would help them to keep their traditions alive. The label would not only ensure to remain the Bugis building, but also to pass on traditional dances, music, clothing etc.

Developing a concept that creates a framework for the future city planning of Labuan Bajo was another research focus. It is important that a sustainable and so-called "Flores-friendly" development of the region is in the foreground. Special attention must be directed to environmentally aware, waste management, workplaces, housing and traditional architecture. The growing tourism should be inconspicuous in the existing structure and should not change the typical cityscape of an Asian small town.

“Flores friendly” architecture should contain the respectful handling with the cultural heritage and the existing environment with using regional materials and traditional handcrafts. To understand and work out the regional identity and architectural traditions, significant elements and factors such as the tripartition, scale and proportion and the connection between architecture and vegetation have to be considered. The traditional buildings are mostly equipped with a saddle roof and made out of wood. New buildings, in contrary, are mainly made out of concrete with a flat roof and do not really integrate in their context. Parts of the research group were focusing on examining hotel buildings, as there are endeavours from some hotels to strongly present the image of the city. Research showed, that a lot of imported styles from other islands, e.g. Bali or Java, can be found in Labuan Bajo, sometimes hotels are designed in a style mix from different Indonesian islands.



Fig. 5: Java and Bugis style hotel “Selini on the Hill”

© Bernhard Luritzhofer, 2018



Fig. 6: Tourism agencies in a traditional building

© Ulrike Herbig, 2018

A symposium, held in Kantor Bupati of Labuan Bajo on 26th April 2018, presented the research results to the local population and several stakeholders. The subsequent workshop focused on developing an understanding of the fast development process in tourism that is going on in Labuan

Bajo. In the workshop, academics from TU Wien, UGM and the University of Technology Sydney participated and worked in mixed international teams on topics for capacity building, strengthening of local activities and to raise the awareness for the issues mentioned above. Another main point of discussion in the symposium and workshop was the “Flores Friendly” label, which will give a great opportunity to bring some sustainable impact on (tourism) development on the island of Flores.

The event was a good starting point for a long-term project focusing on the transformation of the traditional architecture in this region and further development and implementation of the “Flores Friendly” label.



Fig. 7: Academics of TU Wien at the symposium on 26th April 2018 in Labuan Bajo
© Christine Lechner, 2018



Fig. 8: Participants of the workshop on 26th April 2018
© Ulrike Herbig, 2018

It was a great success, that the Deputy Regent (Wakil Bupati) of the regency West Manggarai, Dr. Maria Geong, was also participating in the symposium. She was strongly interested in the researcher’s results and outcomes and declared her interest in setting up an international interdisciplinary research centre in Labuan Bajo. This institution will deal with the cultural and natural heritage of Flores and its development to support the local people in setting up a frame for a sustainable future.

Publications:

U. Herbig, U. Pont, E. De Masi:

"Development of a label "Flores-friendly" - the road to sustainable eco-tourism?";

Vortrag: Präsentation at the Government of the district of West Manggarai, Flores, Indonesien, Labuan Bajo, Flores, Indonesien (eingeladen); 04.01.2018.

U. Herbig, K.M. Valent, U. Pont, A. Mahdavi:

"Conserving the Paradise: Toward Sustainable Touristic Development in the Westmanggarai, Indonesia";

Applied Mechanics and Materials, **12th Envibuild - Buildings and Environment - From Research to Application Proceedings of the 12th International EnviBUILD Conference (7th & 8th September 2017)** (2019), 887; S. 282 – 291.



The Influence of Daylight and Natural Airflow in the Architecture of the Museum Affandi, Yogyakarta

Project leader:

Dipl.-Ing. Dr. Ulrike Herbig, Technische Universität Wien, Fakultät für Architektur und Raumplanung, Institut für Kunstgeschichte, Bauforschung und Denkmalpflege; ulrike.herbig@tuwien.ac.at

- DI Dr. Ulrike Herbig is Senior Scientists at the Faculty of Architecture and Planning at TU Wien and in charge for the coordination and support of research projects, as well as for international affairs at the faculty. Dr. Herbig studied geodesy and has a research interest in the interdisciplinary recording, documentation and analysis of the built environment.

Project team:

Dipl.-Ing. Dr.techn. Gudrun Styhler-Aydın, Technische Universität Wien, Fakultät für Architektur und Raumplanung, Institut für Kunstgeschichte, Bauforschung und Denkmalpflege; gudrun.styhler@tuwien.ac.at
(applicant)

- Teaching and research in the field of history of architecture, building archaeology, historic constructions, cultural heritage, building in existing structures
- Assistant professor at TU Wien, Institute of History of Art, Building Archaeology and Restoration
- Scientific project member at the Austrian Academy of Sciences, Institute for the Study of Ancient Culture
- PhD study at TU Wien
- Practice in architecture offices with focus on projects in historic building contexts and listed buildings
- Diploma in Architecture, Technische Universität Berlin, Germany
- Diploma in Civil Engineering, University of Applied Sciences Magdeburg, Germany

DI Gregor Radinger, MSc, Donau-Universität Krems, Department für Bauen und Umwelt;
gregor.radinger@donau-uni.ac.at

- Head of Center for Environmental Sensitivity
- Study renovation and revitalization at the Danube University Krems
- Architectural studies at the Technical University Vienna, civil engineer examination
- Main research: climate-friendly building, building exposure and daylighting, architectural history, interdisciplinary research on human-building interactions

DI Wolfgang Stumpf, Donau-Universität Krems, Department für Bauen und Umwelt; wolfgang.stumpf@donau-uni.ac.at

- Research associate at Danube University Krems
- Head of the International Summer School "Climate Friendly Buildings - then and now" at the INNES Institute Vienna
- External lecturer at various Austrian universities of applied sciences
- Architectural studies at the Technical University Vienna
- Main research: Buildings, technology and energy for climate-friendly building, building life cycle, building in existing buildings

Dr. habil Mag. Akad. Rest. Patricia Engel, Donau-Universität Krems, Department für Bauen und Umwelt, Zentrum für Kulturgüterschutz, European Research Centre for Book and Paper Conservation-Restoration; patricia.engel@donau-uni.ac.at

- Head of the European Research Centre for Book and Paper Conservation-Restoration
- Habilitation in Conservation-Restoration: University of Fine Arts Warsaw, Poland
- Doctorate in Conservation-Restoration: University of Fine Arts Warsaw, Poland
- Magisterium in Conservation-Restoration: University of Fine Arts Vienna, Austria

M. Eng., Ph.D. Ikaputra, Universitas Gadjah Mada, Department of Architecture and Planning, Faculty of Engineering; ikaputra@ugm.ac.id

- Dr. Ikaputra studied at the Gadjah Mada University (UGM), Yogyakarta, Indonesia and at the Osaka University, Japan. He works as the program director for architecture at the Faculty for Architecture and Planning at UGM. His research interest are city and environmental planning, cultural heritage and building for disaster.

Dr. Ir. Jatmika Adi Suryabrata, M.Sc., Universitas Gadjah Mada, Department of Architecture and Planning, Faculty of Engineering; jatmika@ugm.ac.id

- lecturer for building physics at the Department of Architecture and Planning, Gadjah Mada University, Yogyakarta
- Seminars at professional societies and universities on Green Building Concepts and applications
- Green Consultant at IFC – The World Bank Groups
- Practice in architecture, urban design and lighting design (National and ASEAN awards in Green Buildings and Energy Efficient Buildings and projects certified by Green Building Council Indonesia)
- Post graduate education in architectural science, especially in Building Physics, at University of Sydney, Faculty of Architecture
- Study of bioclimatic designs / passive designs, College of Architecture and Environmental Design, Arizona State University, USA
- Graduated from Gadjah Mada University, Yogyakarta, Department of Architecture and Planning

Dr. Eng. Agus Hariyadi, ST, M.Sc., Universitas Gadjah Mada, Department of Architecture and Planning, Faculty of Engineering; agus@ugm.ac.id

- Expert Assistant (academic staff) at Department of Architecture and Planning, Gadjah Mada University, Yogyakarta
- Doctor, Graduate School of Environmental Engineering, The University of Kitakyushu, Japan
- Master, Architecture, Universitas Gadjah Mada, Indonesia
- Research interests: Environment engineering, Facade design, Thermal and visual comfort in buildings

Project Description

The main goal of the project was to analyze daylight entry and natural ventilation aspects in the architectural concepts of the first gallery and the residential buildings of the Affandi Museum in Yogyakarta. The conclusion of the study should be checked in terms of relevant indoor climate parameters for the future use and maintenance of the museum buildings and the protection of the exhibited art collection.

Furthermore, due to the relation to aspects of energy efficient buildings / green buildings, the project topic formed a basis for a general knowledge exchange in science and academic teaching on current building energy standards in Austria and Indonesia, and the latest developments in the field. Here, special attention was given to traditional architecture and their thermal behaviour concepts.

The project was divided into 3 sections, all of which were implemented. However, due to the late granting and the linkage of the project to the semester rhythm in Vienna and Yogyakarta, the time sequence and organization had to be restructured and adapted to achieve the project goals.

1) As part of the course 251.169 Documentation and Presentation of Architecture in the summer term 2018 at the Vienna University of Technology, students of architecture became acquainted with the spatial design of the Affandi Museum in Yogyakarta and the complex conditions of an adequate presentation of artworks under the local climatic influences. In groups, the 11 students made models of Gallery 1, the house of Affandi and the complex of family apartments in the scale 1:25. These three buildings were the first ensemble on the museum site and are based on designs by Affandi himself. The buildings were built approximately in the years 1962-1974. The available results of building analysis and building documentation of the former ASEA UNINET project "Development of an Integrated Restoration Concept for the Art and Architecture in the Affandi Museum Yogyakarta" were used as a basis for the construction of the architectural models. For the gallery 1 as one of the most important buildings, the models respected the investigated original condition as well as the most important alterations. Such alterations mainly refer to a change in the natural lighting and ventilation situation, but also include a new color scheme in the interior.



Fig. 1, Fig. 2, Fig. 3,: Architecture students of TU Wien producing the models and studying them in the light laboratory of the Danube University Krems. © Gudrun Styhler-Aydin 2018

In a second project step, the architectural models were analysed in the light laboratory of the Danube University Krems under the direction of Dipl.-Ing. Gregor Radinger. The study simulated both the local winter and summer light conditions based on available sunshine data as well as the differences between direct and indirect light (sunny / cloudy). It was very impressive to understand how Affandi in his building design had considered the daytime and season changing situation of light and shadow. Difficult light situations in the area of the exhibition were also reflected in the light laboratory investigation.





Fig. 4, Fig. 5, Fig. 6, Fig. 7, Fig. 8, Fig. 9,: Review of different lighting situations in Gallery 1 (top and center, different phases), for the house of Affandi and for the family apartments (both below). © Gudrun Styhler-Aydin 2018

2) During a two-week stay in Yogyakarta August 17-31, G. Styhler-Aydin (Vienna University of Technology), G. Radinger and W. Stumpf (both Danube University Krems) studied the exposure and ventilation situation in the buildings of the Affandi Museum on site. For the evaluation of indoor and outdoor climate data as well as the context-specific integration of the detailed measurement results, data could be included which were already surveyed on site in 2017 by Dipl.-Ing. Dr. Ulli Pont (Vienna University of Technology) as part of a previous ASEA UNINET project. According to a timetable for the measurements, which had previously been coordinated with the museum administration, data on temperature, humidity and exposure properties in the buildings could be collected over a period of 2 x 5 days. For this purpose, periods with switched-on air conditioning units as well as those without additional air-conditioning were taken into account.

Another focus of the on-site investigations was to identify the original possibilities in the buildings to react to different lighting and temperature with natural ventilation in the interior. Here it was shown that all original window and door installations in the residential buildings had adjustable elements for controlling the air flow in the interior. These included sliding windows, openable skylights and adjustable horizontal glass slats. Even in the fixed glazing, the individual window panes were arranged in a way that a permanent exchange of air in the rooms was ensured. For the most part, these historical elements of Affandi's architecture are still preserved. In Gallery 1, the original situation for interior ventilation was also researched in interviews with the family of Kartika Affandi. In all of the buildings studied, changes in the environment have led to adaptations or complete closure of the elements. One reason are the effects of dust and noise by the near street, which has been increasingly frequented over the decades. In a synopsis of the results of all the investigations carried out, critical values were identified and initial

measures to improve the situation were discussed with the aim of supporting long-term conservation strategies for the museum buildings and the exhibited art work.

Tuesday	Surface-temperature measurements (10:00)	Surface-temperature measurements (13:00, 16:00)	Air-conditioned
	Thermographics (10:00)	Thermographics (13:00, 16:00)	
	Definition of T-, H-measurepoints	Installation and activation of measure tools	
	Definition of light measure points	Light measuring (13:00, 16:00)	
Wednesday	T-, H-datacollection (automated)	T-, H-datacollection (automated)	Non air-conditioned
	Surface-temperature measurements (10:00)	Surface-temperature measurements (13:00, 16:00)	
	Thermographics (10:00)	Thermographics (13:00, 16:00)	
	Light measuring (10:00)	Light measuring (13:00, 16:00)	
Thursday	T-, H-datacollection (automated)	T-, H-datacollection (automated)	Air-conditioned
	Surface-temperature measurements (10:00)	Surface-temperature measurements (13:00, 16:00)	
	Thermographics (10:00)	Thermographics (13:00, 16:00)	
	Light measuring (10:00)	Light measuring (13:00, 16:00)	
Friday	T-, H-datacollection (automated)	T-, H-datacollection (automated)	Air-conditioned
	Surface-temperature measurements (10:00)	Surface-temperature measurements (13:00, 16:00)	
	Thermographics (10:00)	Thermographics (13:00, 16:00)	
	Light measuring (10:00)	Light measuring (13:00, 16:00)	
Saturday	Data collection and evaluation	Data collection and evaluation	

Fig. 10,: Survey plan for 5 days for temperature, humidity and exposure measurements. © Gudrun Styhler-Aydin 2018



Fig. 11, Fig. 12, Fig. 13: The colleagues of the Danube University Krems during the installation of the measuring instruments and the performance of surface temperature measurements. © Gudrun Styhler-Aydin 2018

As part of a series of lectures on August 27, 2018 at the Universitas Gadjadara, the first results were discussed with Indonesian experts and students. The students also took a keen interest in the exchange of knowledge on questions of building traditions in different climatic zones and the current development for sustainable principles of building air conditioning. A presentation of the interim results in the Museum Affandi with participation of the museum staff and representatives of an interested professional audience completed the stay in Yogyakarta.

Lectures at Universitas Gadjadara:

- *Development of an integrated restoration concept for the sustainable future use of the Affandi Museum, Yogyakarta* (Dipl.-Ing. Dr.techn. Gudrun Styhler-Aydin)
- *Daylight planning and indoorclimate-analysis in the Affandi Museum, Yogyakarta* (Arch. DI Gregor Radinger, MSc)
- *Building Energy Standards in Austria and the Thermal Behavior of Affandi Gallery's Construction, Yogyakarta* (DI Wolfgang Stumpf)



Fig. 14: Announcement of the lecture series at the Universitas Gadjah Mada (left). © Agus Hariyadi 2018



Fig. 15: Presentation of G. Styhler-Aydın and discussion with experts and students of the Universitas Gadjah Mada (right). © Gregor Radinger 2018

3) Finally, in December, the planned stay of Indonesian colleagues of the Universitas Gadjah Mada in Vienna was realized. Dr. Ir. Jatmika Adi Suryabrata, M.Sc., and Dr. Eng. Agus Hariyadi, ST, M.Sc., arrived at December 11, 2018. During their stay in Vienna, the Indonesian colleagues were invited to the special module „Indonesia“ at TU Wien. They gave the following lectures:

- Utilization of parametric Robotic for Building Operation Controls (Dr Agus Hariyadi)
- Green Building Approaches in Indonesia (Dr. Jatmika Suryabrata)

At Danube University Krems, Dr. Suryabrata and Dr. Hariyadi were introduced to the Department for Building and Environment and the Light Laboratory. Due to the special interest in energy efficient buildings / green buildings, a guided tour to selected projects in Vienna was done by Austrian team members and the Indonesian guests. Dr. Ir. Jatmika Adi Suryabrata, M.Sc., extended his studies on energy efficient buildings during a trip to Achenkirch (Tyrol) and Munich (see separate report in the attachment).



Fig. 16, Fig. 17: Dr. Ir. Jatmika Adi Suryabrata and Dr. Eng. Agus Hariyadi (Universitas Gadjah Mada, Yogyakarta) at the Light Laboratory of Danube University Krems with the architectural model of Gallery 1 of the Affandi Museum (left) and in discussion with Austrian colleagues (right). © Ulrike Herbig 2018

Lectures and Publications:

G. Styhler-Aydin, *Development of an integrated restoration concept for the sustainable future use of the Affandi Museum, Yogyakarta*, lecture at Universitas Gadjah Mada, August 27, 2018

G. Radinger, *Daylight planning and indoorclimate-analysis in the Affandi Museum, Yogyakarta*, lecture at Universitas Gadjah Mada, August 27, 2018

G. Radinger, *Lightlab-analysis. Collection studies and Management*, lecture at Danube University Krems, January 17, 2019

W. Stumpf, *Building Energy Standards in Austria and the Thermal Behavior of Affandi Gallery's Construction, Yogyakarta*, lecture at Universitas Gadjah Mada, August 27, 2018

A. Hariyadi, *Utilization of parametric Robotic for Building Operation Controls*, lecture at TU Vienna, December 13th, 2019

J.Suryabrata, *Green Building Approaches in Indonesia*, lecture at TU Vienna, December 13th, 2019

U. Herbig, U. Pont, G. Radinger, W. Stumpf, G. Styhler-Aydin, *The Influence of Daylight and Natural Airflow in the Architecture of the Museum Affandi, Yogyakarta*, presentation planned at Forum Building Science, Danube University Krems, May 8, 2019

Future Activities and Cooperations

2019 ASEA-UNINET project „Thermal Comfort Criteria in Indonesia and Europe – TCC IN EU“, project leader: Dr. habil Mag. Akad. Rest. Patricia Engel, Danube University Krems in cooperation with TU Wien, Universitas Gadjah Mada and Affandi Museum in Yogyakarta.

The outcomes of the project will be also part of the publication on the history of art and architecture of the museum Affandi, planned to be printed in 2020.

A joint proposal for a Capacity Building program is planned to develop curricula for preservation and restoration at universities with a respective focus in art and architecture. One prior aim within this frame is to underline the interdisciplinary cooperation between the two disciplines, already starting on educational level.



Transformation of Traditional Architecture for a Sustainable Development in Flores, Indonesia

Participating Researchers:

On Site:

Herbig, Ulrike, DI Dr, TU Wien, Institute for History of Art, Building Archaeology and Restoration. herbig@tuwien.ac.at.

Dr. Ulrike Herbig is Senior Scientists at the Faculty of Architecture and Planning at TU Wien and in charge for the coordination and support of research projects, as well as for international affairs at the faculty. Dr. Herbig studied geodesy and has a research interest in the interdisciplinary recording, documentation and analysis of the built environment.

Doubrawa, Irene, Dipl.-Ing., Institut für Kunstgeschichte, Bauforschung und Denkmalpflege, Department für Baugeschichte; irene.doubrawa@tuwien.ac.at

Dipl.-Ing. Doubrawa studied architecture at the TU Wien, where she is now working as university lecturer at the Department for the History of Architecture and Building Research at the Institute for History of Art, Building Archaeology and Restoration. She has conducted research in the region from 2009-2012 and is currently completing her PhD on a topic dealing with the vernacular architecture of Flores.

Lechner, Christine, Mag. Dipl.-Ing., Institut für Kunstgeschichte, Bauforschung und Denkmalpflege, Department für Baugeschichte; christine.lechner@tuwien.ac.at

Christine Lechner studied International Business Administration at the University of Vienna and the University of Illinois. She was educated in architecture at the TU Wien, where she is now working as university lecturer at the Department for the History of Architecture and Building Research at the Institute for History of Art, Building Archaeology and Restoration. Her research focus is on traditional and contemporary earth architecture and several economic issues in the building industry.

Stefan Bindreiter, Dipl.-Ing. MSc., TU Wien, Institute of Spatial Planning , Research Unit of Local Planning, Spatial Simulation Lab (Simlab), stefan.bindreiter@tuwien.ac.at

Stefan Bindreiter is project researcher at the simlab and has interdisciplinary academic education (FH Hagenberg, digital media and TU Wien, spatial planning) and many years of praxis experience as a software developer. In a project cooperation the simlab can contribute know-how and the expertise of urban and regional planning supported and enhanced through digital tools. By creating spatial overviews, simlab can thus provide a basis for decision-making and contribute to the transfer of knowledge and awareness.

Adhisakti, Laretna Trisnantari, Dr. Eng. Ir., M.Arch., Jurusan Teknik Arsitektur dan Perencanaan Fakultas Teknik Universitas Gadjah Mada (UGM); laretna@ugm.ac.id

Dr. Adishakti received an engineering degree from Gadjah Mada University in her native Yogyakarta (1982), a master's in architecture from the University of Wisconsin (USA, 1988) and a doctorate in engineering from Japan's Kyoto University (1997). Employed as a lecturer in several disciplines at Gadjah Mada University since 1983, with a focus on heritage conservation. She is engaged in the Indonesian heritage, a member of UNESCO-ICCROM's Asian Academy for Heritage Management and of the International Council on Monuments and Sites.

Hadi Rahmi, Dwita, Dr. Ir., M.A., Jurusan Teknik Arsitektur dan Perencanaan Fakultas Teknik Universitas Gadjah Mada (UGM); dwitahr@ugm.ac.id

Dr Hadi Rahmi completed her Master Degree in Geography at Department of Geography, Faculty of Environmental Studies, University of Waterloo, Waterloo, Canada. With the work on her PhD thesis in Environmental studies at the Universitas Gadjah Mada she focused on the research of cultural landscapes.

Working at the department of Architecture and Planning at the UGM she is highly involved in research concerning the preservation and sustainable development of cultural landscapes.

Drake, Campbell, BArch March PhD, Faculty of Design, Architecture & Building; University of Technology Sydney; campbell.drake@uts.edu.au

Educated in Australia and the UK, Campbell Drake is an architect, researcher and a senior lecturer in the School of Design. His research is focused on intercultural creative practice and participatory design strategies for sustainable development within regional contexts. Campbell is the co-founder of Regional Associates, an architecture practice specialising in sustainable eco tourism development in environmentally sensitive locations.

In preparation:

Ikaputra, , Dr M.Eng., Universitas Gadjah Mada, ikaputra_2001@yahoo.com,

Dr. Ikaputra studied at the Gadjah Mada University (UGM), Yogyakarta, Indonesia and at the Osaka University, Japan. He works as the program director for architecture at the Faculty for Architecture and Planning at UGM. His research interest are city and environmental planning, cultural heritage and building for disaster.

Pont, Ulrich, Dipl.-Ing. Dr, Institut für Architekturwissenschaften, Department für Bauphysik und Bauökologie; ulrich.pont@tuwien.ac.at,

Dr. Pont studied architecture at the TU Wien, where he is now working as assistant professor at the Department for Building Physics and Building ecology at the Institute for Architectural Science. His main research interests are the recording and analysis of building performance, and the retrofitting of buildings to improve their indoor environment.

Erb, Maribeth, Associate professor, Department of Sociology, National University of Singapore,

Maribeth Erb joined the Department of Sociology in 1989. She had taught for a year in the Department of Anthropology at the State University of New York at Stony Brook after finishing her Ph.D. there, before coming to Singapore. Her research for her Ph.D. was on Kinship and Ritual among the people of Manggarai in Western Flores, Eastern Indonesia. She has continued to pursue research in Western Flores over the years. When the villagers of one old village in Manggarai decided to rebuilt their traditional house for tourism purposes, she was asked to help in researching out the history and symbolism of this house. Since then she has been interested in the influence that growing tourism has had on Manggaraian culture.



Fig. 4: View over Kampung Tengah from a three-story building at Jalan Soekarno. © Karl Valent 2018

A large variety of socio-spatial patterns have developed over the centuries in Indonesia. These settlement patterns correspond to the social, economic and landscape conditions and are part of the deeply rooted cultural heritage of Indonesia. Local and external influences like the Hindu Kingdoms and colonial powers have influenced how Indonesian cities. Thus, some contemporary Indonesian cities consist of two main spatial typologies, the European city and the urban village (kampung kota).

In areas with a strong focus on tourism the continuity in the development and growth in the settlements accelerated in a way that is challenging local authorities.

In 2016 the government of President Joko Widodo developed the “Ten New Balis” (Sepuluh Bali Baru) plan, with Labuan Bajo as one of four priority areas within that strategy. Labuan Bajo (approx. 30.000 people in 2016) is the capital of West Manggarai Regency and constitutes together with the Komodo National Park, the sub-district (kecamatan) Komodo with a population of approx. 50.000 people. Ignoring a previous environmental impact study that calculated 60.000 annual visitors as the tipping point under current conditions, the development plan envisages to attract up to 500,000 tourists by 2019, up from 54,147 tourists that visited Labuan Bajo in the year 2013. In 2016 the Komodo National Park alone already recorded 107,000 visitors and the numbers are rising. A new environmental study has already commissioned, perhaps one favoring a higher amount of tourists.

The government of Indonesia is allocating funds (30–50% of the 1.2 billion USD budgeted for Labuan Bajo) for the needed infrastructural development, while attracting external private investors (especially from Java Island, China, Saudi Arabia, India and France) with various incentives and promises of at least five-fold returns. At the same time, the local authorities struggle with the speed of events, their regional development gets swamped by the interests of non-local investors and the needs of the local population are neglected. At Labuan Bajo several problems cumulate, as there is an on-going land grabbing, pollution, water scarcity and the endangerment of tangible, intangible and natural heritage being the most urgent ones.

During a 3 week long field research in April, an interdisciplinary team of senior scientists, lecturers and students from the Institute for History of Art, Building Archaeology and Restoration, the Department of Spatial Planning, Interdisciplinary Centre for Spatial Simulation and Modelling (TU Vienna), as well as from the Department of Social and Cultural Anthropology (University of Vienna) conducted a joint research on the impacts, potentials and threats of the current tourism development in Labuan Bajo and its surroundings, on local society and environment.

We were able to sketch the complex network of public and private stakeholders and met with representatives of the local Unit for Regulations and Spatial Planning (Seksi Perencanaan & Pengaturan Tata Ruang) of the Governmental Agency for Public Works and Spatial Planning (Dinas Pekerjaan Umum dan Penataan Ruang), as well as from the Planning Agency for Development, Research and Regional Development (Badan Perencanaan, Pembangunan, Penelitian Dan Pengembangan Daerah). Thanks to the cooperativeness of these local governmental agencies we could gain an in-depth understanding of the challenging situation between the plans and interests of the central government, who wish for a major increase in tax revenues, and the local government, who struggles to find the capacities and power to regulate and plan these developments in a sustainable manner. We witnessed how the responsible units are working on the final approval of their new spatial masterplan for Labuan Bajo, while a myriad of unregulated construction projects are taking place across the district. Although older spatial and building regulations are in place, many construction projects run until their completion without applying for the needed permits at the local authorities. Controlling and enforcing the regulations is immensely difficult and the local authorities' work is overshadowed by the interest and power of the central government and potent private investors.



Fig. 5: View of Kampung Tengah from the coastline. © Karl Valent 2018

By conducting interviews, in-depth discussions and observations in the traditional neighborhoods (especially in Kampung Air and Kampung Tengah), we could collect information on how these rapid developments affect the local population. These traditional fishing neighborhoods, founded in the early 17th century by ethnic Bajo and Bugis people, were the first settlements in Labuan Bajo. But nowadays they increasingly face being pushed towards the margins of society. Two main factors responsible for the impacts on local settlement structure, sociocultural and economic life in the last 15 years are the constructed ocean embankment and the spreading of tourism. The seawall along the western shoreline was built between 2006–2012 to stop tidal waters entering the neighborhoods. Stilt houses, specifically designed for this tidal fluctuation, were now modified by closing the first level creating much demanded for living space for the new migrant workers attracted by the job opportunities in the emerging tourism sector. Although this architectonic change generated an additional income, it severely impacted the living quality by blocking the natural air ventilation of the settlement and depriving them from a previously shady outdoor space with various social functions. Most of these usages (weddings, general gathering, drying cloth, etc.) are now moved to sea front walk way, which is hoped to remain public instead of being privatized in the course of tourism developments.



Fig. 6: The sea embankment at the western coastline of Labuan Bajo, where the local community dries fish. © Karl Valent 2018

But while the population in these settlements has increased over the last years, the space occupied by the settlements has shrunk, losing land to hotels and restaurants, leading to a skyrocketing of

land prices and rents. While many of our respondents voiced their fear of seeing their traditional houses and their settlement displaced by tourist infrastructure, we did not encounter any actual community measures to stop the sell-out of their legal land. Although the community criticizes this trend, selling remains an unsanctioned private decision, and it is a decision often understood in the face of financial needs and opportunities. The tourism development in Labuan Bajo is a two-sided sword. It indeed created job opportunities, pushed the improvement of infrastructure and the availability of consumer goods, but at the same time competes for already scarce resources like water and land. Other resources, especially fish, are now protected for the sake of the tourist attraction (and hardly because of any environmental reasons) and the community is limited in exploiting this resource which used to be their income basis for generations. Therefore, more and more former fishermen seek jobs in the tourist or construction sector, where they compete with workers from the florenese highlands and neighboring islands. The high availability of low skilled workers leads to very low wages, limiting their chance for savings and investing in own businesses. Consequently, an offer for ones private land or property can be a welcoming chance to get hands on capital, but bearing the risk to loose everything if not successful in reinvesting.



Fig. 7: Details of Kampung Tengah and how traditional buildings are being replaced by hotels.
© Karl Valent 2018



Fig. 8: Jalan Soekarno, the main road leading through the touristic center of Labuan Bajo. © Karl Valent 2018



Fig. 9: modern architecture overshadowing traditional one.
© Karl Valent 2018

During a field visit to Kampung Komodo, the only settlement on the famous Komodo Island, we met with community leaders and the head of the local school to learn about the life within the National

Park. They clearly stated being excluded from planning decisions, and feeling merely tolerated settlers, as opposed to a feeling of ownership on this island they inhabit since generations. We were confronted with a variety of infrastructural shortcomings, particularly regarding waste & sewage management, education and health. The Komodo National Park Management regulations heavily impacted traditional fisher-men's life with restrictions and quotas, ultimately limiting their income and making them dependent on tourism. Some men work now at the national park as rangers without a fixed salary, but rather a daily fee of EUR 5.50,- paid for each day they guide a tour. Due to the high demand for work, they are just allowed a maximum of 10 working days a month. Other income options are selling souvenirs at the arrival area of the national park, fishing, working as cheap labor at the mainland or in other parts of Indonesia and abroad.



Fig. 10: Impressions of Kampung Komodo. © Karl Valent 2018

In the hope of increasing the local income situation, the community recently developed a homestay network and hopes to attract more of the park visitors to stop or even sleep at Kampung Komodo. In the meantime, the local population struggles to make ends meet. One of their main expenses is sending their children to secondary school on the mainland, which adds up to a minimum of EUR 70,- per child each month for school fees, housing, food, etc. Their request for a secondary school on the island was continuously denied and some villagers voiced their fear that this is just one strategy of the Management Agency of Komodo National Park to push them off their island.

Back on the mainland and gathering information from a different set of stakeholders, we spoke to representatives of NGOs, such as Burung Indonesia, Eco Flores, Indonesian Waste Platform and Trash Hero, who work on the protection of the environment, of urban green spaces & wildlife, on ecotourism, as well as on waste reduction & management. Some of the local NGOs are doing important work in the health and education sector, but as in many other parts of the world, their power and resources are just too limited to stimulate the tourism developments to take a more sustainable path or to increase the ownership of the community in these processes.

Seeking an example for a community-based tourism project as comparison, Mag. Doubrawa and Mag. Valent visited Wae Rebo, a traditional village which (since 2010) was renovated/rebuilt with national and European funds under the guidance of the Indonesian Ecotourism Network (INDECON), promoted as tourist village by the local government and ultimately received the Award of Excellence under UNESCO's Asia Pacific Heritage Awards in 2012. Although designed and implemented with high community participation, the rapid increase from less than 100 annual tourists in 2008 to more than 7.000 ten years later, did not pass without leaving sociocultural costs in this astonishing site of unique cultural, architectonic and environmental value. Therefore, the research focused on the development and root causes of the conflict lines, corruption, mismanagement within the local society and the involvement of private, national and international stakeholders. The collected data

and information documents present a highly interesting and insightful case of the potentials and threats of touristic developments in West Manggarai Regency, and already triggered an ongoing exchange with Catherine Allerton from the Anthropology Department of the London School of Economics and Political Science.



Fig. 11: The traditional centre of Wae Rebo village. © Karl Valent 2018

Most of the third week was occupied with arranging and preparing for a final symposium at the main premises of the West Manggarai regent's office. With the vice-regent, government officials, members of the local community, as well as representatives of the private and NGO sector attending, we presented our results and spent the second half of the day discussing and working on strategies for creating a Flores Friendly Label to stimulate a more social and environmental development.

This interdisciplinary field research provided a unique opportunity to investigate processes shaping, constituting and emanating from multi-stakeholder tourism development projects. The interests and conflicts stretching between the different government levels, non-local investors and the local community show an important example of the complexity of such processes and can serve as a baseline for the improvement of integrated planning designs and their implementation.

Addendum - Flying Visit - February 2019:

In course of the described project, Stefan Bindreiter spent 8 days (30.01. to 06.02.) in Labuan Bajo to assess and research further initiatives and opportunities for cooperations with local authorities of region "Manggarai Barat" (West-Flores). During this stay, numerous interviews were conducted (see itinerary below), including the head of the Planning Department, the head of the Tourism Department of the Manggarai Barat region, as well as representatives of NGOs (WWF, Indecon, etc.).

During the stay Mr. Abdul Haris Manggala Putra (Indecon), Mr. Lars Borgudd and Mrs. Elisabet Yani were very helpful as they made contacts to local stakeholders and acted as translators in the interviews. In talks with NGOs and regional authorities, the following picture emerged: The representatives would very much welcome the support of local authorities by universities in the development of planning tools and professional and scientific examination of plan contents.

Itinerary - Meetings and talks:

Wednesday (arrival), 30.01., Mr. Abdul Haris Manggala Putra, NGO Indecon

Thursday, 31.01., Tour Komodo island national park

Friday, 01.02., Due to short-term changes in the schedule, the meeting with vize-regent Ms Maria Geong was unfortunately canceled.

Friday, 01.02., Mrs. Shana Fatina, Head of Tourism Department, Region Manggarai Barat at „The Green Prundi“ hotel during a stakeholder congress with various stakeholders of the region and the „bupati“ –regent of the region, where stakeholders were informed about the results of the RTRW 2018 (Rencana Tata Ruang Wilayah – regional development plan), which has not been decided yet.

Friday, 01.02., Mr. Abdul Haris Manggala Putra, NGO Indecon – Presentation of eco-friendly tourism in Tado village

Saturday, 02.02., Mrs. Nurhayati Alwi, NGO Laskar Peduli Kebersihan Kota Labuan Bajo LPK2L („Cleaning Labuan Bajo“), Labuan Bajo

Saturday, 02.02., Mr. Lars Borgudd and Mrs. Elisabet Yani – „Flores Joyful Retreat“ (Mr. Borgudd and Mrs. Yani teach children in farmers villages outside of Labuan Bajo in Indonesian and English language, since only the local dialect is spoken there.)

Sunday, 03.02., Tour to the villages of Melo and Wae Moto. Lunch and traditional dance presentation with „head of tradition“ of Wae Moto, Mr. Om Pice. The inhabitants of Wae Moto are also interested in marketing their culture and customs in the form of sustainable tourism (as in Tado village). However, there is a lack of professional knowledge and the necessary structures.



Fig. 12: Traditional dance practice session in Wae Moto. © Stefan Bindreiter

Monday, 04.02., Mr. J. Beni, Head of Department of Social Affairs, Region Manggarai Barat at „Bappeda Manggarai Barat“, Labuan Bajo

Monday, 04.02., Mr. Richard T. Sontani, Head of Spatial Planning Department, Region Manggarai Barat at „Bappeda Manggarai Barat“, Labuan Bajo

Monday, 04.02., Ms. Sus Yanti Kamil (WWF, Labuan Bajo) at „Cafe Escape“, Labuan Bajo

Tuesday, 05.02., Mr. Very Kuriniadi, Department of Public Work & Spatial Planning at „Kantor Dinas Pekerjaan Umum Manggarai Barat“, Labuan Bajo

Publications:

U. Herbig, U. Pont, E. De Masi:

"Development of a label "Flores-friendly" - the road to sustainable eco-tourism?";

Vortrag: Präsentation at the Government of the district of West Manggarai, Flores, Indonesien, Labuan Bajo, Flores, Indonesien (eingeladen); 04.01.2018.

U. Herbig, K.M. Valent, U. Pont, A. Mahdavi:

"Conserving the Paradise: Toward Sustainable Touristic Development in the Westmanggarai, Indonesia";

Applied Mechanics and Materials, **12th Envibuild - Buildings and Environment - From Research to Application Proceedings of the 12th International EnviBUILD Conference (7th & 8th September 2017)** (2019), 887; S. 282 - 291.



**Fig. 13: RTWR Regional Development Plan, Draft -
has not yet come into force. © Bindreiter**



Towards an alliance for distributed ethnomusicology data

Alex Hofmann, Ph.D.

Universität für Musik und darstellende Kunst Wien

In Cooperation with:

Prof. Dr. Andreas Rauber

Technische Universität Wien

Partner in Asia:

Prof. Joeseeph Bowmann

Mahidol University - College of Music

CVs of involved personel at TU Wien

Andreas Rauber (rauber@ifs.tuwien.ac.at):

Andreas Rauber is Head of the Information and Software Engineering Group (IFS) at the Department of Information Systems Engineering (ISE) at the Vienna University of Technology (TU-Wien). He furthermore is president of AARIT, the Austrian Association for Research in IT and a Key Researcher at Secure Business Austria (SBA-Research). He received his MSc and PhD in Computer Science from the Vienna University of Technology in 1997 and 2000, respectively. In 2001 he joined the National Research Council of Italy (CNR) in Pisa as an ERCIM Research Fellow, followed by an ERCIM Research position at the French National Institute for Research in Computer Science and Control (INRIA), at Rocquencourt, France, in 2002. From 2004-2008 he was also head of the iSpaces research group at the eCommerce Competence Center (ec3).

Tomasz Miksa (miksa@ifs.tuwien.ac.at):

He received in 2011 his MSc in systems and computer networks from the Wroclaw University of Technology, Poland. In 2016 he received his PhD in computer science from the TU Wien for his work on verification and validation of scientific workflow re-executions. He was involved in preservation of business processes in the EU-funded FP7 project TIMBUS. Furthermore, he took part in the FP7 4C Project which aimed to clarify the costs of curation of digital assets. Currently, he is a chair of the DMP Common Standards working group at the Research Data Alliance (RDA) and a co-founder of RDA Austria.

Peter Knees (knees@ifs.tuwien.ac.at):

Peter Knees is Assistant Professor at TU Wien. His research interests focus on Music Information Retrieval (MIR), Web Information Retrieval and Multimedia Retrieval as well as Recommender Systems and Digital Media Arts. He has been working on numerous research projects in this domain including SmarterJam – automatic Recommendation of Music Tracks and Musicians for cooperation in an Online Jam Community, or GiantSteps – Seven League Boots for Music Creation and Performance.



Introduction

While the South-East Asian musical heritage is particularly rich, it is highly diverse and scattered across multiple countries and regions. The same holds for existing ethno-musicological resources.

Music research involves various kinds of data, ranging from written sources (manuscripts, music sheets, publications, etc) to audio and video recordings in different formats (analogue, digital) with varying additional information (Metadata) about contents and contexts of the performances, the performers, their ideas and viewpoints, musical instruments and the way of their use and so on. Until

now, researchers and institutions have developed primarily individual ways to collect and store such data, either digitally or in a card-index cabinet. Data search in such self-contained storages is difficult and searching across multiple storages can be very time consuming. This presents a barrier for conducting contemporary, computer-aided musicological research. For instance, incompatible data structures prevent applying automated data analysis and indexing across music collections to provide new ways to access the data and gain new insights. This includes the use of visualization techniques and state-of-the-art machine learning methods on existing data sets, which may reveal hidden connections between different areas within music research.

Report of Action

Following a preparatory data collection, in a workshop held at the Mahidol University Bangkok from 28-30th January 2019, which brought together ethnomusicology and ICT experts from Austria, Thailand, Malaysia and the Philippines, all four research facilities presented their current data holdings and infrastructure. More specifically is included:

Mahidol University: Prof. Dr. Boonsit Yimwadsana (ICT), Dr. Krit Buranavitayawut (College of Music)

- in process of building a museum and research center about south-east asian music
- Collection consists of +300 musical instruments which are currently not catalogued,
- Music performance recordings which are due to the process of building the actual museum space stored in a storage someplace else.

Malaysia: Dr. Pek Lin Chong (private collection)

Recreational songs of the Kenyah

- Original form: *a capella* and involving informal group-singing, often including multipart singing and simple dance movements. The data was collected over a period of 20 years, initially using Sony video-cameras and audio-recorders, stored in Hi8 videocassettes/Sony digital video cassettes tapes and audio-cassette tapes. Subsequently transferred to VHS tapes/audio-cassette tapes. Specific sections were digitized and combined for presentations and teaching (wmv, avi and mp4 formats). Over the years, a substantial amount of data recorded has been lost due to fungus growth or degradation of the tapes. Selected repertoire (songs and instrumental music) were transcribed, translated and their musical characteristics analysed. The lyrics were transcribed and translated with the help of native speakers of the language
- Size of the dataset:
 - Field recordings:
 - Video: 112 GB [14 hours]
 - Audio: 2.6 GB
 - Applied ethnomusicology
 - Video: 7 GB
 - Audio : 68.3 MB

- Metadata:
 - Dates, location, categories or names of songs, instrumental pieces or dances
 - Names of performers/main performers.

Example of the data collection:

	Description of content, location of recording	Date recorded	Length of recording	Format of storage/Size of file		
				MP4	AVI	WMV
1	Marudi and Long Lama: Songs-(<i>belian dado'</i>) Dance (<i>datun julud', kanjet laki, kanjet leto</i>)	1995 November	1 hr 42 min	1.95 GB	21.6 GB	
2	Long Lama and Long Laput <i>belian dado'</i> , dance instrumental music (<i>sape</i>)	1995 November	55 min	1.08 GB	12 GB	
3	Long San: Songs (<i>belian dado', kerintuk</i>). Dance	1996 June	30 min		900 MB	
4	Long Moh: songs,dance instrumental music (<i>lutong</i>)	1996 December	1hr 19 min		1.72 GB	1.49 GB
5	Long Laput: <i>Keluri</i> (instrument), Kenyah song Kenyah/Kayan dance	1997 December	1hr 24 min		1.83 GB	
6	Long Mekaba: Kenyah instrumental music, songs and dance	2002 November	1 hr 2 min		13.1 GB	
7	Uma Badang: Kenyah instrumental music, dance	2004 November	51 min	1.51 GB	16.9 GB	

Example of the analysis performed:

	Title of Song	Tone set	Mode	Ambitus	Metre
1	<i>Along</i> (Long Selatong)	M: $\underline{s} \underline{l} \underline{d} r m s$ H: $s l d'$	Do-pentatonic	8	4/4
2	<i>Are Ruti</i>	M: $\underline{l} \underline{d} r m s l d'$ H: $d s l d'$	Do-pentatonic	10	4/4
3	<i>Ateklan</i>	M: $\underline{s} \underline{l} \underline{d} r m s$ H: $s l t d'$	Do-pentatonic	8	4/4
4	<i>Bangen-bangen</i>	M: $\underline{d} r m s l d'$ H: $s l d' r' m'$	Do-pentatonic	8	4/4; 2/4
5	<i>Baya-Baya</i>	M: $s, l, d r m s$ H: $m s l d'$	Do-pentatonic	8	2/4; 4/4
6	<i>Belabau Alih Silon</i>	M: $\underline{l} \underline{d} r m s l$ H: $d' l s$	Do-pentatonic	8	4/4; 2/4
10	<i>Lan-e</i> version 1 (Baram)	M: $\underline{s} \underline{l} \underline{d} r m s l$ H: $r m s l d' r'$	Do-pentatonic	9	4/4 ; 2/4

Philippines U.P. Center for Ethnomusicology: Roan Opiso

The name, “**U.P. Center for Ethnomusicology**” was established in 1997 by the U.P. Board of Regents, in recognition of Professor Jose Maceda’s visionary work and authorship of putting together an ethnomusicological collection of about 2500 hours of recorded music in open reel and cassette tapes, field notes, music transcriptions, song texts, photographs, music instruments, music compositions, personal files, about 2000 books and journals, all of which he personally initiated and developed as a unified institutional resource for music research.

The UP centre now has as a digital collection of audio recordings, texts, videos and images stored in external hard-drives. Data is catalogued and this metadata information is available in a online public access catalogue. Accessing the actual material would require researchers to either visit the centre or request for access per letter or email, sending a research proposal which will be evaluated by the management. The process of digitizing old material is currently ongoing.

MDW - Department of Folk Music Research and Ethnomusicology: Dr. Hande Saglam, Dr. Ardian Ahmedaja

The **Department of Folk Music Research and Ethnomusicology** is currently digitizing and archiving their fieldwork recordings with the aim to make the data accessible for internal and external scientific researchers. This involves more than 10.000 hours of audio-video material locally stored on a server at the university with the according Metadata stored in a local database with the ArchivisPro software. This software provides well prepared masks and a keyword list. However, moving the data in a semi-automatic process to the mdw repository is foreseen.

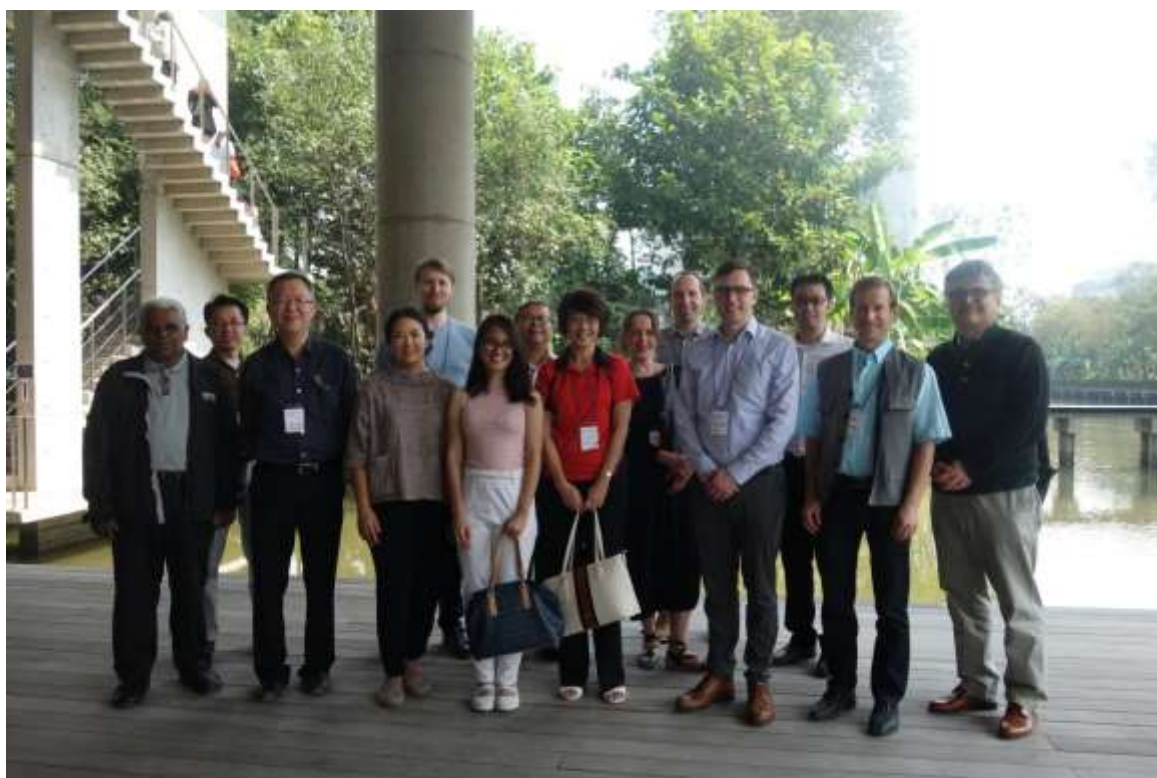
Future steps

To proceed towards the establishment of a networked research infrastructure for ethnomusicological research 3 concrete action streams were identified:

- 1) Policies: research institutes are encouraged to adopt policies that establish research data management as a core activity, defining the respective responsibilities and providing the required services. To this end, existing research data management policies as presented during the workshop (the templates developed by the LEARN project, the specific RDM policy adopted by TU Wien) will be shared and discussed at the various institutions, identifying adaptations needed in the local contexts.
- 2) Applying Music IR research technologies to ethnomusicological content: Subsets of data have been identified by the participating institutions. Following some clarification of formalities, these data sets will be shared in the next month with the aim of having students collaboratively work on these, extracting features and learning concepts as provided by the metadata. These results will be returned to the data owners for evaluation and feedback collection.
- 3) Repository infrastructure: A set of Opens Source Repository solutions will be prepared by TU Wien

and made available to the participating institutions in a conveniently deployable version (e.g. virtual machines, docker containers). These will be populated by each institution with some selected data items to evaluate their fitness for musicological research purposes.

A follow-up workshop is planned for beginning of July 2019 to share and discuss the insights gained in the project. A further meeting may be scheduled towards the end of 2019 to evaluate progress, identify gaps and to outline the subsequent steps towards the establishment of a networked infrastructure and advanced MIR-assisted research on the data holdings.



Participants of 1st Workshop on Distributed Ethnomusicology Data and MIR in the Framework of ASEA-Uninet, taken in January 2019 at the Mahidol University Campus. (Photo by Nartpraween Suppasri / International Office Mahidol University)

Calibration of Constitutive models for soils and coarse-grained rockfills

Report of the ASEA-UNINET Project: ASEA 2018 / TUGraz / 1
between
Graz University of Technology, Graz, Austria
and
Suranaree University of Technology, Nakhon Ratchasima, Thailand

Persons involved:

Erich Bauer, Dipl.-Ing. Dr.techn., Ao.Univ.-Prof.

Institute of Applied Mechanics, Faculty of Civil Engineering at Graz University of Technology, Graz, Austria

Research topic: constitutive modelling of granular materials for soil and rockfills

Suksun Horpibulsuk, Prof. Dr.

Chair and Director of Center of Excellence in Innovation for Sustainable Infrastructure Development, School of Civil Engineering, Suranaree University of Technology, Nakhon Ratchasima, Thailand

Research topic: geotechnical engineering

Avirut Chinkulkijniwat, Assoc. Prof., Dr.

School of Civil Engineering, Suranaree University of Technology, Nakhon Ratchasima, Thailand

Research topic: constitutive modelling of unsaturated soil

Summary of the project:

This project dealt with enhanced constitutive models to describe grain fragmentation, creep and stress relaxation in soil and rockfill materials. Such constitutive models are of great practical importance in geotechnical engineering. The idea for this project was discussed with Prof. Suksun Horpibulsuk already in April 2017 during his stay at Graz University of Technology. It was decided to start with a course for master students and PhD students, which aimed to provide the theoretical foundation for a joint scientific research co-operation between Graz University of Technology and Suranaree University of Technology. In the course state-of-the-art models were presented to describe the essential mechanical properties of soil and rockfill materials based on the concepts of elasto-plasticity, generalized plasticity and hypoplasticity. The focus was on the influence of the microstructure, the pressure level and the state of weathering of the material on the mechanical behaviour. In this context particular models based on classical continuum as well as higher order continuum descriptions were presented. For more sophisticated constitutive models appropriate concepts for experimental investigations in the laboratory were also discussed. The course had the following structure:

- Mechanical behaviour of soils and coarse grained rockfills observed in experiments
- Constitutive models based on classical continuum description including
- Calibration of particular constitutive models
- Limits of classical continuum models and outlook to higher order continuum models

If financial support is available, the project partners are very interested in continuing the co-operation. In the next phase the students should practice the calibration of the constitutive models based on experiments carried out in the laboratory at Suranaree University of Technology. This phase could lead to an increased exchange of students between Graz University of Technology and Suranaree University of Technology.

Numerical Simulation of Sediment Transport in Indonesia

The participants of this ASEA-UNINET project:

Schneider Josef

Assoc. Prof. Dipl.Ing. Dr.nat. techn

Graz University of Technology, Institute of Hydraulic Engineering and Water Resources Management

schneider@tugraz.at

Associate professor on institute above. Currently head of hydraulic laboratory.

About 200 relevant publications (e.g. hydraulics, physical modelling, sedimentation):

<https://graz.pure.elsevier.com/en/persons/josef-schneider/publications/>

H. Nadjadji Anwar

Prof. Dr. Ir., M.Sc.

Institut Teknologi Sepuluh Nopember - ITS, Surabaya

nadjadji@ce.its.ac.id

Head of department for Hydraulic Engineering and Environment.

Former rector of ITS, Surabaya

Umboro Lasminto

Dr. techn., M. Sc.

Institut Teknologi Sepuluh Nopember - ITS, Surabaya

umboro@ce.its.ac.id

Lector on institute above.

He made his dissertation at Graz University of Technology, Institute of Hydraulic Engineering and Water Resources Management 6 years ago

Novi Andriany Teguh

M. Sc.

Institut Teknologi Sepuluh Nopember - ITS, Surabaya

andrianynovi@gmail.com

PhD student of ITS

The project originally included as the first module an intensive training of the scientific staff at the Institute of Technology Sepuluh ITS (Surabaya) in the hydrodynamic and sedimentological modeling with the open source suite openTELEMAC-MASCARET (www.opentelemac.org). The local organization of the workshop is planned to be done by Dr. Lasminto under the supervision of Prof. Nadjadji, the scientific organisation by the TU Graz team.

The TELEMAC suite consists of several parts of numerical models in the field of free surface flow. In TELEMAC-3D the three-dimensional flow field is determined by solving the continuity equation and Reynolds-averaged Navier-Stokes equations. The sediment transport module in the TELEMAC suite is called SISYPHE. As already mentioned in the project report of 2017 (Klasinc & Schneider) sedimentation problems in the reservoir of Sengguruh dam are severe and solutions for reducing the

storage volume have to be found. To understand the reservoir sedimentation problem in general and the Sengguruh dam reservoir in specific numerical simulations have to be performed.

Hence, the second module includes the investigations of the storage space Sengguruh on the river Brantas and its sedimentation problems. The goal is to work with IST to find solutions for the storage space in order to reduce sedimentation problems and develop sustainable sediment management. Together with the IST, a numerical model for the storage space will be developed, which should serve as the basis for finding solutions or developing better storage space management. Furthermore, data collections will be carried out on site.

For organizational reasons, this could not be done this year and will be postponed until 2019. In 2018, however, a staff member of the ITS (Mrs. Teguh) travelled to Graz between 27.11.2018 and 9.12.2018 as a preparatory measure for enrollment in order to get an initial insight into the software. TELEMAT was installed and tested in Graz, and initial modelling was done. Subsequently, Fr. Teguh will actively support the training in Indonesia in 2019.

Additionally, Mrs. Teguh joined scientific excursions on 29.11.2018 to flood retention basins (FRB) in Graz and surrounding areas (Figures 1 and 2). The intention is that she understands how to design and to construct sustainable and modern flood retention measures. These FRBs are a very common way in Styria to perform an effective flood retention with less land usages. Besides, the linear flood retention measures can be made smaller.



Figure 1. Visit flood retention Andritzbach, © TU Graz / Alfred Hammer



Figure 2. Visit flood retention Stufenbach, © TU Graz / Alfred Hammer

On 5th of December 2018, a short symposium was held at the Institute of Hydraulic Engineering, where Mrs. Teguh presented the situation in Indonesia and her research activities on the one hand, and the scientific staff from the Hydraulic Engineering Institute to present research activities in order to explore common research fields. There was a very lively discussion.

Mrs. Teguh gave an intensive introduction about Indonesia and Surabaya. She highlighted the work done at ITS, especially in the hydraulic laboratory (Figure 3). Furthermore, a further focal point was the hydropower (HP) development in Indonesia. Besides the current situation (Figure 4), she showed that there is still a potential of 95% for HP development in Indonesia.



Figure 3: Hydraulic laboratory at ITS, © ITS / Savitri



Figure 4. HPP development in Indonesia

Mrs. Teguh has already a broad knowledge about numerical modelling. She made her master degree in Stuttgart and used for that reason the software SSIIM. In her presentation, she showed results about a 3D numerical modelling and analysis of bed topography in a 180° channel bend. The main progress of here modelling is shown in Figure 5.



Figure 5. Main process of SSIIM simulation, © ITS / Novi Andriany Teguh

As an example, results of simulations with two different sediment transport equations are shown in Figure 6.

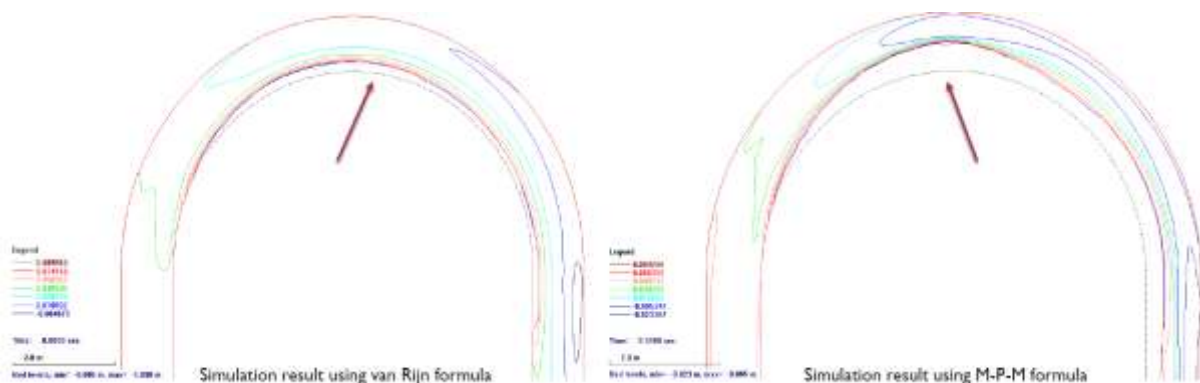


Figure 6. Results of numerical simulations, © ITS / Novi Andriany Teguh

The knowledge of Mrs. Teguh concerning multi-dimensional sediment transport modelling will be an important contribution for the planned workshop at ITS in 2019.

DES_Decarboxylase

Participating persons

1. Prof. Dr. rer. nat. Robert Kourist (Projektleiter)

Head of Institute of Molecular Biotechnology
Graz University of Technology
Petersgasse 14
A-8010 Graz
Austria
Tel. +43 3168734071

Prof. Kourist obtained his diploma in Biochemistry in 2006 and his PhD in biotech in 2008 at the University of Greifswald, Germany. After postdoctoral stays in Yokohama and Munich and a stay Junior Professor for Microbial Biotechnology at the Ruhr-Universität Bochum in 2012 he has been Full Professor at TU Graz since 2017. His researcher deals with biocatalysis and enzyme engineering.

2. Dr. rer. nat. Dipl. Biochem. Sandy Schmidt

Institute of Molecular Biotechnology
Graz University of Technology
Petersgasse 14
A-8010 Graz
Austria
sandy.schmidt@hotmail.de

Dr. Schmidt is University Assistant at the Institute of Molecular Biotechnology, Graz University of Technology.

3. Prof. Dr. Susan Arco

Name der Universität: University of the Philippines
Institut: Institute of Chemistry, College of Science
Ort: Diliman, Quezon City 1101
E-Mail: sdrarco@yahoo.com

Prof. Arco has obtained her PhD degree in 1997 at the University of the Philippines-Diliman. Post-doctoral training includes: ASEA-UNINET, Graz University of Technology, Graz, Austria, 1 March – 5 April 2005; UP-NSRI-DA-BAR, UP Diliman, 1 June 2002 – 31 May 2003; JSPS, Sophia University, Tokyo, Japan, 15 November – 24 December 1999. She is currently professor at the University of the Philippines. Her research covers the following topics: Development of Organic Reactions in Benign

Solvents : ; Aqueous Diels-Alder as an Alternative Approach to the Anthraquinone Backbone; Aqueous Diels-Alder Methodology Toward Some Selected Monoterpenes; Synthesis of halogen-free ionic liquids based on 1-n-alkyl-3-methylimidazolium as greener solvents for Diels-Alder reaction; Electrochemistry.

4. B. Sc. Eduardo Atayde Jr.

Name der Universität: University of the Philippines
Institut: Institute of Chemistry, College of Science
Ort: Diliman, Quezon City 1101
E-mail: eduardojr.atayde@upd.edu.ph

B. Sc. Eduardo Atayde Jr. is a Master student in Prof. Arco's group.

5. B. Sc. Kim Sisicanin

Name der Universität: University of the Philippines
Institut: Institute of Chemistry, College of Science
Ort: Diliman, Quezon City 1101

B. Sc. Kim Sisicanin is a Master student in Prof. Arco's group.

Project report

1. Introduction and objectives

Chemoenzymatic cascade reactions are quite recent, exciting reaction concepts, since they are able to combine benefits of two catalytic fields. Successful chemoenzymatic cascades have been applied e.g. to the production of amino acids, for the dynamic kinetic resolution of secondary alcohols, or for the generation of polymers. Recently, the group of the applicant demonstrated the coupling of enzymatic reactions to water-tolerant metathesis catalysts (Á. Gómez-Baraibaret al., *Angew. Chem., Int. Ed.*, 2016, **55**, 14823.). The mutual compatibility of all involved catalysts and their reaction conditions, especially the solvent, is a decisive factor that requires the existence of a compatibility window that is often difficult to meet. On the one hand, cascades in aqueous media or bi-phasic systems are limited to catalysts with a pronounced tolerance towards water. This excludes a large number of synthetically useful metathesis catalysts from their application in chemoenzymatic processes. On the other hand, conducting the cascade in organic media requires enzymes that are active under non-aqueous conditions. As only very few enzyme classes tolerate organic media, this approach is not generally applicable.

A very recent approach to conduct enzymatic reactions in non-conventional solvents such as deep eutectic solvents (DES). These systems are formed from a eutectic mixture of anionic and cationic species, typically quaternary ammonium salts with hydrogen donors. Prominent examples are choline chloride/glycerol or choline chloride/levulinic acid. DESs have a very low vapour pressure, and thus are non-flammable. Otherwise than the related ionic liquids, they are non-toxic. After the reaction, they can easily be removed by addition of water. DES often have improved properties regarding the solution of high amounts of substrates and

products. Moreover, DES are considered to be highly promising solvents to combine chemical and enzymatic reactions.

The project *DES_Decarboxylase* aims to establish a reaction system for the phenolic acid decarboxylase (PAD) from *Bacillus thuringiensis*. PAD converts bio-based ferulic acid into hydroxystyrene. Hydroxystyrene is a building block for high-performance polymers and bio-based antioxidants. Current research in the Kourist laboratory deals with the increase of the substrate spectrum of the enzyme by protein engineering and the application of this enzyme in chemoenzymatic cascade reactions. A current bottleneck of the enzyme is the limited solubility of the starting material in water. Conducting the reaction in deep eutectic solvents would alleviate this issue. The project pursues the following objectives:

- characterization of DES at UP;
- protein engineering of the substrate scope at TUG;
- establishing the biocatalytic reaction in DES at both laboratories;
- exchange of material and analytics;
- mutual training of co-workers.

2. Visits

To establish the collaboration, Prof. Dr. Arco and her two co-workers visited in June 2018 the TU Graz for two weeks. This visit was dedicated for a getting-to-know-each-other and an introduction of the experimental reaction.

The members of the Arco group were introduced to the production of the decarboxylase PAD and how to conduct analytics for activity measurements. Prof. Arco received enzyme material and chemicals to establish the procedure at UP, which is an important requirement for the investigation of the Deep eutectic solvents

Due to the unclear situation regarding the financing of the ASEA-Uninet 2018, Prof. Robert Kourist's and Dr. Sandy Schmidt's stays could not be planned and booked on time.

Therefore, the financial support cannot be as planned. We intend to apply financial support from ASEA-Uninet to realize the back-visit in 2019.

3. Experimental report

Materials and Reagents

Ethyl acetate and glacial acetic acid were obtained from RCI Labscan while cyclohexane was obtained from Ajax Chemicals. All the chemicals were used without further purification. The TLC Silica gel 60 F₂₅₄ plastic sheets were purchased from Merck. The UV detector used was UVGL-55 Handheld UV Lamp. Iodine used for staining was obtained from Sigma-Aldrich.

Procedure

Fifty microliters (50 µL) of the substrate stock (200 mM Ferulic acid in DMSO) was diluted with 945 µL of 50 mM KP_i buffer (pH 6). The biocatalytic reaction was initiated by the addition of 50 µL of 2.6 mg/mL phenolic acid decarboxylase (PAD) in 50 mM KP_i buffer (pH 6) at room temperature with constant shaking for an hour. The reaction progress was then monitored using TLC. The plate was developed in cyclohexane/ethyl acetate/acetic acid (1:1:0.001), observed under UV light, and later stained in an iodine chamber.

Results

The PAD-WT and PAD-185A both exhibited biocatalytic activities as shown in Figure 1. A R_f value of 0.91 was calculated for the decarboxylation products of both enzymes and these products are assumed to be 2-methoxy-4-vinylphenol. Once HPLC protocol is received, the nature and amount of the products can be confirmed and preparation of various deep eutectic solvents can already be resumed.



Fig. 1 TLC chromatoplate of the decarboxylation reaction

To establish the collaboration, Prof. Dr. Arco and two coworkers visited the TU Graz in June 2018. She received training in the handling of the model enzyme Phenolic Acid Decarboxylase (Figure 1).

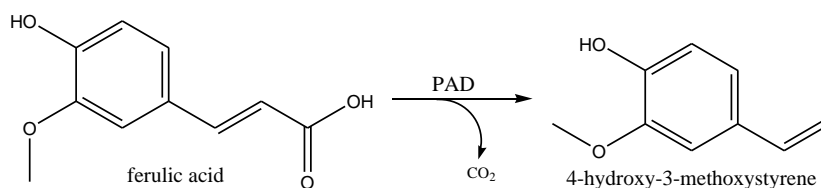


Figure 1. Schematic representation of the conversion of ferulic acid to 4-hydroxy-3-methoxystyrene

The reaction was successfully established in the laboratory at UP. Figure 2 shows the conversion (consumption of starting material) of ferulic acid using wildtype PAD and variant I85A.

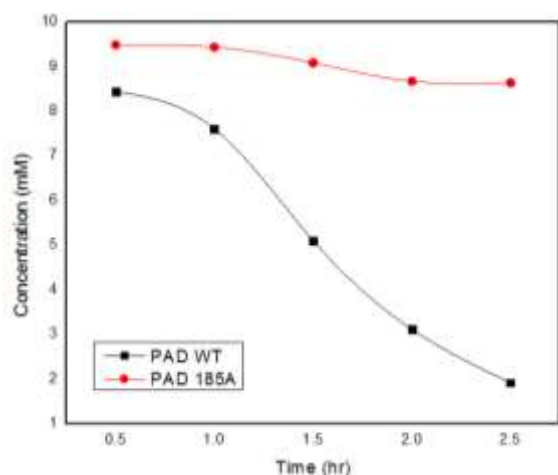


Figure 2. Ferulic acid concentration vs. time graph during the reaction with PAD

4. Summary and outlook

After successfully establishing the enzymatic reaction at UP, Prof. Arco's research currently focuses on the investigation of different eutectic solvents. Aim is to relate the properties of these solvents to the performance of the enzyme. The Kourist group is currently investigating the substrate spectrum of the enzyme.

Prof. Kourist plans to visit UP in September of 2018 for a review of the results in both laboratories and the planning of joint publications.

Publications obtained so far:

As the project is in a rather initial phase, no publications have been obtained so far.

Expected results and expected publications:

In the long term, a publication on the characterization of the decarboxylase in deep eutectic solvents is expected.

Planned actions and collaborations:

We plan to continue the collaborative research and plan visits for 2019. For this, a proposal for ASEA-uninet is currently under preparation.

The effect of chain length on mesomorphic and rheological studies of anhydrous branched-chain glycolipids

This research project has been carried out in August-September 2018 at the University of Malaya (UM) in Kuala Lumpur and Graz University of Technology in Graz) in continuation of a research project in 2017. It included an outgoing (Austrian project leader to UM) and an incoming (Melonney Patrick a Malaysian master's student to TU Graz) mobility.

Project leaders from Austria were **Manfred Kriechbaum** (Mag., Dr.) from the Graz University of Technology (TU Graz), Institute of Inorganic Chemistry (manfred.kriechbaum@tugraz.at) and from the Malaysian host institution Dr. **Noor Idayu Mat Zahid**, from University of Malaya (UM), Department of Chemistry, (nooridayu@um.edu.my).

Dr Manfred Kriechbaum from TU Graz is currently a Senior Scientist at the Graz University of Technology, and received his PhD at the Karl-Franzens University of Graz. Previously he had worked for over 25 years at the Austrian Academy of Sciences and for 2 years at Princeton University, USA. His research interests cover all aspects of SAXS (Small-Angle X-Ray Scattering) in theory, instrumentation and application, carried out at conventional X-ray laboratories and also at synchrotron radiation facilities (like at ELETTRA, Trieste, Italy).

Dr. Noor Idayu Mat Zahid received her PhD University of Malaya in 2013. She is currently a senior lecturer at UM doing research and teaching at the Department of Chemistry and her fields of expertise are bio-compatible materials (glycolipids, liquid crystals, liposomes), Self-Assemblies and Self-Organized Systems (liquid crystals, thermotropic, lyotropic, biaxial phases). She is the successor of Prof. Rauzah Hashim, the project leader of the previous common research project in 2017 who retired this year. Dr. Noor Idayu Mat Zahid is also the manager of the SAXS-laboratory at UM and supervisor of the master's student Melonney Patrick (also UM) who carried out the experimental SAXS measurements of this project during his visit at TU Graz

A common research tool we are both are using at our laboratories is Small-Angle X-ray Scattering (SAXS). It is a fundamental scattering method for structure analysis of condensed matter and a powerful technique to gather quantitative nanoscale information from a diverse range of samples from liquids to pastes, powders, and films. The typical length scales probed range from ~1-100 nm, corresponding well to the typical feature sizes of nanoparticles in solutions, nanocomposites, block copolymers, mesoporous materials, protein solutions or liquid crystalline systems and ideal to study self-assemblies and self-organized systems in the nanosize range.

Aim of this project was to characterize the nanostructure and self-assembly of first-time synthesized glycolipids by SAXS. Using the sugar head group of mannose which is an epimer of glucose, five branched chain (of total chain length of C8-C24) glycolipids have been synthesized. These branched chain mannosides display unique trend in their thermal and liquid crystals properties By SAXS it was found that in the dry state, the shorter chain compounds, α -man-C6C2 and α -man-C8C4 exhibit a lamellar ($L\alpha$) phase. The middle chain mannoside, α -man-C10C6 adopts ribbon phase at the room temperature; while, the longer chain ones, α -man-C12C8 and α -man-C14C10 form inverse bicontinuous cubic phase of space group Ia3d (V_{II}) and hexagonal (H_{II}) phase respectively.

In this current project part (2018) we focused on the lyotropic properties (glycolipids in water) of these compounds looking at the nanostructural behavior as a function of temperature by using SAXS.

The worktime dedicated to this project was structured the following way:

Two weeks outgoing mobility at **UM** included: (a) finalizing a review publication on this subject (glycolipids in the dry state). It has been accepted and published now [1], (b) giving a workshop over 3 days at UM on the technique of SAXS titled “SAXS. *Theory, Method, Praxis and Applications*”, (c) synthesis and preparation of the glycolipid samples for the SAXS measurements at TU Graz.

Two and a half weeks incoming mobility at **TU Graz**: SAXS measurements of one branched glycolipid sample at different water concentration as a function of temperature (T-scans from -15°C to 75°C). The allocated time for these measurements turned out to be almost too short for the amount of the projected measurements so that only all measurements could be carried out but no data evaluation yet. This is currently in progress and the results will be presented and published by summer 2019. We will try to continue and complete this project by using the other synthesized branched glycolipids and using also other complementary methods (like DSC: Differential Scanning Calorimetry).

[1] “*Guerbet glycolipids from mannose: liquid crystals properties*”, Melonney Patrick, N. Idayu Zahid, Manfred Kriechbaum & Rauzah Hashim, *Liquid Crystals*, Volume **45**, Issue 13-15, 1970-1986 (2018). <https://doi.org/10.1080/02678292.2018.1492036>

Other academic/research activities in Malaysia beside the research project:

Invited keynote speaker at the **ICXRI-2018** (<http://www.icxri2018.com/>, International Conference on X-Rays & Related Techniques in Research & Industry 2018) on Aug. 18/19th in Kota Bharu, Kelantan, Malaysia giving a talk titled: “*Pressure-Induced Phase Transitions Investigated by in-situ SAXS (Small Angle X-Ray Scattering)*”

Invited visit to **UKM** (Universiti Kebangsaan Malaysia, 3.9.) in Bangi, Selangor, by Prof. Shahidan Radiman to do a follow-up on my previous ASEAN-project from 2016 and giving a seminar talk titled: “*SAXS in Nanostructural Research*”

Invited visit to **UiTM** (Universiti Teknologi MARA, 4.9.), Faculty of Medicine, Sungai Buloh Campus by Prof. Siti Hamimah to give two seminar talks titled: “*SAXS in Biomedical Research*” and “*Studies and Research Grant Opportunities in Austria*”

Invited visit to the **Malaysian Nuclear Agency** in Bangi, Selangor, by Dr. Hafizal bin Yazid to perform measurements on their SAXS-instrument on absolute intensity scaling of scattering experiments.

Crystallization of fungal carboxylate reductase

Scientists:

Priv.-Doz. Dr. techn. Margit Winkler; Austrian project leader; Institute of Molecular Biotechnology, margit.winkler@tugraz.at; M Winkler is Elise-Richter fellow at Graz University of Technology and Senior Researcher at the Austrian Center of Industrial Biotechnology. She studied technical chemistry and completed her PhD in Organic Chemistry. As Erwin-Schrödinger fellow, she joined David O'Hagan at the University of St. Andrews. Margit obtained her *venia docendi* in Biotechnology in 2019. Her research focus is on biocatalysis and she is interested to find and to improve enzymes for challenging chemical transformation and to use them in a biotechnological context.

Assoc. Prof. Dr. Farah Diba Abu Bakar; Malaysian project leader; School of Biosciences and Biotechnology, Faculty of Sciences and Technology; fabyff@ukm.edu.my; FDA Bakar is Professor at the, National University of Malaysia and supervisor of Jonathan Ling's PhD thesis. Her scientific focus is on enzymes from extremophilic sources at the interface between enzymology and structural biology.

Jonathan Ling; jonathanguyang@gmail.com J Ling is currently pursuing a PhD in Biochemistry at the National University of Malaysia (UKM). His research interest is centered around the functional and structural biology of fungal biosynthetic enzymes.

Inge Eiteljörg; I. Eiteljörg is PostDoc Institute of Molecular Biotechnology and acib GmbH; Inge.eiteljoerg@acib.at; I Eiteljörg has strong expertise on protein expression and purification by various chromatographic techniques.

Report:

The selective reduction of carboxylic acids to aldehydes is a difficult multi-step process in synthetic chemistry. Carboxylic acid reductases (CARs) are three-domain enzymes that operate in assembly-line fashion to catalyze the selective one-step reduction of carboxylic acid substrates to their corresponding aldehydes. Their exceptionally broad natural substrate scope makes them invaluable biocatalysts for potential applications in diverse chemical and synthetic processes (Qu et al., 2018; Winkler, 2017).

Our motivation was to study the three-dimensional architecture of CARs to unlock the full catalytic potential of CARs. This should enable a more holistic and integrated understanding of the CAR enzyme class as a whole, and expedite future efforts to tailor these enzymes by protein engineering.

Expression of CARs

Plasmid constructs for recombinant expression were generated prior to the research exchange. In Graz, *Neurospora crassa* CAR (NcCAR) with an N-terminal 10xHIS tag and a variant with a 10x HIS tag and a TEV cleavage site were cloned, and in Bangi, two CARs from *Pycnoporus cinnabarinus* (PcCAR3 and PcCAR4). We used the pETDuet-1_EcPPTase vector (containing the *E. coli* PPTase needed for the essential post-translational modification of carboxylate reductase). Expression was observed for all constructs except for the one without TEV cleavage site.

Purification of CARs

During our research stay in Bangi large-scale protein purification was carried out in order to obtain protein preparations with high purity. The full-length CARs were purified via two chromatographic steps. First, a HisTrap FF 5 mL nickel pre-packed column was used, followed by size exclusion chromatography (with a HiLoad 16/600 Superdex 200 pg (GE Healthcare) column). Protein preparations with purities ranging from ~80-90% were obtained. Protein yields were somewhat lower than expected, probably, because IPTG induction was used instead of an autoinduction protocol. Protein preparations were characterized by determination of the protein concentrations using the Bradford assay and by analysis of their purity by Polyacrylamide gel electrophoresis followed by Coomassie Blue staining.

Determination of enzymatic activities

The expression and purification of PcCARs has been successfully demonstrated for the first time during the incoming stay of J. Ling in Graz. The result was repeated in Bangi and activity of PcCAR3 was determined by a spectrophotometric assay and resulted in 0.26 U/mg. Corroborating the first experiment, PcCAR4 showed no activity for any of the tested substrates.

Crystallization of CARs

As a follow up of our 1-week research stay, Jonathan Ling continued to use the preparations for crystallization trials. Crystal screening was performed with a number of commercial screening kits (e.g. Crystal Screen I and II and PEG/Ion, all from Hampton Research) at nanoliter scale in 96-well Intelli-Plates (Hampton Research) using a robotic dispenser (PHOENIX Liquid Handling & Microscope System). A number of conditions gave rise to observable crystals. Optimization of crystallization is currently still being attempted in order to obtain better, diffraction-quality crystals.

Summary and conclusion

In summary, experimental procedures that are established at the IMBT in Graz have been transferred to the labs in Bangi. Although certain instrumental differences called for adaptations, the expression and purification of CARs was successful. The purity of the obtained protein preparations was actually

not perfect and required another purification step prior to crystallization trials, which require homogenous protein preparations to increase the success rate. Protein crystallization – especially of large, flexible proteins like CARs – is a highly challenging task with no guarantee of success. The research exchange did provide substantial exchange of experience with respect to the expression and purification strategy for both parties and hopefully, diffracting crystals will appear with time (this can take months) and lead to structural insight on this fascinating enzyme class.

Teaching activities:

While Inge Eiteljörg was engaged full time in wet lab work, Margit Winkler spent two days as Moderator in 'Scientific Manuscript Writing Workshop', 15.-16. Nov 2018, UKM, Malaysia, organized by the American Society for Microbiology (ASM) Malaysian Chapter and UKM. Furthermore, phylogenetic analyses were conducted to understand the evolutionary context of the new carboxylate reductases from *Pycnoporus cinnabarinus*.



Figure 8 Project team trip to Kuala Lumpur. Left to right: Nardiah Rizwana Jaafar, Margit Winkler, Farah Diba Abu Bakar, Jonathan Ling Gu Yang; Back: Petronas Towers, © UKM / Jonathan Ling Gu Yang

Publication:

Lecture: Margit Winkler (2018) Discovery, characterization and application of carboxylic acid reductases. Faculty of Science and Technology, Universiti Kebangsaan Malaysia, Nov 12, Bangi, Selangor, Malaysia. This talk was presented to staff, postgraduate and final year students of the School of Biosciences and Biotechnology.

Biogenic raw materials, Resource Efficiency and Cleaner Production in the Mekong Delta

Participatin scientists

- i) **Hans Schnitzer**, Prof. Dr. techn.
PhD in Chemical Engineering, retired University Professor for Chemical Engineering Fundamentals and Energy Technology at Graz University of Technology.
- ii) **Gerhart Braunegg**, Prof. Dr. techn.
PhD in Chemical Engineering, retired University Professor for Bioengineering and Applied Microbiology at TU Graz;
- iii) **Hai Le Than**; Director of Institute of Environment and Resources, Vietnam National University, Dr. techn. TU Wien
- iiii) Assoc. Prof. Dr. **Ho Quoc Bang**
2005: Msc degree in Environmental Sciences
2010: Dr. degree in Environmental Sciences
Current position: Head of Department of Air pollution and Climate Change
- v) Dr. **Nguyen Hai Au**
Head of Department of Remote Sensing and GIS
2009: Msc degree in Utilization and protection of environmental resources
2017: Dr. degree in Utilization and protection of environmental resources
Current position: Head of Department of Remote Sensing and GIS
- vi) Msc. **Tran Thi Hieu**
2018. Msc degree in Natural Resources and Environmental Management
Current position: Researcher – Department of Environmental Management

Report about the visit of TU Graz of **Dr. Ho Quoc Bang** **Dr. Nguyen Hai Au** **Tran Thi Hieu, MSc**

The Vietnamese scientists were welcomed at TU Graz by Prof. Hans Schnitzer and Prof. Gerhart Braunegg.

Since the professional fields of Profs. Schnitzer and Braunegg differ widely from those of the Vietnamese guests it was considered useful to plan several visits of TU Graz institutes as well as institutions of local and regional importance according to the background and interests of the Vietnamese guests.

The report gives an overview of the different visits and topics, as well as a list of persons hosting the group in the various institutions.

TU Graz; Institute for Satellite Communications and Communications Networks

Prof. Wilfried Gappmair
Dr. Manuela Wenger
Prof. Hans Schnitzer
Prof. Gerhart Braunegg
Prof. Hartmut Kahlert
Ms. Sibylle Braunegg
Dr. Ho Quoc Bang
Dr. Nguyen Hai Au
Msc. Tran Thi Hieu

After an introduction to the work of the institute by Prof. Gappmaier, Dr. Wenger showed the group around the building. She explained about the nano-satellites TUG has launched, their payload and their performance. The group was showed the antennas on the roof of the building and the control room for the TUG Nano Satellite. The group was very much impressed. A vivid discussion followed the visit.

TU Graz; Remote Sensing and GIS, Institute of Geodesy

Dr. Ho Quoc Bang
Dr. Nguyen Hai Au
Msc. Tran Thi Hieu
Dr. Manuela Hirschmugl
Prof. Hans Schnitzer
Ms. Sibylle Braunegg

Dr. Manuela Hirschmugl presented the research activities of Prof. Schardt: many projects related to remote sensing and GIS. Some of their techniques can be applied to solve problems in Ho Chi Minh and the Mekong Delta such as: land subsidence, mining activities, etc. A vivid discussion between Dr. Hirschmugl and Dr. Au showed, that one technique could be very useful to Southern Vietnam, namely the ADAM Portable Remote Sensing Device. This can be used among other tasks to monitor mining activity.

Dr. Au of IER team will discuss with local city/province representatives in Southern Vietnam and keep in contact with Dr. Manuela Hirschmugl to develop a proposal for the application of the ADAM module.

Discussion about "Smart City Research"

StadtLABOR

Prof. Hans Schnitzer
Mag.^a Barbara Hammerl
Ms. Sibylle Braunegg
Dr. Ho Quoc Bang
Dr. Nguyen Hai Au
Msc. Tran Thi Hieu

Vietnam has identified 3 cities, which are planned to be transformed under a smart city program. IER is also active in this field and will be involved in the National Smart City projects. Ms. Barbara Hammerl and Prof. Schnitzer introduced the activities for Smart City projects in Graz and Austria which can be applied in developing cities as HCMC. Social projects, stakeholders participating in the project and several more aspects of Smart City development could improve the quality of life in Vietnamese cities.

Prof. Dr. Hans Schnitzer introduced the Smart City research topic and projects of his team in this research field.

IER team and Ms. Sibylle Brauneegg discussed about smart measures for smart city, as well as potential applications for cities in Vietnam. As planned for 2020, the 3 biggest cities in Vietnam will undergo a smart city development (Hanoi, Ho Chi Minh City and Da Nang).

Discussion about "Air Quality, Energy, Waste Management, Ecoprofit", Department of Air, Energy, Waste Management, City of Graz

Prof. Hans Schnitzer

Dr. Ho Quoc Bang

Dr. Nguyen Hai Au

Msc. Tran Thi Hieu

Dr. Werner Prutsch (Department of Air, Energy, Waste Management, City of Graz)

Thomas Lampesberger (Advisor for the City Counselor for Environmental Affairs, Tina Wirnsberger, City of Graz)

Dr. Werner Prutsch presented the role of the Department of Air, Energy, Waste Management in Graz and the measures/projects for air quality management, waste water, solid waste, energy, and the Ecoprofit Program in Graz.

The IER team discussed and learned about many measures of the City Graz which can also be applied in Ho Chi Minh city.

It turned out to be useful to do more research in Ho Chi Minh city, having similar problems in comparison to the situation in Graz with PM10 pollution. Graz has therefore adopted the regulation, that heating systems may not release more than 4g dust/m² of Gross Floor Area (GFA).

Further, Dr. Prutsch presented many project related to green building, renewable energy (solar, hydrology...)

Discussion about "Air Quality Monitoring and Management" Styrian Government, Air Quality Monitoring Network

Prof. Hans Schnitzer

Dr. Thomas Pongratz (Regional Administration of Styria)

Dr. Andreas Schopper (Regional Administration of Styria)

Dr. Ho Quoc Bang

Dr. Thomas Pongratz presented the air quality-monitoring network in the Province of Styria including Graz and the results for the air quality in the province.

The monitoring results for some pollutants are higher than the legal limits for e.g. PM10, NO2...due to heating and traffic in Graz.

Then, Dr. Andreas Schopper presented the air quality management plan for the City of Graz and Styria. There are many measures can be applied also in Ho Chi Minh city because the IER team is now developing the air quality management plan for HCMC. Such measures could include enhancing public transportation, subsidies, incentives, and measures for traffic regulations.

Then, we discussed about a low cost air quality monitoring network. This can be developed for HCMC because HCMC doesn't have any air quality monitoring station now. We visited one air quality monitoring station in Graz and learned how to install such a monitoring network. We discussed the potential to develop a low cost air quality monitoring sensor / devices network.

Publications:

Earlier publications have been reported in previous years.

Tran Van Thanh, Hans Schnitzer, Gerhart Braunegg, Le Thanh Hai (2017). Development of an Optimization Mathematical Model by Applying an Integrated Environmental Indicator for Selecting Alternatives in Cleaner Production Programs, Journal of Cleaner Production Volume 154, pp295–308

<https://www.sciencedirect.com/science/article/pii/S0959652617307059>



City of Graz, Dept. Environment



Climate Change Centre Austria



Satellite test chamber at TU Graz



Geodesy, Remote sensing

© all photos: TU Graz / Sibylle Braunegg

Advanced Computational Geotechnics

Project Leader: **Prof. Helmut F. Schweiger, Graz University of Technology**

Prof. Schweiger is Head of the Computational Geotechnics Group at the Institute for Soil Mechanics and Foundation Engineering of the Graz University of Technology. His main research interests are the development of multilaminate models for soils and the assessment of the influence of the constitutive model for solving practical problems, in particular deep excavations, deep foundations and tunnels. His research is reflected in more than 200 publications in International Journals and Conference Proceedings and invitations to keynote and plenary lectures at International Conferences on Soil Mechanics and Computational Geotechnics. He is also president of the Austrian Society of Soil Mechanics and Geotechnical Engineering.

helmut.schweiger@tugraz.at

Ass.Prof. Franz Tschuchnigg obtained his Ph.D. at the Graz University of Technology investigating the behaviour of deep foundations by means of 3D finite element analysis and holds presently a post-doc position at the Institute of Soil Mechanics and Foundation Engineering at the Graz University of Technology. His main research interests are 3D finite element modelling of geotechnical structures and finite element limit analysis. He was a visiting research fellow at the University of Newcastle in Australia.

franz.tschuchnigg@tugraz.at

Dr. Indra Noer Hamdhan is a lecturer and Head of the Geotechnical Laboratory at the National Institute of Technology, Bandung, Indonesia. He held a scholarship of the Government of Indonesia which allowed him to obtain his Ph.D. from the Graz University of Technology. His main research interest is slope stability analysis considering climatic effects such as intensive rainfall events.

indranh@itenas.ac.id

Short description of course

This course has been a continuation of various courses held in the past in Denpasar and Bandung within the long term cooperation between Graz University of Technology and the National Institute of Technology, Bandung. The content of the course is based on the course "Computational Geotechnics" which is held at the Graz University of Technology within the curriculum for civil

engineering in the master programme “Geotechnical and Hydraulical Engineering. In recent years numerical methods have also gained importance in Indonesia because a number of large infrastructure project will be built within the next decades. Many of them involve deep excavations in an urban environment (e.g. Jakarta) and embankments for roads and railways in coastal regions where soft soils prevail. In all these case numerical methods will be applied to predict the behaviour of these geotechnical structures. The course reflected these needs and besides hands-on training on using a particular code (supervised mainly by Dr. Tschuchnigg) a series of background lectures (given by Prof. Schweiger) have been given. As in previous years the course was well attended, this year more than 30 participants, presenting a mix of students in their final years and practical engineers. It has to be mentioned that some lectures have been given also by our colleagues from Indonesia.

Pre-training: Monday				3.12.2018
Session Pre-training:				
3:00	4:00	CGT1	Introduction to PLAXIS 2D & 3D	Dr Cheang
4:00	5:00	CGT2	Training 1: Modelling with PLAXIS 2D and 3D	Dr Cheang/Indra/Franz

Day 1: Tuesday					4.12.2018
Session 1: Soil Behaviour and Models					
8:30	9:15	CG1	Geotechnical Finite Element Modelling		Prof Schweiger
9:15	10:00	CG2	Plasticity and Mohr-Coulomb Soil Model		Prof Schweiger
10:00	10:15	Tea Break			
10:15	12:00	CG3	Exercise 1: Elastic and Elastoplastic Modelling of Strip Foundation		Dr Cheang
12:00	1:00	Lunch			
Session 2: Soil Models					
1:00	2:00	CG4	Critical Soil Mechanics and Soft Soil Model		Prof Schweiger
2:00	3:15	CG5	Hardening Soil and HS-small Soil Models		Prof Schweiger
3:15	3:30	Tea Break			
3:30	4:15	CG6	Structural Elements in Plaxis		Dr Cheang
4:15	5:30	CG7	Exercise 2: Calibration of Soil Model using Soil Test		Dr Tschuchnigg

Day 2: Wednesday				5.12.2018
Session 3: Initial Stresses and Safety Analysis, Modelling of Excavations,				
8:30	9:15	CG8	Modelling of Excavations	Prof Schweiger
9:15	10:00	CG9	Initial Stresses and Safety Factor Analysis	Prof Schweiger
10:00	10:15	Tea Break		
10:15	12:00	CG10	Exercise 3: Modeling of Excavation using MC, HS and HS-small	Dr Tschuchnigg

12:00	1:00	Lunch			
Session 4: Modelling of Groundwater, Drained, Undrained and Consolidation Condition					
1:00	2:00	CG11	Modelling of Groundwater in PLAXIS		Dr Cheang
2:00	3:00	CG12	Modelling of Undrained Behaviour and Consolidation		Prof Schweiger
3:00	3:15	Tea Break			
3:15	4:00	CG13	Ground Improvement with Vertical Drains		Ikhya
4:00	5:30	CG14	Exercise 4: Modelling of embankment improved with vertical drains		Ikhya

Day 3: Thursday					6.12.2018
Session 5: Modelling of Embankments, Slopes and Unsaturated Soil Behaviour I					
8:30	9:15	CG15	Utilization of Bamboo Pile-Mattress System as Soil Improvement for Embankment on Soft Soils	Prof Masyhur	
9:15	10:00				
10:00	10:15	Tea Break			
10:15	11:00	CG16	Unsaturated Soils	Prof Schweiger	
11:00	12:00	CG17	Advancing Geotechnical Modelling in Bentley-Plaxis	Dr Cheang	
12:00	1:00	Lunch			
Session 6: Modelling of Embankments, Slopes and Unsaturated Soil Behaviour 2					
1:00	2:00	CG18	Modelling of Full and Partially Saturated Slopes	Dr. Indra	
2:00	3:15	CG19A	Exercise 6A: Slope Instability and Influence of Unsaturated Soil Behaviour	Dr. Indra	
3:15	3:30	Tea Break			
3:30	4:30	CG19B	Exercise 6B: Evaluation of Slope Instability and Influence of Unsaturated Soil Behaviour	Dr. Indra	

Day 4: Friday					7.12.2018
Session 7: Modelling of Ground Improvement					
8:30	9:15	CG20	Modelling of Ground Improvement		Prof Schweiger
9:15	10:00	CG21	Concrete Model (SCM)		Prof Schweiger
10:00	10:15	Tea Break			
10:15	11:30	CG22	Exercise 7: Modelling of Improved Ground		Dr Tschuchnigg
11:30	1:30	Lunch + Friday Pray			
1:30	2:30	CG22	Exercise 7: Modelling of Improved Ground (continue)		Dr Tschuchnigg
Session 8: POP Quiz					
3:00	5:00				

Numerical Methods for PDE Constrained Optimization Problems

This research project extends a long time cooperation of O. Steinbach and T. X. Phan who was a PhD student at TU Graz until 2011, and who is now Deputy Head in the School of Applied Mathematics and Informatics at Hanoi University of Science and Technology, Vietnam. At TU Graz, G. Of and P. Gangl (since 2017) are involved.

The research project covers two areas of interest: The first one is the numerical solution of optimal control problems with energy regularisation by using finite and boundary element methods.

In the most recent work we have extended this approach to the solution of the Cauchy problem for the Poisson equation. We plan to extend these ideas to control and inverse problems for the heat equation. In the context of space–time finite and boundary element methods we will also include time–dependent boundary conditions.

The second topic is also related to finite and boundary element methods for the heat equation, but brings in shape optimization to determine an optimal design for an electric motor. This research topic is due to the expertise of P. Gangl who joined the institute in September 2017. The electromagnetic behavior of an electric machine is described sufficiently well by the magneto–quasistatic approximation of the Maxwell equations. The most widely used model for electrical machines is a two–dimensional one, which is a parabolic partial differential equation where the magnetic reluctivity describes diffusion, and the unknown is the third component of the magnetic vector potential. Note that the motor consists of an outer, fixed part (stator) and an inner, rotating part (rotor), which are separated by a thin air gap. It is important to have a good approximation of the solution in the air gap, since this is where the torque is generated, which is responsible for the machine's rotation. We are interested in the shape optimization of the ferromagnetic part of the motor such that a given objective function J , which may represent quantities such as the produced torque or the smoothness of the rotation, is minimized.

Note that shape optimization problems can be interpreted as optimal control problems where the control variable is replaced by a shape of a domain. In this context, however, the control is not an

element of a vector space, but it is a subset of the computational domain and Fréchet derivatives have to be replaced by the notion of the shape derivative. The formula for the shape derivative contains the adjoint state, which is the solution to a linear parabolic partial differential equation with given terminal condition, and no initial condition. Since, in the course of the optimization algorithm, both the state and the adjoint equation have to be solved many times, an efficient solution strategy is important. For the solution of the primal and adjoint problems we plan to use space–time boundary element methods in parallel which are already available at TU Graz.

During the last year's visit of P. Gangl in Hanoi we have started the work on shape optimization problems subject to parabolic evolution equations by using space–time finite and boundary element methods. We plan to apply for an ASEA UniNet project in 2020 which may allow us to have some longer stays at TU Graz and at Hanoi University of Science and Technology, respectively. There is also an ongoing attempt to attract students from Hanoi to do a PhD at TU Graz.

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Education and training in the field of rock mechanics and tunnelling

Persons participating in project:

Project leader: Em. Univ Prof. Dipl.-Ing. Dr. mont **Wulf Schubert**, Graz University of Technology, Institute of Rock Mechanics and Tunnelling.

Email: schubert@tugraz.at

Studied Civil Engineering at Graz University of Technology, graduated 1977; doctoral study at Mining University Leoben, Austria, PhD in 1980.

Worked for Geoconsult Salzburg from 1980 to 1992 on rock mechanics and tunnelling projects around the world, with focus on Europe, Far East Asia and South America Full professor at Graz University of Technology from 1992 to 2018; main research areas: rock mass characterization, tunnelling in poor and faulted ground, improvement of support elements, development of new monitoring data evaluation and interpretation methods

Ass.Prof. Dr. **Kurt Klima**, Graz University of Technology; Institute of Technical Geology and Applied Mineralogy (now: Institute of Applied Geosciences);

Email: klima@3-g.at

PhD at Graz University 1975, joined Institute of Applied Geosciences, retired from University 2015. Specialization in field exploration, rock mass characterization, tunnelling geology

Univ. Prof. Dr. **Zainab Mohamed**, Universiti Teknologi MARA (UiTM), Malaysia; Faculty of Civil Engineering, Institute of Frontier Materials and Industrial Application;

Email: zaina556@salam.uitm.edu.my.

Prof. Mohamed received her PhD from Universiti Kebangsaan Malaysia, Bangi, and is since working at the UiTM. Specialization in rock and rock mass properties, anisotropy, weathered rocks and soils

Report:

The program started with a visit of Prof. Zainab Mohamed to Graz University of Technology from April 16th, 2018 to May 12th, 2018. Prof. Mohammed participated in a class taught by Prof. Schubert on Advanced Rock Mechanics and Tunnelling. She also participated in a course on rock mechanics laboratory tests, given by Ass. Prof. Dr. Manfred Blümel.

In addition, Prof. Mohamed reviewed a number of Master and Doctoral theses, which were completed at the Institute of Rock Mechanics and Tunnelling at Graz University of Technology.

Discussions with the members of the Institute were held regularly.

Prof. Mohamed was taken to a field trip to the Semmering base tunnel, a 27,3 km railway tunnel currently under construction in Austria by Prof. Schubert.

Prof. Schubert and Prof. Klima visited the UiTM in Shah Alam from November 5th, 2018 to November 9th, 2018.

A Geomechanics Short Course was given from Monday through Thursday. Approximately 50 to 60 engineers from academia and industry very actively participated in the short course (program attached)-

In addition, extensive discussions were held with respect to an ongoing research project with the focus of effects of anisotropic rocks.

Due to the nature of this initial cooperation project, serving the training in the field of Geomechanics for Malaysian professors and engineers, no publication was prepared.

A final visit at the general directorate for infrastructure in Kuala Lumpur was used to discuss future cooperation on a larger scale.

SHORT COURSE ON GEOMECHANICS							
TUNNEL ENGINEERING AND PROJECT MANAGEMENT							
5 Nov - 8 Nov. 2018							
Day	Date/day	8.30 am	Break	11.30 am	Lunch	2.00 pm	4.30 pm
Day 1	5 Nov 2018. Monday	Module 1 - Rock Testing and Characterization, ISRM Suggested Method. Hands-on testing and analysis. Venue: Rock Mechanics Laboratory, UiTM Shah Alam. Selangor. (UiTM)					
Day 2	6 Nov 2018. Tuesday	Module 2- Tunnelling methods : benefits and shortcomings. (Graz TU)		Module 3 -Impact of geological environment on tunnelling and investigation. (Graz TU)		Module 4- Identification of geological and design parameters for tunnel modelling. (Graz TU)	Module 5 - Evaluation of investigation and characterization of ground for tunnel. (Graz TU)
Day 3	7 Nov 2018. Wednesday	Module 6 -Identification of hazards and selection of appropriate excavation and support methods. (Graz TU)		Module 6 - Identification of hazards and selection of appropriate excavation and support methods. (Graz TU)		Module 7 - Project management and contract in tunnel project and Monitoring of tunnel. (Graz TU)	
Day 4	8 Nov 2018. Thursday	Module 8 - Recent Advances in Tunnel Engineering- South Korea experience (KAIST)		Module 8 - Recent Advances in Tunnel Engineering- South Korea experience (KAIST)		Module 9 - Tunnel construction in Malaysia - Malaysian experience. (MMC Corporation Berhad)	

Hands on course on high performance liquid chromatography (HPLC) and thin layer liquid chromatography (TLC)

ASEA 2018 / TUGraz / 15

- Leader of the project a.o.Univ.Prof. DI Dr. **Michael Murkovic** from the Institute of Biochemistry at Graz University of Technology. Research interest: Food chemistry with a focus on liquid chromatography and the formation of carcinogenic compounds during preparation/cooking. He studied Technical Chemistry at the same university with a Dr. in biotechnology; after doing a PostDoc at ETH Zürich and 4 years of professional experience at Sandoz he started working at the university in 1993.
- Contact person and local organiser was Dr. **Endry Nugroho Prasetyo** is currently employed at Institut Teknologi Sepuluh Nopember (ITS); Biology Department. Faculty of Science. One of his research interest is the production of polymeric carbohydrates from macroalgae for food uses. After studying in Surabaya he studied for PhD at Graz University of Technology at the Institute of Environmental Biotechnology.
- The aim of this project was to train undergraduated and graduated as well as PhD students on liquid chromatographic techniques which are useful for analysing food constituents like carotenoids, carbohydrates, or polyphenols. The participants will had the chance to work hands on with thin layer chromatography and discuss a series on issues on analytical problems as well as general questions on food chemistry especially the action of antioxidants.

Besides the practical work a theoretical course on the principles of separation and background information about the equipment was given.

The basic theory of separation was discussed and directly applied to the chromatographic separation. Thin layer chromatography is especially useful for training since the separation can be followed and the result is directly visible if chemical compounds are analysed that have an absorption in the visible range (carotenoids) or if a post separation derivatisation (direct heating of carbohydrates on an amino phase, reaction with radicals (DPPH) showing antioxidant activity).

Carotenoids - having different colours from yellow to violet - were separated (e.g. a chili extract is a very good example since it contains a great variety of different carotenoids of different polarity which can be separated). Some local chili samples were analysed.

It was discussed to prepare an electronic teaching course in Austria which will be provided via the internet. There will be the possibility for an exam for the students.

Report on the ASEA-UNINET project Geoarchaeological evaluation of a prehistoric site onto a relict rock fall (Krabi, Thailand)

PD Dr. Erich Draganits

The project has been carried out between 1st and 16th of February 2018, perfectly according to the working plans. The Austrian part of the research team, Konstantina Saliari (archaeozoology, NHM Vienna) and Erich Draganits (geoarchaeology, BOKU Vienna), met the Thai research group, Pitsanupong Kanjanapayont (geologist, Chulalongkorn University, Bangkok), Chawalit Khaokhiew (geoarchaeologist, Silpakorn University, Bangkok) and Prasit Auetrakulvit (archaeozoologist, Silpakorn University, Bangkok) directly in the field at Tonsai, Krabi. The aim of this project was to carry out interdisciplinary geoarchaeological and zooarchaeological research in Thailand.

The archaeological site is located directly at a sub-vertical rock face onto a relict rock fall south of Tonsai. The local geology includes sub-horizontal grey to dark grey Permian limestone with chert layers (Fig. 1). The location and altitude above sea-level was measured by handheld GPS and laser distance measurement combined with a level.

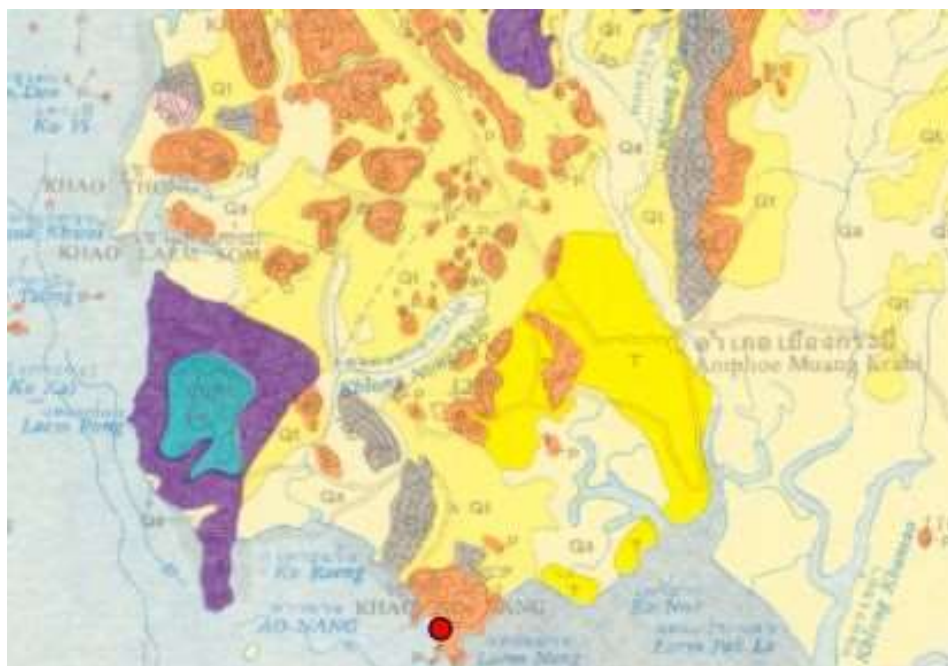


Figure 1. Location of the investigated archaeological in the geological map NC47-14 Changwat Phangnga (map: Geological Survey of Thailand, 1985).

Altitude above mean sea-level was calculated using the tide tables of the tide gauge at Pak Nam Krabi by the Hydrographic Department Royal Thai Navy. Both measurements were challenging, because of the weak GPS coverage directly below a sub-vertical rock-face and levelling across room-sized boulders of the rock fall. Figure 2 shows the site location and context with the landscape in larger detail



Figure 2. Location of the investigated archaeological site onto the relict rock fall south of Tonsai (Krabi) indicated in red. Two freshwater sources directly north of the site are indicated in blue (satellite image: Google Earth).

The archaeological site was almost completely destroyed when the path between Tonsai and Railey West was built. The only well preserved area was protected by a cover of travertine. Additional disturbance of the site results from the location of climbing routs directly in this area (Fig. 3). After cleaning the outcrop, a detailed stratigraphic profile documented the vertical evolution of the site and provided the base for subsequent sampling (Fig. 4). Seven different layers have been differentiated and documented concerning color, grain size, internal structure and archaeological content. Additionally, photos from several different directions were taken aiming for a 3D documentation based on structure from motion. The investigations directly at the site were supplemented by the geoarchaeological study of the environmental situation and natural resources of the surrounding.



Figure 3. Overview of the site from north (photo: Erich Draganits).



Figure 4. Detail of layer 3 with abundant gastropods, bivalves and some bone fragments, covered by layer 2. In the middle part of the photo a dark horizon probably indicates a hearth (photo: Erich Draganits).

Samples aimed to document the present molluscs together with the much rarer bone finds. Stone tools were hardly found and mainly comprised of rounded pebbles. The visibility of flaked stone tools might be hindered by the use of local limestone and cherty limestone raw materials. Preliminary identification of the molluscs indicate the presence of 12 families and up to 12 species of bivalves and 7 families and c. 14 species of gastropods. Each mollusk was photographed to enable additional later assessment

After Mollusk identification was done on existing literature and additionally with the collection of the Phuket Shell Museum, the reference collection of the Phuket Marine

Biological Center (PANWA) and with the collection of the Natural History Museum of the Chulalongkorn University in Bangkok. During a final meeting, the data of the fieldwork and interpretation was discussed and a publication of the data planed.

Future research plans will continue the interdisciplinary approach of this project, aiming to connect geology, zoology and archaeology. Prof. Dr. Pitsanupong Kanjanapayont from the Chulalongkorn University in Bangkok will stay during April 2018 at the University of Vienna facilitating progress of the research. Especially, more samples will be selected for geochronological dating. Additionally, in cooperation with Prof. Dr. Martin Zuschin from the Institute of Palaeontology, University of Vienna, the animal remains will be studied additionally and finally returned to the collection of the Chulalongkorn University in Bangkok.

Report (ASEA 2018/BOKU/4): Soil re-cultivation for agricultural use in ex-tin mining areas on Bangka Island, Sumatra (Indonesia)

Project team:

Dr. Asih Ngadisih and Rizki Maftukhah, M.Sc, from the University of Ghadja Mada (UGM), Indonesia, Department of Agricultural and Biosystem Engineering, Faculty of Agricultural Technology, as a visiting scientists at the Institute of Soil Research at University of Natural Resources and Life Sciences, Vienna (BOKU), for a period of 3 weeks, in April 2018 within the framework of ASEA Uninet program.

The Bangka Island research was established in 2017 (research contract was signed by Axel Mentler) and is a part of the interdisciplinary research interest on Climate, Land, and Water Resources Engineering for Sustainable Biosystem of UGM and BOKU and following the SDG's.

The members of UGM group are academicians, government, researches, and farmer groups.

Members of group from Department of Agriculture and Biosystem Engineering are: Prof. Sigit Supadmo Arif, Dr. Murtiningrum, Dr. Bayu Drri Apri N, Dr. Ntadisih, and Ritzki Maftukhah, M.Sc. Rizki Maftukhah, M.Sc is since 2017 PhD candidate at the Boku Institute of Soil Research (IBF). The team members from Austria are Dr. Franz Zehener, Dr. Axel Mentler, Dr. Katharina Keiblinger (BOKU, Department of Forest- and Soil Sciences, Institute members of Institute of Soil Research (IBF)) and Dr. Rosana Kral (BOKU, CDR (Centre for Development Research) are the Austrian research members of the team.

Team members Indonesia:

Dr. Asih Ngadisih (UGM) born in Indonesia and has a current position as a Lecturer of Universitas Gadjah Mada (UGM), Department of Agricultural and Biosystem Engineering, Faculty of Agricultural Technology. Her main area of research is Soil and Water Conservation Engineering, slope stability, bio-engineering, interaction between plant, soil, water, and atmosphere.

Rizki Maftukhah, M.Sc (UGM), STP, M.Sc, is born in Kebumen, 18 February 1989 Indonesia.

2012 – 2014 Master of Science, Agricultural Engineering, Universitas Gadjah Mada (UGM)

Thesis: Effect of Water and Organic Fertilizer Managements on Soil Redox Potential, Nitrogen Uptake, and Rice Performances under System of Rice Intensification Framework. 2019 PhD candidate at the Boku institute of soil research (IBF), BOKU with working title: Soil recultivation for agricultural use in ex-tin mining areas on Bangka Island, Sumatra (Indonesia) supervised by Katharina Keiblinger.

Team members Austria:

Dr. Franz Zehetner, born in Austria and is since 2013 Assoc Prof. at the Institute of Soil Research. (IBF), (BOKU). Senior Scientist at the Institute of Soil Research, from 2009 - 2013. Project coordinator for research projects in Indonesia (ASEA Uninet). From 2005 post-doctoral research fellow at the Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan. Expertise and main research focus pedology; volcanic ash soils; biogeochemistry at Galapagos islands; soil organic matter; biochar (soil fertility and C sequestration) and fate of phosphorus in soils.

Dr. Axel Mentler born 07.06 1954 in Germany, since 1989 present position in the Institute of soil science, University of Natural Resources and Applied Life Sciences, BOKU, Vienna. Major fields of interest are soil chemistry and soil physics, with special focus on plant nutrients experienced in instrumental analytics of plant nutrients but also micro-pollutants. Special emphasis is put on tropical soils, soil erosion, soil biochemistry and biological tests and twenty years' experience in laboratory work as head of the chemical laboratory and involved in international discussion groups on soil issues. 2015, International Training Course on Organic Agriculture: "The future of rice", Gadjah Mada University Yogyakarta (UGM), South East Asia. Sustainability Transitions Summer School, Yogyakarta, Indonesia, August 2015. This reflects the ongoing cooperation with CDR as a partner and was the condensation point for the long-term cooperation with the UGM in Indonesia.

Katharina Keiblinger, Priv.-Doz. Dipl.-Ing. Dr., Institute of Soil Research, Universität für Bodenkultur (BOKU). Main research topic is focused on soil and litter decomposition, in terms of nutrient cycling and microbes active in soil processes. The active microbes are studied via "metaproteomics" to link the abundance with the activity of enzymes to further evaluate their role in terrestrial nutrient cycles. Availability of nutrients and its ratios especially nitrogen (N) and phosphorus (P) in relation to carbon (C), and how this affects microbial carbon use efficiency and the microbial decomposition of organic matter is one of the main focus. Another focus is the response of temperature adaptation/stress, drought re-wetting, and heavy metal to the microbial community and nutrient cycling processes, as well as sorption studies with biochar for a more mechanistic on the soil N cycle.

Dr. Rosana Maria KRAL, born 01.07.1980 in Austria, PhD in France and postdoctoral research in Austria. Her passion for science communication took over and she left biochemistry to join CDR (BOKU) in 2015. Since then, she has been linking development practice and research through several projects. Since 2016, she has also been researching with partners in Mozambique how to strengthen links between smallholder farmers and other actors like government, NGOs and the private sector. Rosana links interdisciplinary and partner-like approaches to future research. Communication, cultural and social anthropology is her main interest in the project.

Background

Bangka Island is part of the South Eastern Asian tin belt extending from Myanmar to Malaysia. The basis for this tin deposit is metamorphic granite. Tin mining has been part of the regional economy in

this area since the Middle Ages. Today, tin is used predominantly in IT and the electronic industry. Mining is still essential for the region's industry: Bangka Island harbours one of the largest tin mines of the world, and around 70% of Bangka Island is tin mining area (Inonu, 2008; Supriadi et al., 2016). In 2016, tin production in Bangka was about 7,530.88 Megatons of tin (Badan Pusat Statistik, 2017).

Nowadays, three main excavation techniques are applied on Bangka Island: (i) uncontrolled digging, often by individuals, (ii) mining by industrial groups in the inland and (iii) mining on-shore/ off-shore near the coastline.

Forests are burned to remove vegetation cover and tin is mined manually with shovels or industrially. Tin is found between 8 and 12m below the surface, where it appears together with quartz and kaolinite. No chemical extraction is needed. Tin is separated from quartz and kaolinite by a two-step procedure. First, the excavated material is suspended in water, and the light kaolinite is washed away. Next, the mixture is sieved. The tin-containing minerals are smaller than quartz and pass the sieve; the remaining quartz sand is discarded. While industrial mining companies collect the mine wastes and discard them in a concentrated manner, individual diggers often leave wastes wherever they incurred, making further exploitation by mining companies economically unattractive.

After suspending and washing away, highly weathered kaolinite waste sediments in small basins scattered across the landscape, even in the agricultural production area. Kaolinite acts as a water barrier and is responsible for the white-blue colour of these artificial ponds that are characteristic for the island.

Industrial tin mining in Bangka regency is operated by PT. TIMAH (Persero) Tbk. In 2016, the Company owned onshore areas in Bangka Island about 160,665 ha. The exploration activity has been conducted for more than 50 years and now is still being expanded.

On-shore and off-shore excavation are operating in the beach area, and in the water area from 2-10 m water depth using suction and floating dredgers. Similar processes for separation are applied and the fine clay fraction is discarded to the sea water. If Kaolinite is suspended with sea water, it produces colloids. Colloids impair visibility under water. This threatens marine life and hampers possible exploitation of the island by tourism.

These activities have a devastating impact on the environment, such as land degradation (Asmarhansyah, 2016; Inonu, 2008). More specifically, tin mining activities cause (1) complete re- or destructuring of soil and sediments (separation into kaolinite and quartz sand fractions), through changes in top soil composition, changes in cation exchange capacity (CEC); (2) more kaolinite to be transported into river systems and the marine environment, where it affects marine and fluvial life and can even change river flow patterns; (3) Loss of vegetation cover and kaolinite deposits at the surface lead to increased surface water runoff. This can prevent ground water reserves from replenishing and increases danger for salinization, (4) vegetation changes: loss of biodiversity and changes in wildlife habitat.

Based on data from Bangka Belitung Province agency, tailing and ponds are approximately 85.6% and 14.4%, respectively of the total ex tin-mining land area. Tailings have high portion of sand, however, soil pH, organic matter content, cation exchange capacity (CEC), water-holding capacity, and essential macro nutrients are low (Ashraf, Maah, & Yusoff, 2011; Asmarhansyah, 2016; Inonu, 2008). Land abandoned after tin mining has very low soil fertility and consequently is unsuitable for

plant growth and agricultural use (Asmarhansyah et al., 2017; Howell & Mackenzie, 2017; Inonu, 2008; Naeth, Chanasyk, & Burgers, 2011).

Local government and communities are supporting nature conservation techniques. Current strategy for re-cultivation of ex-mining area is mainly focused on filling the pits by using overburden or top soil around the pit (Anonymous, 2016). Recently, local government together with the Agricultural Research and Development Agency, has developed a master plan to recultivate ex-mining area for agricultural land use. To ensure food security through integration system of rice and livestock (Subardja et al, 2011), the physical, chemical, and biological properties have to be improved. This can be accomplished through application of organic amendments such as manure and compost since they will increase the content of soil organic carbon, and improve soil physical, chemical, and biological properties (Asmarhansyah et al., 2017; Howell & Mackenzie, 2017; Masciandaro et al, 2013; Mitsui & Jos, 2017).

To improve degraded soils to ensure sustainable production with sufficient yields, soil additives are often applied. Beside compost and manure, zeolites, biochar and lime were shown to have beneficial effects on plant yield and soil properties (Wong 2003). Potential natural inorganic amendments are zeolites that are considered a well suitable material for agronomical purposes. Zeolites chemically belong to the group of aluminosilicates and are of natural volcanic origin. Zeolites can improve soil quality by its microporous structure, which functions as a molecular sieve, as well as its associated ability as a cation exchanger, zeolite is particularly useful for the nutrient supply to plants. Another amendment is biochar (BC). A number of field and pot trials have shown that the unique properties of BCs can enhance the productivity of various crops (Asai et al. 2009; Major et al. 2010; Vaccari et al. 2011) by increasing soil fertility. BC enhances soil fertility by raising soil pH, CEC and buffer capacity (Lehmann et al. 2003). In addition BC improves soil physical structure (Chan et al. 2007) and increases soil microbial biomass and nutrient availability (Steinbeiss et al. 2009). Furthermore, it increases water holding capacity (WHC), water availability (Lehmann et al. 2011). While BC is also able to reduce soil acidity, the same is true for lime application. To improve the permeability of the soils the addition of polyvalent ions, e.g. Ca^{2+} in the form of quicklime (CaO) and finely ground limestone powder (CaCO_3) is applied (Becher 2001).

Recreation of ex-mined area for agricultural use needs technologies that are economically viable and environmentally friendly. This project aims to study the potential for recreation of the ex-mining area for agricultural use, to ensure food security for the future in Bangka Island. We will characterize soil properties of ex-mined area and recreated area, to compare soil health. A field experiment will be involved in the present project, a conventional rice field established in a previous mining area in Bangka regency 3 years ago. In this field plots will be established with different treatments to analyze heavy metal mobility in soil, water, and plant system together with yields, to evaluate potential strategies for improving soil health and food security.

Specific Aims of the project

The aims of this project are to study the potential for recreation of the area for sustainable agricultural use of tin ex-mining area. We will characterize soil properties of ex-mined area and the possibility to

improve soil properties. The first step will be a general survey of the soil (and vegetation) in the area, while the second experiment will be on the lab scale to evaluate the mixing procedure for improving soil properties. The results from the lab experiment will provide a valuable basis for implementation in the field scale. In the field a plot experiment will be conducted on a rice field established in a previous mining area in Bangka regency 3 years ago to analyze heavy metal mobility in soil, water, and plant system. By understanding soil and heavy metal properties, we will be able to improve soil and water management practice in the ex-mined area for sustainable agriculture.

Research Methods

Experimental site Bangka Regency is located in Bangka Island, Bangka Belitung Islands Province, Indonesia with an area of approximately 302,879.47 ha. Administratively, Bangka regency is adjacent to other regency Bangka Belitung Islands Province, i.e. Pangkalpinang City, Bangka Tengah and West Bangka regency. Soil pH in Bangka regency is acidic with a pH below 5, and the soil consists of tin in silica matrices, such as tin ore, quartz sand fraction, kaolinite fraction, highly weathered granite gneiss, albite and hornblende (Badan Pusat Statistik, 2017). A conventional rice field established in previous mining area in Bangka regency was set up 3 years ago. This will serve as a field trial to analyze a large variety of parameters in the soil and the rice plant at each harvest, together with the yield.

Experiments:

Experiment 1 - Soil (and vegetation) survey of ex-mined and non-mined area

Part of this survey was already started and will be continued. The preliminary data already obtained from the ex-mining area is given in Table (1) which include a detailed analysis of plant relevant nutrients and heavy metals in excavation material and soil parameters of an agroforestry system (pepper plantation) located on Bangka Island (Table 1).

		K	P	% Ct	% Nt	pH-H ₂ O	EC	Sn	Zn	Cd	Pb	Cr	Cu
		[mg/kg]	[mg/kg]				[μS/cm]	[mg/kg]	[mg/kg]	[mg/kg]	[mg/kg]	[mg/kg]	[mg/kg]
Bangka	II	174.55	36.61	4.20	0.10	4.70	115.0	3.01	17.86	0.10	41.46	5.18	3.95
Bangka	II	234.39	35.94	2.46	0.11	4.92	144.0	3.25	24.78	0.14	48.99	5.85	4.59
Bangka	I	11.90	8.44	0.86	0.03	5.07	18.0	4.02	6.11	0.02	14.30	2.84	1.60
Bangka	I	13.08	8.58	0.87	0.02	5.00	19.0	3.78	9.21	0.03	15.41	3.34	2.35
Pepper													
Plantation													
0-14 cm		26.55	4.12	0.93	0.03	4.93	34.0	7.55	8.70	0.03	3.78	2.97	3.60
Pepper													
Plantation													
14-20 cm		36.35	2.68	0.91	0.02	4.71	32.0	7.31	11.03	0.02	4.14	3.55	1.30
Fresh soil													
from mining		12.53	4.52	1.05	0.01	4.64	294.0	2.74	6.89	0.03	12.58	7.60	2.86

Table 6 Soil parameters of excavation material, in comparison to agroforestry system on Bangka Island.



Figure 1 Tin mining area, © BOKU/Axel Mentler



Figure 2 Ex-mining area, © BOKU/Axel Mentler

Experiment 2 - Laboratory experiments and incubation

Excavation material from mining process (removed upper soil layer, quartz, and kaolinite fraction) will be sampled and used for a laboratory experiment to examine soil parameters for potential recreation in the field. This excavation material will be mixed together with soil amendments (i.e. biochar, zeolite, compost, and lime) to improve the structure and fertility. The well mixed excavation material and its amendments will be incubated at 27°C (average annual temperature) in the lab in centrifuge tubes in 4 replicates for destructive samplings. The duration of the laboratory experiment is 6 months in the first year of the PhD. Each of the treatments will be homogenized and an equivalent of 15 g dry soil will be filled into 50 ml centrifuge tubes. The bulk density of all treatments will be adjusted to ensure comparability. The water content will be adjusted to 50% of the water holding capacity by regular weighing of the tubes. Established microcosms will be samples after 1 week, 3 months, and 6 months. At each of the 3 samplings a set of soil physical and chemical parameters will be determined (see laboratory analysis). In addition, the same set of treatments will be prepared in soil standardized columns, to estimate the water holding capacity and infiltration measurements.

The soil texture of the upper soil is of loamy sandy, which indicates a clay fraction <15%. To ensure a clay content, low enough for crop production that is not based on flooded soils, the amount of kaolinite has to be limited. In the experiment, amount of added kaolinite is limited to 5% (see Figure 4). Arenosols have high sand content (>35%) and high infiltration rates, that allows planting of other crops than rice, such as pepper for recreation towards cash crops and future agro-forestry systems. Lime will be used in form of CaCO_3 which would increase the soil pH and the soil aggregate stability in the respective samples. Also biochar is aimed to be improve soil of soil pH in acidic soils, and to improve further soil physico-chemical parameters. Compost provides nutrients and organic matter to the exceptionally nutrient poor soils after excavation.

Experiment 3 - Field experiment

A conventional rice field established in a previous mining area in Bangka regency 3 years ago, will serve as a field trial to analyze a large variety of metals in the soil and the rice plant at each harvest, together with yield. On this field, a set of sub-plots (minimum of 3-4 replicates each) will be established that will receive. (i) Biochar (ii) compost (iii) zeolite and (iv) lime.

This experiment is to analyze the effect of soil amendments on rice yield, soil chemical and physical properties, and heavy metal availability in rice plant. The experiment is planned to run for 18 months following the cropping calendar of rice cultivation in Bangka Regency.



Figure 3. Re-cultivated soil with conventional rice field on Bangka Island, established 3 years ago from the farmers community, © BOKU/Axel Mentler

Laboratory analysis

Soil parameters including physical and chemical properties of soil from ex-mined and non-mined area will be analyzed in the IBF, BOKU laboratory. We also will monitor soil properties, plants, and heavy metal availability continuously during field experiment.

Expected results

- a. It is expected that soils that were treated with amendments (i.e. compost, lime, biochar, and zeolite) show an improved water infiltration and water holding capacity, as well as soil aggregate stability.
- b. Further, the recreated soils are suggested to be described by a more neutral soil pH due to the treatments applied, especially the ones that receive BC, compost and lime, which would lead to improved soil fertility.
- c. The higher soil pH further also enhances soil nutrient availability, which is improved especially by the compost applications.
- d. Together the treatments are expected to optimize the classical / conventional rice field plant yields.
- e. In addition, the lab trial is anticipated to provide a valuable strategy for future mixing of excavation material to produce “soil substrate” for growing crops other than conventional rice.
- f. Soil amendments are expected to change the redox potential in the soil, especially in the field experiment and hence may change the plant availability of heavy metals, and therefore the concentrations in the soil, water, plant compartments

Working activities in Vienna (2018):

Activities from Mrs. Rizki Maftukhah, M.Sc (UGM) and Dr. Mrs Asih Ngadisih at IBF, Boku, Vienna:

The most important thing before visiting our Institute was to take soil samples from the mining area of Bangka Island. This material is the base of the microcosms experiments worked out in Vienna. These artificial, simplified ecosystems are used to simulate and predict the behaviour of natural ecosystems in Banka under controlled conditions. The results are used for the up scaled experiment under field conditions at Bangka Island in August 2018.



Fig.4 Soil samples arrived at IBF laboratory Vienna, BOKU, © BOKU/Axel Mentler

The soil samples arrived well in the IBF institute in Vienna (see Fig. 5) with a lot of help from AGES (Agentur Gesundheit Ernährungssicherheit) and the Austrian custom services at the airport in Vienna. In the white plastic bags are Kaolinite sample from the mining area, the gray one are samples with Cassiterite (SnO_2) and the brawn ones are samples from the old top soil. Hydraulic mining methods are used to concentrate mined tin, a process which relies on the high specific gravity of the SnO_2 ore, of about 7.0.

	treatments	upper soil	caolinite	quartz	lime	compost	biochar	zeolite
1	control	59%	5%	36%	-	-	-	-
2	lime control	58%	5%	36%	1%	-	-	-
3	biochar	50%	5%	36%	-	6%	3%	-
4	zeolite	50%	5%	36%	-	6%	-	3%
5	compost	50%	5%	36%	-	9%	-	-
6	lime-compost	49%	5%	36%	1%	9%	-	-

Table 2 Experimental design for the microcosm experiment (simulation of field experiment)



Fig. 5 Mrs. Rizki Maftukhah and Mrs Asih Ngadisih Sample preparing the samples from Bangka at the IBF laboratory for elemental analysis and for the microcosm experiment, © BOKU/Axel Mentler.

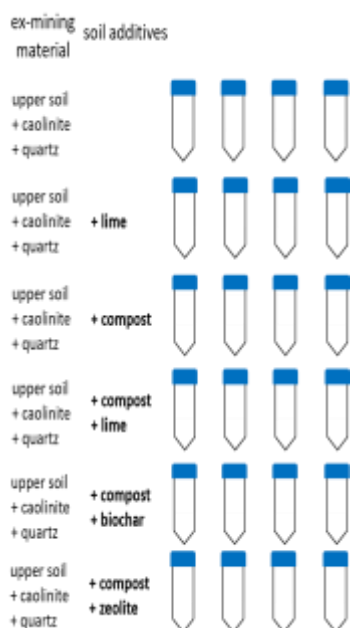


Fig. 6. Scheme and table for lab incubation treatments, with 4 replicates each (IBF laboratory BOKU, Vienna). The scheme shows the different treatments of the experiment, © BOKU/Axel Mentler

Experimental Site

Bangka Regency located in Bangka Island, Bangka Belitung Islands Province, Indonesia. Administratively, Bangka regency is adjacent to other regency Bangka Belitung Islands Province, i.e. Pangkalpinang City, Bangka Tengah and West Bangka regency.

Working activities in Indonesia:

Set up the field-experiment at Bangka Island in cooperation with UGM members and the local farmer group. The treatments consist of the following amendments: (1) Control, (2) Lime (3) compost (4) charcoal and combinations of (5) charcoal and compost, as well as (6) charcoal and sawdust/woodshavings (Fig. 7). Soil was amended with 10 t / ha for the treatments 2-4 (single amendment), and with an application rate of 20 t/ha for treatments 5 and 6 (double amendments). This will serve as a field trial to analyze a large variety of parameters in the soil and the crops at each harvest, together with the yield.

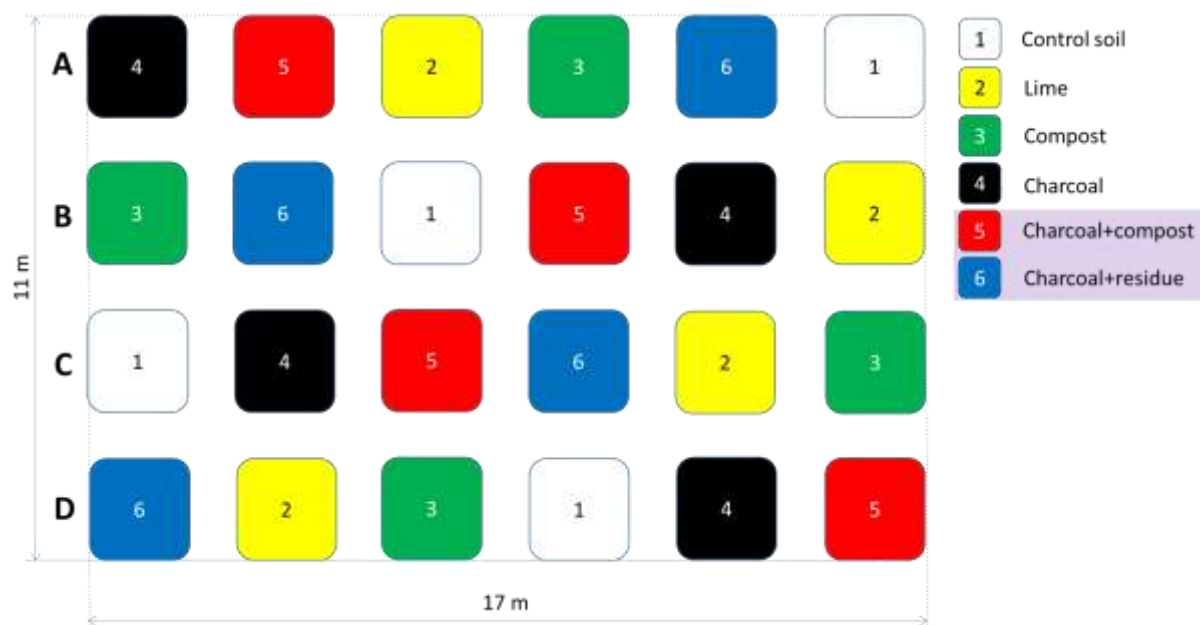


Fig. 7 Split plot design, © BOKU/Axel Mentler

The plots are used to grow a local variety of Cassava (*Manihot esculenta*, Euphorbiaceae), with 4 plants per plot. In addition xx (name of legume) seed were added in a grid of 25 x 25 cm as a cover crop to avoid soil erosion (see Fig. 7).

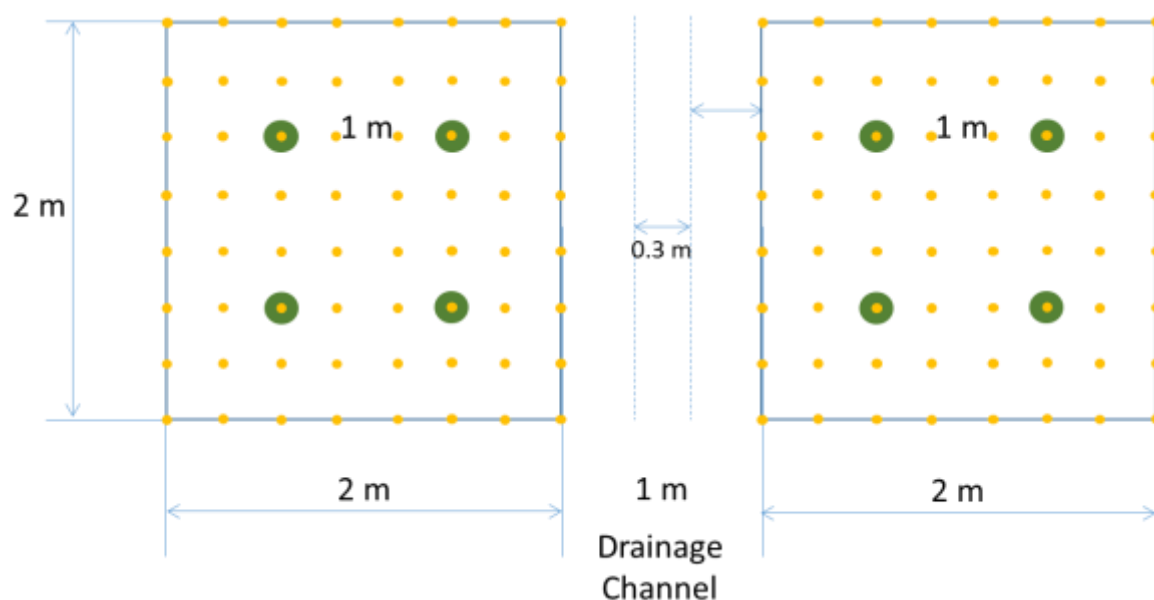


Fig. 8 Experimental layout for 24 month, © BOKU/Axel Mentler

This experiment is designed to analyze the effect of soil amendments on rice yield, soil chemical and physical properties, and heavy metal availability in plant material. The experiment is planned to run for 24 months, with crops rotation (see Fig. 8).

Laboratory analysis

Soil parameters including physical and chemical properties of soil from ex-mined and non-mined area will be analyzed in the (IBF) laboratory. We also will monitor soil properties, plants, and heavy metal availability continuously during field experiment.

Methods for laboratory analysis

Mineralogical composition of the excavation material (X-ray diffraction) and sedimentation analysis of different particle size distribution has already been performed. Soil will be analyzed for physical and chemical parameters.

Plot planting scheme – first year 2018

Fig. 9

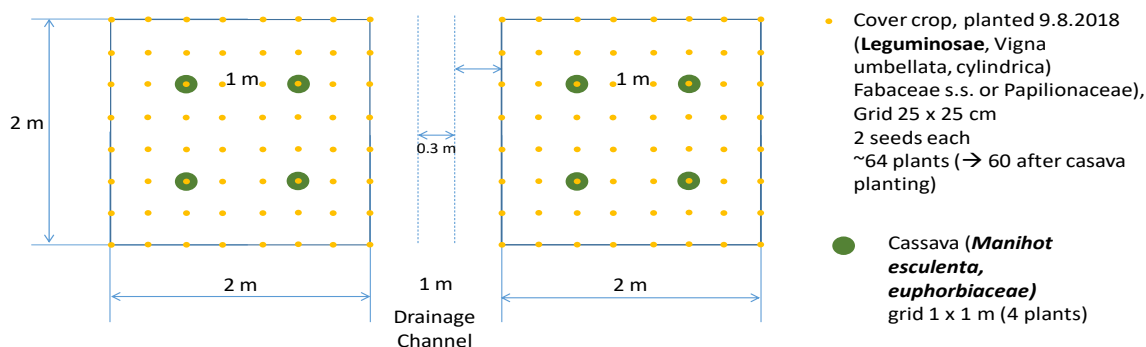
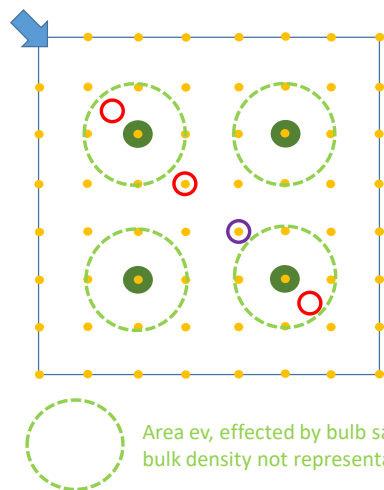


Fig.9 Indicate the planting scheme of the test plots, © BOKU/Axel Mentler

Soil samplings at plant harvest!

Fig. 10 Soil sampling plan at plant harvest

edge effects



Soil samplings after **6 months**:

Take 4 cylinders (Ø 6cm height 6cm?) use **one** to determine **bulk density** (ideally where the soil was not effected by cassava bulb harvest) measure and document where the sample was taken.

Take 3 more cylinders in another plastic bag (note position on plot) composite the soil from the 3 cylinders in a plastic bag (and homogenize the soil) put back soil material to the field by refilling the holes with sample material by a bit more than half of the holes

The rest of the whole is refilled with soil material from the surrounding.

Avoid sampling too close to the edges (edge effects)

Fig. 10 Soil sampling plan after 6 month, © BOKU/Axel Mentler

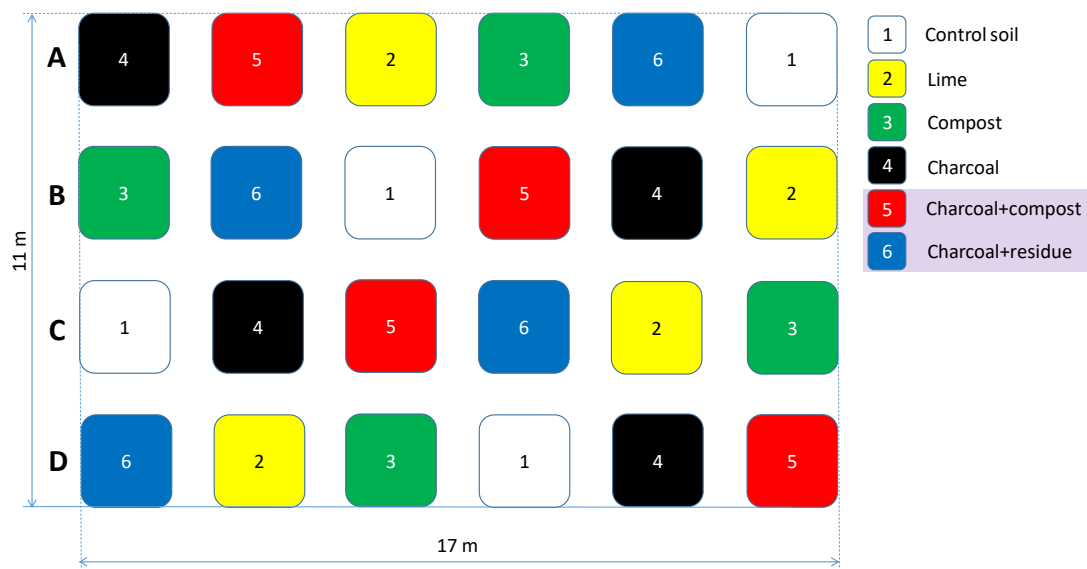


Fig. 11 demonstrates the set up of the field experiment at Bangka Island, © BOKU/Axel Mentler



Fig. 12 Dr. Keiblinger, farmers and the UGM team are clearing the field experiment by removing the old plant cover (see Fig. 12), © BOKU/Axel Mentler



Fig. 13 The next step of field experiment preparation is levelling the terrain of experimental side and to fill up a small pond in the middle of the test plot area. Dr. Keiblinger, Dr. Nagdishi farmer and Dr. Mentler are working on the field experiment up scaling the results from the Vienna lab experiment,
© BOKU/Axel Mentler



Fig. 14 With the help of farmer's rice tractor it was possible to bulldoze the area in a sufficient way,
© BOKU/Axel Mentler



Fig. 15 The established test plots with colour labels to indicate the different treatments (D6 blue is in the front), © BOKU/Axel Mentler

Additional work package:

Dr. Rosana Kral, Dr. Katharina Keiblinger and Dr. Axel Mentler are involved in an additional work package at the UGM in Jogjakarta, Java in the frame of the ASEA Uninet program. The aim of this activity was to set up an elementary analyser (CNS NA 1500 Carlo Erba) from the institute of soil science IBF (BOKU) at the “Fakultas Teknologi Pertanian (FTP)-UGM Jogjakarta (Department of Agricultural and Biosystem Engineering, Faculty of Agricultural Technology and Food Technology). The instrument is a donation from the institute of soil science (IBF-BOKU), Vienna and was refurbished, free of charge, from technicians Anton Cech (**Thermo Fisher Scientific Inc.**) and Andreas Kitzler (**Agilent Technology, Austria**). The programme is focusing the use of elementary analysis for food and agricultural based research at UGM. In the food sector the instrument is used to determine the amount of carbohydrates in industrial processed food products and to estimate row protein content of processed food. In the agricultural sector the instrument is used to analyse soil organic carbon, C/N ratios and to calculate carbon content and carbon stocks in soil and agricultural systems. These are important parameters for the Bangka Island project. The Boku team organised staff training at UGM including method transfer, theoretical background and onsite training with the instrument. Dr. Rosana Kral and Dr. Katharina Keiblinger prepared a manual for the use of the instrument and worked out a one week training course for UGM staff members.



Fig. 16 The established CNS NA 1500 (Carlo Erba) with auto sampler device and gas supply at UGM - laboratory Jogjakarta (Institute of food technology) , © BOKU/Axel Mentler



Fig. 17 Axel Mentler discussing instrument possibilities with laboratory stuff members from the UGM, © BOKU/Axel Mentler



Fig. 18. Dr. Keiblinger, Dr. Rosana Kral, master student from Boku Mrs. Sara Vaca (working at a master thesis from BOKU at the Dieng plateau Central Java), UGM staff members and the head of the Institute of food technology in front of the CNS analyser after the training, © BOKU/Axel Mentler

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List of Publications

MSc. Rizki Maftukhah

Peer-reviewed Journal Articles

- Toru Watanabe, Takuma Mashiko, **Rizki Maftukhah**, Nobuo Kaku, Hiroaki Ito (2016). Nitrogen removal and power generation from treated municipal wastewater by its circulated irrigation for resource-saving rice cultivation. *Water Science and Technology* 75 (4). DOI: 10.2166/wst.2016.572
- Rizki Maftukhah**, Erni, R., Benito, H.P., Sri, R., Sigit, S.A. (2015). Shallow water depth management to enhance rice performances under system of rice intensification (SRI) framework. *Jurnal Irigasi Vol. 10. No. 1 (41 – 48)*.
- Bayu Dwi Apri Nugroho, **Rizki Maftukhah**. (2015). The effects of cropping methods to growth, crop index and yield response to water of rice (*Oryza sativa* l) in rain-fed agriculture. *Journal of Agricultural Science and Technology B* 5 (376-382)

Conference Proceedings

- Rizki Maftukhah**, Bayu D.A Nugroho, Chusnul Arif, Kazunobu Toriyama, Kazuhiko Kobayashi: Enhancing Rice Productivity through System of Rice Intensification in Terraced Rice Field. National Seminar of PERTETA. Aceh, Indonesia, November 2 – 3, 2017

- Bayu D.A. Nugroho, Chusnul Arif, **Rizki Maftukhah**. Cropping Calendar Scenario based on Climate Projections against Regional Climate Change in The Southern Part of Indonesia. International Conference on Tropical Agriculture. Yogyakarta, Indonesia, October 26 – 27, 2017
- Rizki Maftukhah**, Ngadisih, Murtiningrum, A. Mentler, B. B. Ghaley, A. M. Hama, K. Keiblinger, L. Probst, F. Zehetner, R. Kral. Comparison of Soil Parameters between Conventional Rice Production Systems (CRPS) and System of Rice Intensification (SRI), Adapted to Small Scale Farms in Java, Indonesia. International Conference on Organic Agriculture in the Tropics. Yogyakarta, Indonesia, August 20 – 24, 2017.
- Rizki Maftukhah**, E. Romansyah, Benito H. Purwanto, Bayu D.A. Nugroho, Murtiningrum, Sigit S. Arif. Nitrogen uptake and its relation with rice yield under shallow water depth management. International Conference of Sustainable Agriculture. Yogyakarta, Indonesia, January 17 – 18, 2017.
- Rizki Maftukhah** and Bayu Dwi Apri Nugroho. Effect of cropping system on soil moisture content and water use efficiency of upland rice. National Seminar of PERTETA. Padang, Indonesia, November 4 – 6, 2016.
- Rizki Maftukhah**, Intan K. Wardani, Murtiningrum, and Sigit Supadmo Arif. Setting up of knowledge management center to develop modernization of irrigation in Indonesia (study case: Bedegolan irrigated area). The 2nd International Symposium of Agricultural and Biosystem Engineering. Lombok, Indonesia, August 9 – 11, 2016
- Rizki Maftukhah**, Sigit Supadmo A, Murtiningrum. Strategi peningkatan penghidupan berkelanjutan sebagai dampak deforestasi dan degradasi lahan di Bantul (studi kasus Desa Selopamioro). National seminar of PERTETA. Makassar, Indonesia, August 5 – August 7, 2015.
- Toru Watanabe, Takuma Mashiko, **Rizki Maftukhah**, Nobuo Kaku, Hiroaki Ito. Rice cultivation with power generation by circulated irrigation of treated municipal wastewater. WEF-EESS Asia-Pacific Wastewater Treatment and Reuse Conference 2015, Singapore, June 28 - July 1, 2015.
- Rizki Maftukhah**, Erni, R., Benito, H.P., Sri, R., Sigit, S.A.. Shallow water depth management increases soil redox potential and rice yield under system of rice intensification (SRI) framework. In proceeding (abstract) of International Conference on Ecohydrology (ICE) 2014, Yogyakarta, Indonesia, November 10 – 14, 2014.

Expected results

The expected result of the cooperation with the community on Bangka Island is to produce save agricultural products on the ex-mining area after regeneration of the soils. The future could be to establish an agro forestry rice-production system including traditional crops like pepper and to extend trees outside of forest systems. We hope that the integration of trees outside forests could be a part of sustainable management of these landscapes and a future of this island.

We hope that we can demonstrate a transition from miners to farmers.

- Regarding the EGU General Assembly 2019, we are pleased to inform you that the following abstract you are co-authoring has been accepted and scheduled as oral presentation (12 min + 3 min for questions and discussions) in session ITS3.1/SSS1.4/EOS3.2/BG1.21/ESSI3.8/HS11.32/NH9.22 - Citizen Science and Open Science: bridging the science-society-gap by finding emerging environmental issues and empowering citizens (co-organized), room N1 on Friday, 12 Apr 2019, 11:45:EGU2019-10514

From Mining to Agriculture: Citizen Science for Soil Re-cultivation on Bangka Island, Indonesia by Rosana Maria Kral et al.

- A documentary video production from Rosan Kral, Axel Mentler, Sebastian Postl (BOKU Media Center, BOKU DOKU) und Katharina Keiblinger about Bungka Island will be presented at the EGU Conference and as soon as possible the you tube linke will be published.

- Regarding the EGU General Assembly 2019, we are pleased to inform you that the following abstract you are co-authoring has been accepted and scheduled as poster in session HS8.3.6/BG2.39/SSS7.11 - Soil moisture and soil--water constitutive laws, measurement and comprehension of their environmental effects (co-organized):EGU2019-17688

Potential of Ex-tin Mined Area for Agricultural Production in Bangka Island, Indonesia by Rizki Maftukhah et al.

The display time will be Thursday, 11 Apr 2019, 08:00-19:30. The contact author is asked to set-up the poster in Hall A at board number A.182. The author in attendance time is Thursday, 11 Apr 2019, 14:00-15:45. For details of the corresponding presentation as well as of the session programme please see:

<https://meetingorganizer.copernicus.org/EGU2019/session/31787>.

Poster presentation: abstract submission - OeAW symposium SDGs in a Mediatized World. The Austrian Academy of Sciences (OeAW) International Symposium. Global Sustainable Development Goals in a Mediatized World, April 4 – 5, 2019

A Partnership for a Common Goal: How Farmers and Scientists Work towards Re-cultivating Soils on Bangka Island, Indonesia.

Axel Mentler¹, Rosana Maria Kral², Rizki Maftukhah³, Ngadisih³, Murtiningrum³, and Katharina Maria Keiblinger^{1*}

1) University of Natural Resources and Life Sciences Vienna (BOKU Vienna), Department of Forest and Soil Sciences, Institute of Soil Research Peter Jordan Str. 82 A-1190 Vienna, Austria

2) University of Natural Resources and Life Sciences, Vienna (BOKU Vienna), Centre for Development Research (CDR), Dänenstraße 4, 1190 Vienna, Austria

3) Department of Agricultural and Biosystem Engineering/ Faculty of Agricultural Technology, Universitas Gadjah Mada (UGM), Jalan Flora No.1, Bulaksumur, Yogyakarta 55281, Indonesia

* Corresponding author

ASEA2018/BOKU/6

Protein secretion and cell surface display in lactic acid bacteria

Involved Personnel:

Project Leader Assoc. Prof. Dr. **Clemens Peterbauer**, Institut f. Food Technology, University of Natural Resources and Life Sciences Vienna (clemens.peterbauer@boku.ac.at)
PhD in Microbiology/University Vienna, Scientist at the Hebrew University of Jerusalem (Rehovot, Israel) and the University of Technology Vienna, since 2002 in his present position, since 2016 Assoc.Prof. Research on carbohydrate oxidoreductases, protein production and engineering

Assoc. Prof. Dr. **Tran Van Hieu**, Department of Molecular and Environmental Biotechnology, University of Science, Vietnam National University Ho Chi Minh City (tvhieu@hcmus.edu.vn)
PhD Würzburg University, Assoc.Prof. 2016. Research on vaccine development for human and veterinary medicine, utilization of GRAS-microorganisms for vaccine delivery, production of glycoproteins

Tran Anh Minh, MSc., Institut f. Food Technology, University of Natural Resources and Life Sciences Vienna (anh.tran@boku.ac.at), graduate of USc-VNU HCMC, PhD student supported by an Ernst-Mach-Grant from ASEA-Uninet

Lactic acid bacteria (LAB) are Gram-positive, microaerophilic, non-sporeforming bacteria with complex phylogenetic relations and very variable phenotypic and physiological properties. *Lactococcus lactis* is the best-investigated species, most biotechnologically relevant species are found among *Lactobacillaceae*, namely in the genera *Pediococcus* and the largest genus, *Lactobacillus*, with over 100 species. LAB are commercially very important in the drinks, food and feed industry, as starter cultures for the production of many fermented food products with improved shelf life, taste and nutrient content. Additionally they are thought to have a health-promoting effect as permanent or long-term colonizers of the human and animal gut epithelia, due to a number of interactions with these epithelia, the immune system as well as beneficial enzymatic activities. Because of their properties as part of the human or animal microbiome and their ability to form transient or stable populations in the gastrointestinal tract, LAB have moved into the focus of interest as „vehicles“ for the delivery of therapeutic products as well as oral and mucosal vaccines. For such applications the well-known weaknesses of LAB as cell factories, like low biomass formation and limited yield for produced proteins, will play a minor role, because of the

direct, local and often long-term application. *Lactobacillus*-species that can establish permanent colonies allow a long-term presence and continuous production of the vaccine or the therapeutic protein.

For these purposes a larger and more flexible „tool box“ than available at present is necessary. This includes specially constructed custom strains for antibiotic-free plasmid selection conforming to highest biosafety standards, small and flexibly modifiable plasmids with different regulatory and anchoring motifs for stable surface display on the bacterial cell wall or membrane. Development and standardization of those tools are one of the major goals of this project, which is embedded in a long-term collaboration of Prof. Tran with our group and the research of his previous co-workers Tran Anh Minh.

The visit of Prof. Tran at BOKU was mainly used for works on a novel, proprietary vector system which shall, on the basis of an existing plasmid, allow the combination of different inducible and constitutive regulatory elements as well as easily detectable (microscopically visible) fusion partners. These experiments were finished in fall/winter in the group of Prof. Hieu in Ho Chi Minh City. Additionally the insertion of restriction sites is planned that will allow the insertion of modular elements for, e.g., different anchoring systems.

The new vector is currently used in both research groups for various expression experiments of vaccine fragments (Vienna) and receptors (HCMC). During my visit in Ho Chi Minh City additional experiments were planned as well as a potential Erasmus+ project for co-workers of Prof. Hieu in order to visit BOKU and our Core Facility Biomolecular and Cellular Analysis. Publications with involvement of this project will presumably be presented later in the year.



Faculty of Economics and Business
Universitas Gadjah Mada



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UGM-WU Joint International Summer University Indonesia 2018

September 2018



Erasmus+



1. Project leader: Dr. Elisabeth Götze

Dr. Götze is Senior Lecturer at the Department of Foreign Language Business Communication.

Teaching

Dr. Götze has extensive experience as lecturer in International Marketing and Management at bachelor and master level, both in English and German language. She has taught courses in different Universities in Europe (e.g. GSOM St. Petersburg), America (e.g. Victoria/Canada) and Asia (e.g. Vietnam, Indonesia). Apart from academic teaching, she also trains managers as well as teachers in the respective areas.

Research Interest

- Marketing to children
- Ethical issues in marketing and business
- Diary method in qualitative research

Professional Experience

Dr. Götze has gained industry experience as a marketing manager in the fast moving consumer goods industry. Moreover, she has consulted companies such as Blaha Büromöbel, Johnson & Johnson Medical, Museum für Angewandte Kunst, OMV, Raiffeisenbank, Universitätszahnklinik Graz.

2. General Information: The International Summer University Indonesia 2018 (hereinafter referred to as ISU Indonesia 2018) was held in Yogyakarta, Indonesia from July 23, 2018 – August 10, 2018 as a joint program of Universitas Gadjah Mada (hereinafter referred to as UGM) and WU (Vienna University of Economics and Business) (hereinafter referred to as WU). The ISU Indonesia 2018 was co-taught by faculty members from UGM and WU; the program focused on “International Management in Emerging Markets”. In total 40 students have been nominated to take part in ISU Indonesia 2018 (18 WU/22 UGM).

3. Academic Program: The academic coordination of ISU Indonesia 2018 was carried out jointly by Dr. Elisabeth Götze (WU) und Dr. Rangga Almahendra (UGM). The aim of this course was to discuss nowadays challenges international managers face when doing business in foreign markets, with a special focus on emerging economies. In the course, cross-cultural and international management issues were examined and the challenges of managing in an international marketplace were analyzed. Furthermore, cultural diversity and differences, political and economic influences, global market factors, and other contingencies with which management of multinational enterprises must contend were discussed. Moreover, the course provided insight into management practices of formulating and implementing strategies for international and global operations.

Lecturers teaching for UGM were Dr. Dafri Agus Salim, Rimawan Pradiptyo, MBA, Rokhima Rostiani, S.E. M.Mgt., Rr Tur Nastiti, M.Si, Ph.D.

Different group assignments within the program had to be solved:

- The mixed groups of WU and UGM students had to face an assignment to support various Indonesian SMEs. The students were divided in groups of 7 to 8 students. The first task was to identify problems the SME faces, conduct market research and select different frameworks to work out possible solutions. The findings had to be summarized in a report and presented on the last day of week 3.
- The other assignments concerned case studies and articles from challenges companies face in Emerging Markets. The groups had to create a summary of the respective case and article they could choose in the beginning and then present it in front of the participants.

Guest lectures contributed additional academic input to enrich the practical orientation of the ISU Indonesia by giving students the opportunity to obtain information about doing business in this very special region of Indonesia or from an ASEAN perspective.

Company visits at local companies (around the city of Yogyakarta) were also part of the program. The students visited a bigger company, PT Madukismo, a sugar factory as well as the SMEs they also collaborated with for their group projects.

4. Course Evaluations: ISU Indonesia 2018 was taught by 7 professors, 4 from UGM (Universitas Gadjah Mada) and 2 from WU (Vienna University of Economics and Business) as well as a guest lecturer (RMIT Melbourne). The participants evaluated every professor's class. The course evaluations should assess the quality of the ISU Indonesia courses. The overall perception of the lecturers was good (average score on a 1 (very good) to 5 (very poor) scale). All lecturers taught with great commitment and catered to the students' interest.

5. Intercultural Evening and Understanding: In addition to international teamwork on a group project throughout the program, students held an International Cultural Evening (ICE). At the so-called „ICE“, both WU and UGM students presented their respective culture and student life, especially through dances, videos and food.

6. Conclusion: The diverse program schedule, stunning and exotic Indonesia itself (especially Yogyakarta) and the warm welcoming group of students and staff members were the biggest assets of this International Summer University.

The students all benefitted from the intercultural exchange among each other, which is always a great asset of an International Summer University. Working on projects together helps students to broaden their horizon and to understand different perspectives.

Working as a team enabled the participants to get to know each other not only on a personal level but also on a professional one.

The main lecturers were also very successful in transferring their knowledge. The students to a great part found the topics interesting and enjoyed the teaching methods. In conclusion, the ISU Indonesia was a great success for all participating students, faculties of both universities and the International Office of WU.



Photo credits: National Economics University

INTERNATIONAL SUMMER UNIVERSITY VIETNAM 2018

ASEA Report
September 2018



1. Project leader: Univ. Prof. Dr. Jonas Puck

Jonas Puck is Head of the Institute for International Business and Full Professor at the WU Vienna University of Economics and Business. In addition, he is Academic Director of the MBA in Energy Management at the WU Executive Academy. Previously he held the position of academic director of WU's CEMS program and was head of the department of global business and trade.

He previously held positions at Nuremberg University, Germany, the University of New South Wales, Australia, the University of International Business and Education, China and the Bradford University School of Management, UK. He also is a past president of the European International Business Academy. He earned a Dipl.-Kfm., a PhD in International Management and a postdoctoral qualification (Habilitation) from Nuremberg University.

Jonas is an experienced teacher and consultant and has provided consulting solutions, research expertise, or executive education for numerous firms of different size and industries, including ABB, AT Kearney, BMW, BP, Coca Cola Hellenic, DocLX, ERBE, EY, FESTO, L'Oreal, LEONI, OPEC, OMV, Porr, Post AG, Schlumberger, Schüco, Siemens, Shell, SPIDI, ThyssenKrupp, UNIDO, Verbund. Voith, and many others. He received awards for outstanding teaching as well as outstanding research, e.g. the CEMS Best International Business Project Award 2015, EIBA Fellows Research Award 2008, Ludwig Erhard Award 2008, Schoeller Fellow Award 2009, Festo Fellow Award 2010, and Best Paper/Best Reviewer Awards from a large number of journals and conferences.

Research interest

His current research interests lie in the overlaps of global strategy, finance, and political science, often with an industry focus on energy and extractive industries. Jonas serves on the Editorial Boards of the Journal of International Business Studies, Long Range Planning, European Management Journal, Journal of World Business and the Multinational Business Review. His research has been published in journals such as the Journal of International Business Studies, Journal of Management Studies, Journal of World Business, Long Range Planning, Management International Review, and Human Resource Management (US), among others. In addition, he is editor or author of six books and numerous book chapters.

2. General Information: The International Summer University Vietnam 2018 (hereinafter referred to as ISU Vietnam 2018) was held in Hanoi, Vietnam from July 09, 2018 – July 27, 2018 as a joint program of Hanoi University of Science and Technology (hereinafter referred to as HUST), National Economics University (hereinafter referred to as NEU) and WU (Vienna University of Economics and Business) (hereinafter referred to as WU). The ISU Vietnam 2018 was co-taught by faculty members from HUST, NEU and WU the program focused on “Global Strategy in Emerging Markets”. In total 40 students have been nominated to take part in ISU Vietnam 2018 (20 WU/20 HUST&NEU).

3. Academic Program: The academic coordination of ISU Vietnam 2018 from WU side was carried out by Univ. Prof. Dr. Jonas Puck. On HUST side, Prof. Nguyen Danh Nguyen and on NEU side, Dr. Dao Thanh Tung and Prof. Nguyen Viet Hung were in charge of the academic coordination and taught in the ISU program.

The ISU Vietnam 2018 program was based on the following pillars:

- The ISU Vietnam 2018 **course program** on “Global Strategy in Emerging Markets” was jointly taught by WU, HUST and NEU faculty members. Classes offered a general overview of the management of cross-border business activities and on the special circumstances in Vietnam. The aim was to provide students with the required profound knowledge in order to be able to examine, understand and solve challenges of emerging markets and internationalization.
- Students developed a **group project** within the program. The student groups consisted of a balanced mix of WU and HUST/NEU students, divided in groups of five students. The projects were concerned with internationalization strategies of European firms that enter the Vietnamese market. The projects

were designed to give an overview of many relevant industries, as well as different stages of international commitment. Project firms ranged from newly internationalized SMEs (Northland, Braun Maschinenbau, AST) over service providers (Coop Himmelb(l)au), to larger manufacturers of consumer goods (Zotter, Blum) and established MNCs (Liebherr, AT&S). Students were asked to develop strategies how the respective project firms can succeed in the Vietnamese market. The starting points varied from firms that first consider a market entry to firms that aim at becoming market leaders in their product segments. The students were expected to conduct extensive research both through secondary sources and through directly approaching the respective companies. The strategy recommendations were pitched to a hypothetical company board on the last day of classes.

- **Company visits** at local companies (in and around Hanoi) were also part of the program. Company visits were included in the academic part of the program with the intention to enrich the courses taught by the lecturers from both universities by adding a practical dimension to the academic program. In addition, they allowed students to experience how local businesses work. In 2018 two company visits were organized: *Bac Giang Garment Corporation* and *Pullman Hotel*.

4. Course Evaluations: Every lecturer's performance has been subject to evaluation by the participating students. The overall perception of the lecturers was good. All lecturers taught with great commitment and catered to the students' interest. In accordance with the students' wishes, classes were either practice-oriented, or focused on the Vietnamese economy, culture and history.

5. Intercultural Evening and Understanding: In addition to international teamwork on a group project throughout the program, students held an International Cultural Evening (ICE) on July 19th. At the so-called „ICE“, both WU, HUST and NEU students presented their respective culture and student life, especially through dances, videos and food.

6. Conclusion:

The ISU Vietnam 2018 was a great success for the organizing institutions and the participants in various ways.

The great cultural exchange, vibrant and exotic Vietnam itself, as well as a very diverse and interesting academic program and the motivation and commitment of all students and staff members, can be seen as the most important and crucial aspects for the success of the ISU Vietnam 2018. The students also received practical insights during the company visits. Furthermore, the theoretical knowledge that they acquired during the lectures served as a great input for the project work that all students had to complete. The students learned to work on group projects in intercultural teams and could broaden their horizon by learning about new perspectives to tackle possible problems.

Fatigue life extension of welded steel structures by High Frequency Mechanical Impact (HFMI) treatment under constant and variable amplitude loading

Involved persons:

Ass.Prof. Dr. Martin Leitner, MBA
Montanuniversität Leoben, Chair of Mechanical Engineering, Austria
Assistant Professor (since 2015) and Senior Researcher (since 2013)

Dr. Juri Saedon
Universiti Teknologi MARA, Faculty of Mechanical Engineering, Malaysia
Lecturer (1996) and Senior Lecturer (2001)

Dr. Mohd Shahrman Adenan
Universiti Teknologi MARA, Faculty of Mechanical Engineering, Malaysia
Lecturer (2008) and Senior Lecturer (2015)

Muhd Faiz Muhammad
Universiti Teknologi MARA, Faculty of Mechanical Engineering, Malaysia
Lecturer (2013), Senior Lecturer (2017) and PhD-Candidate (2018)

Content of project:

According to the IIW recommendation [1], the fatigue strength of welded steel joints is generally independent of the base material's yield strength. In order to utilize the lightweight potential of high-strength steel materials, the application of post-treatment techniques, such as the HFMI-treatment, is well applicable [2, 3]. On the basis of numerous fatigue test results under both constant amplitude loading (CAL) [4] and variable amplitude loading (VAL) [5], guidelines for the fatigue assessment [6] as well as quality assurance [7] are developed, which are recently published as IIW recommendation for the HFMI-treatment [8]. However, as in-service conditions mostly include VAL load-spectra [9, 10], an in-depth knowledge about the fatigue resistance of HFMI-treated mild and high-strength steel weld joints is of utmost importance.

Palmgren [11] and Miner [12] proposed a linear damage accumulation to incorporate VAL in the course of the fatigue assessment. Thereby, the damage sum D is calculated by summarizing the ratio of the applied number of load-cycles n_i to the number of load-cycles until failure N_i at each load-level i , see Equ. 1. Herein, allowable damage sums D usually reveal values between 0.5 and 1.0, whereby a conservative value of $D=0.5$ is recommended in [1, 13].

$$D = \sum_1^i \frac{n_i}{N_i} \leq 0.5 \dots 1.0 \quad \text{Equ. 1}$$

An extensive study in [14] including welded medium- and high-strength steel joints under VAL shows that the real damage sum D_{real} indicates a value of $1/3 < D_{real} < 3$ for more than 90% of the analyzed data. Furthermore, investigations in [15] additionally highlight that even lower damage sums down to about $D_{real} = 0.2$ may be observable for welded steel joints, which is also mentioned in [1] in case of fluctuating mean stress states. To assess the fatigue strength under VAL and compare the results to CAL, an equivalent stress range can be calculated [1], which considers the load-spectrum and a specified damage sum, see Equ. 2.

$$\Delta\sigma_{eq} = \sqrt[k]{\frac{1}{D} \cdot \frac{\sum (n_i \cdot \Delta\sigma_i^k) + \Delta\sigma_L^{(k-k')} \cdot \sum (n_j \cdot \Delta\sigma_j^{k'})}{\sum n_i + \sum n_j}} \quad \text{Equ. 2}$$

For VAL it is suggested to use $k' = 2 \cdot k - 1$ [16] instead of the recommended [1] value of $k' = 22$, which is only valid for CAL. Investigations considering HFMI-treated steel samples under CAL and VAL in [17-21] demonstrate that the specified damage sum D varies between values of 0.2 and 1.0. However, as a suitable definition of D is of utmost importance for the fatigue assessment of HFMI-treated steel structures under in-service VAL conditions, this paper analyses the effect of VAL on mild and high-strength steel joints and provides suggestions for D to obtain a proper equivalent stress range for design. As no further comprehensive evaluations of applicable damage sums for HFMI-treated joints are available so far, this work contributes to properly assess the fatigue strength of HFMI-treated structures under VAL. Herein, the IIW-recommended and well proven method based on the calculation of an equivalent stress range is applied utilizing commonly specified damage sums from literature. (text from [22])

Within this project, recently published fatigue test results of welded and HFMI-treated joints under CAL and VAL [21, 22] were analyzed and the applicability of different allowable damage sums was discussed. As shown in Figure 1, the VAL load scenario exhibits a remarkable effect on the fatigue behavior, which was one major topic of the discussions during the meeting.

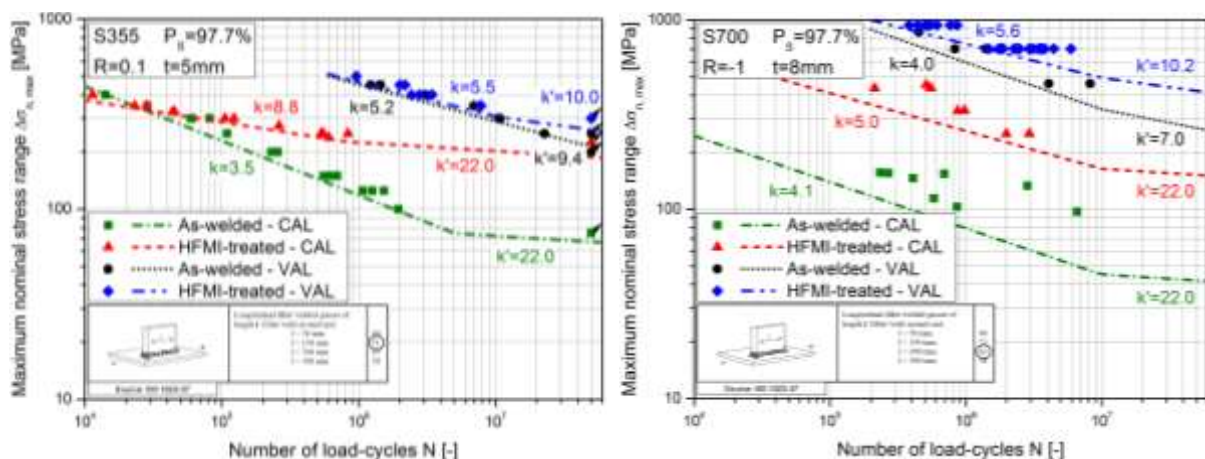


Figure 1: CAL and VAL experiments of S355 (left) and S700 (right) welded and HFMI-treated steel joints [22]

Outcome/conclusions of the discussions during the meeting:

The participants of the meeting concluded that the IIW-recommended fatigue design curves for HFMI-treated steel joints utilizing the suggested allowable damage sums show a conservative assessment under the investigated load-spectra in any case, which enables a benefit in fatigue strength due to the post-treatment compared to the as-welded condition under VAL as well. Further fatigue tests considering different specimen geometries, base materials and load scenarios as well as crack propagation analyses to cover both crack initiation and growth should be conducted in the future to holistically analyze the total lifetime of welded and HFMI-treated joints under VAL. In addition, special focus should be laid on under/overload effects, which may significantly affect the benefit of the HFMI-treatment and which need to be incorporated in the course of a proper fatigue design especially if variable amplitude load-spectra are considered. [22]

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Publications:

The following publications, at which some participants of the project partially contributed by scientific support, dealing with the fatigue enhancement by HFMI-treatment under CAL were presented and published during the Annual Assembly and International Conference of the International Institute of Welding (IIW) in the year 2018 in Indonesia:

Muhd. Faiz Mat, Dahia Andud, Yupiter HP Manurung, Salina Saidin, Noridzwan Nordin, Norasiah Muhammad, Martin Leitner: Fatigue Life Enhancement of Transverse and Longitudinal T-Joint on Offshore Steel Structure HSLAS460G2+M using Semi-automated GMAW and HFMI/PIT, *Proceedings of the 71st IIW International Conference*, 2018.

Salina Saidin, Muhd. Faiz Mat, Yupiter HP Manurung, Dahia Andud, Noridzwan Nordin, Martin Leitner: Effects of High Frequency Impact on Fatigue Life of Manual Welding of HSLA Butt Weld, *Proceedings of the 71st IIW International Conference*, 2018.

Further work:

Further work deals with the modern additive manufacturing technique called "Wire Arc Additive Manufacturing (WAAM)". A project application for a further cooperation in 2019 and 2020 is/will be submitted, which mainly focuses on the scientific investigation of this topic. As this method is comparably new, a strong scientific exchange with international experts from university and industry at the International Institute of Welding (IIW) in the upcoming Annual Assemblies in 2019 and 2020 is of utmost importance. Thereby, additionally further publications (also peer-reviewed in the course of the Journal "Welding in the World" is possible) are scheduled.

Final Report 2018

ASEA-UNINET Workshop on Biological Mass Spectrometry in Metabolomics, Proteomics and Drug Discovery 1-3. Aug. 2018

Project leader: Univ. Prof. Dr. Ebrahim Razzazi-Fazeli / Vetcore Facility for Research / University of Veterinary Medicine Vienna

He is head of the Proteomics Unit at the Core Facility for Research / University of Veterinary Medicine Vienna. He studied Biotechnology at the University of Natural Resources and Life Sciences (BOKU) in Vienna and made his PhD at Medical University of Vienna in the field of therapeutic drug monitoring. He was group leader at quality control department of a biopharmaceutical company (Boehringer Ingelheim Austria). Furthermore, he was at Hoffman La Roche central research unit / Basel Switzerland before he joined the Vetmeduni Vienna 20 years ago. His main research field is biological mass spectrometry and its application in bioanalysis. He established various proteomics methods and technologies needed in this field at VetCore of the university. At the core facility the major field of work focuses on identification and quantification of proteins and peptides using interfacing liquid chromatography with mass spectrometry by LC-MS-MS or MALDI-TOF/TOF.

Thai organizers: Dr. Piyada Songsermsakul
Faculty of Pharmaceutical Sciences / Khon Kaen University, Khon Kaen / Thailand.

Dr. Piyada Songsermsakul is permanent staff since 2001 at Faculty of Pharmaceutical Sciences / Khon Kaen University. She received her Doctoral degree in field of analytical chemistry at the University of Vienna / Austria. She got 2009 a scholarship for research stays for university academics and scientists by German Academic Exchange Service (Deutscher Akademischer Austauschdienst: DAAD) at Laboratory of Bioanalytics, Institute of Hydrochemistry, Technische Universität München, Germany "Structural characterization of benzo(a)pyrene monoclonal antibody by FT-ICR-MS". In 2012 she was awarded as Hitachi research fellowship by the Hitachi Scholarship Foundation at Institute of Medical, Pharmaceutical and Health Sciences, Kanazawa University, Japan "Evaluation of polycyclic aromatic hydrocarbons in water and air samples". In 2015 she received Ernst Mach-Nachbetreuungsstipendium (EZA) scholarship by Austrian Agency for International Cooperation in Education and Research (OeAD-GmbH), Centre for International Cooperation & Mobility (ICM) at VetCore, University of Veterinary Medicine Vienna, Austria, hosted by Prof. Dr. Ebrahim Razzazi-Fazeli on the topic of "Proteome analysis of mycotoxin-producing fungi".

Introduction

Biopharmaceuticals are produced by biotechnological process and are proteins of human origin, such as antibodies, hormones and cytokines, fragments thereof. In addition also human plasma derived proteins (albumin, immunoglobulin,...) can be seen as biologics. The so-called recombinant proteins are produced in living cells, which are genetically modified. These class of biopharmaceuticals show extreme structural complexity and fidelity as well as post-production covalent modifications. Additionally, the contamination with host cell proteins is another source of heterogeneity. Therefore, the quality control of biopharmaceuticals is an important issue. Biological mass spectrometry has gained increasing interest in the field of protein analysis as well as proteomics, metabolomics and analysis of other bio-molecules. It has become an important tool in modern drug analysis including biologicals and drug discovery. Mass spectrometry offers an attractive alternative to the more traditional bioanalytical methods for rapid and sensitive measurements. Nowadays it is the most ubiquitous tool in analytical biochemistry and has definitively revolutionized the field of bioanalysis.

Particularly, the biological mass spectrometry has been shown to be the method of choice for characterization and evaluation of drugs as well as therapeutic proteins. It can provide detailed structural information.

The ASEA-UNINET workshop on biological mass spectrometry in metabolomics, proteomics and drug discovery at Khon Kaen University, Thailand has provided a comprehensive overview of biological mass spectrometry, its development as well as its important role in bioanalysis and biopharmaceutical analysis. Furthermore, application of this sophisticated technology in metabolomics and proteomics disciplines was highlighted. Major interfaces in mass spectrometry, including electrospray ionization and matrix-assisted laser desorption ionization mass spectrometry were discussed.

Project Description

ASEA-UNINET workshop 2018 on Workshop on Biological Mass Spectrometry in Metabolomics, Proteomics and Drug Discovery was hosted at Khon Kaen University, Thailand, Aug. 1-3, 2018.

The workshop was organized by Dr. Piyada Songsermsakul from the Faculty of Pharmaceutical Sciences / Khon Kaen University, who made tremendous efforts for this perfectly organized workshop. From Austria, Prof. E. Razzazi-Fazeli / University of Veterinary Medicine Vienna, Vetcore hold lectures at the workshop. In a cooperation with Bruker company, Dr. Jaran Jainhuknan from Bangkok gave two lectures with regard to new developments in the field of mass spectrometry.

Prof. Dr. Wolf-Dieter Rausch / Inst. of Medical Biochemistry was unfortunately not able to attend to the workshop due to his schedule.



The Organizing Committee, © KKU

Aim of the Project

The project aimed at giving a theoretical introduction in to biological mass spectrometry with focus on metabolomics, proteomics and drug discovery strategies. The program implicated academic staff of Thai partner universities, postgraduates, PhD and master students, researchers as well as pharmaceutical industries. The workshop was a problem based and knowhow transfer program.

The workshop was attended by 30 participants from different universities in Thailand.

Day. 1. Preparation of Workshop and Training course

Meeting the dean Prof. Associate Professor Dr. Paiboon Daosodsai, Dean of Faculty of Pharmaceutical Sciences, Khon Kaen University.

Meeting with workshop organizing committee at the Faculty of Pharmaceutical Sciences in order to discuss details and to prepare workshop for next two days. Emerging points as well as organizing aspects were discussed deeply.

Day 2. Opening, Introduction and Theoretical Part

The workshop was opened by Professor Dr. Paiboon Daosodsai, Dean of Faculty of Pharmaceutical Sciences, Khon Kaen University. He welcomed the participants and lecturers in the opening ceremony. Prof. Razzazi gave an introduction and overview on the activities of ASEA-UNINET with Thailand and the cooperation with the University of Veterinary Medicine in Vienna.

The first day, workshop started with a lecture on introduction to biological mass spectrometry and its relevance in metabolome as well as proteome analysis, which was presented by Prof. Razzazi-Fazeli. The fundamentals of Electrospray ionization and Matrix Assisted Laser Desorption/Ionization were discussed exemplified. Furthermore the identification of proteins and biomarkers relevant in drug discovery were discussed. Another topic of the workshop was Metabolomics. Fundamentals of metabolomics was given by Prof. Razzazi-Fazeli and basics and application of metabolome data analysis.

Dr. Jaran Jainhuknan from Bruker company highlighted the new developments in mass spectrometry and instrumental possibilities for metabolome research. Furthermore, fundamentals of spectral identification of metabolites using MS/MS approach and high resolution MS was discussed.



Lecture ASEA-UNINET Workshop, © KKU

Day 3. Overview of Protein analysis and characterization by biological mass spectrometry

The third day was focused on basics of protein analysis and sample preparation in proteomics approaches. The lectures were given by Prof. Razzazi-Fazeli on application of mass spectrometry based proteomics in characterization of biopharmaceuticals. During the course the participants and the lecturer realized the demand of basics on protein separation using polyacrylamide gel electrophoresis, a very important method in characterization of proteins.

At the end of the workshop an interactive secession by trainer and participants reviewed and highlighted the potential and advantages, applications as well as disadvantages of each method. In addition, strategical considerations were discussed further.

The workshop was then evaluated by all participants. As a general outcome, the workshop was appreciated as proactive and interactive in coming to grips with important strategies and methods utilized in modern proteomics.



Participants ASEA-UNINET Workshop, © KKU

The organizers want to thank ASEA-UNINET organization and Faculty of Pharmaceutical Sciences, Khon Kaen University and Bruker (Thailand) their contributions to the workshop.

Prepared by:

Univ.Prof.Dr. Ebrahim Razzazi-Fazeli

Dr. Piyada Songsermsakul

Masterclasses for Violin and Chamber Music, Nov 19-25, 2018

Univ. of Music and Performing Arts Vienna, Joseph Haydn Institute for Chamber Music - Priv.Do. Mag.art.Peter Schuhmayer , project manager

Mr. Schuhmayer teaches at the Joseph-Haydn Institute for Chamber Music violin and chamber music. He is focusing on international exchanges in teaching and learning structures not only between European Universities but also in the Asian and US territories. He has served as first violinist and performed internationally with the Artis Quartet of Vienna for 39 years.

Mahidol University Bangkok, College of Music - Assoc.Prof. Paris Paraschoudis, DMA

Mr. Paraschoudis teaches at the College of Music violin and chamber music and served as chair of the string and chamber music departments for many years. He is assistant leader of the violin section of the Thailand Philharmonic Orchestra and is busy in exchanges especially in the South east Asian Countries and the US. He is focusing in integrating kids from various social backgrounds into the music educational structures.

Report:

My stay in Bangkok at the Mahidol University November 19-25, 2018 was the newest activity in the cooperation between the mdw and the Mahidol University which started several years ago in order to develop closer connections in the exchange of students and teachers.

Among the most obvious things which I realized when I started my visit was the change in the position of head of strings from *Paris Paraschoudis* to *Marcin Szawelski* but much more the just ongoing programme accreditation procedure evaluation of Mahidol's bachelor programmes by the Quality Assurance agency MusiQuE. The higher management staff was pretty busy with meetings and preparations for this important evaluation process.

After a full Institutional Review which successfully completed in 2017 this was the second visit paid by the review team of the Agency to Mahidol.

The Executive Summary of that first report was approving, " The College of Music, Mahidol University is a truly exceptional institution. It fully complies with all MusiQuE standards. The Review Team found that the College of Music's strongest points are the vision that permeates the whole teaching and learning environment and that strongly addresses the needs of country and region. All the measurements taken from this vision guide the still developing institution safely and brilliantly through this process and surely far beyond it.

The impression which I got during my stays were the same like were the report continued,"

the College manages to be embedded in the region and at the same time to look beyond, which it aspires as well. Faculty, staff and students benefit from the clear dedication to internationalization and at the same time to honoring the roots of Thai art. The facilities in which the College is situated mirror the beautiful idea of literally connecting to the environment with trees from Thai forests being planted in open spaces giving at the same time room to musical practice under the open sky. “



Teaching room with view to the new but yet unfinished Museum of Southeast Asian Music., © mdw / Peter Schuhmayer

My masterclasses during the stay were mainly consisting of one- to- one lessons and chamber music teaching . Pieces by Beethoven, Bach, Schubert, Kreisler and Mendelssohn had been prepared and performed during the lessons.

The focus of the artistic and pedagogic strategy was mainly to point out the basic structure of the pieces and through changes in sound and articulation change as well the personal interpretation of the already existing musical text.

Students and partly teachers were listening to the lessons and the interest in watching the classes was mixed over the few days. The level of preparation varied as well as the level of students. The more basic the instrumental skills still are, the more they would need assistance in preparing the pieces for the masterclasses. The development of the Music College in terms of quality of their students is still ongoing and still a process to be continued but no question that Mahidol is keeping up it's interest to be part of a strong international network.



Masterclass situation at Mahidol with Peter Schuhmayer, © mdw / Peter Schuhmayer

The expected outcome of the project is certainly still an increasing number of incoming students from Thailand to the mdw as well as a frequent exchange of teachers or graduates.

Master Classes at Mahidol University – Nov. 22 to Dec. 1, 2018

Projectleader: **em.o.Univ.-Prof. Mag. Dr. Carole Dawn REINHART**

University of Music and Performing Arts in Vienna

Leonard Bernstein Institute

E-Mail: carole@cdreinhardt

Reknowned trumpet soloist Carole Dawn REINHART had an extensive career of concerts with symphony orchestras and chamber orchestras all over the world. In 1983, she was offered a professorship at the prestigious University of Music in Vienna, Austria. She continues teaching as Professor Emeritus, gives master classes around the world (emphasizing the elements of Viennese style), and serves as a juror for solo competitions.

Report:

This year, I flew to Bangkok one day earlier than usual in order to hear the Thailand Philharmonic Orchestra playing Richard Strauss' "An Alpine Symphony" in the new Prince Mahidol Concert Hall. The program opened with an interesting world premier of "Dhumketu" ("Fog") by a young Thai composer and Mahidol alumnus, Wiwat Suthiyam. Beethoven's "Piano Concerto, No. 1" was masterfully performed by German pianist, Rolf-Dieter Arens, who, after an international solo career, is now on the faculty at Mahidol. Johannes Klumpp conducted the orchestra in a brilliant and breathtaking performance of "An Alpine Symphony". Through my many trips to Thailand, it's been a real pleasure to follow the progress in quality and repertoire of TPO.

On Monday morning before lessons began, the Pre-College trumpet teacher, Alongkom Laosaichuea, showed me around the new Pre-College building, near the College of Music. In addition to classrooms with the newest medial equipment and keyboards, large and small ensemble rooms, and an enviable number of practice rooms, there are dormitories and areas for relaxation or programs, a large cafeteria, plus a 4th floor garden covering the large atrium space designed to filter and cool the air in the building. The facilities are well planned and were completed last year when I was at Mahidol. After the tour, I began working with the students, including the 21 year-old student, who is now solo-trumpeter in the TPO and who did a magnificent job playing the first trumpet part in "An Alpine Symphony". Many of the students have played for me for several years, so it is interesting to be able to assess their improvement. I noticed that there seem to be even more girls learning the trumpet and in general, they are quicker than the boys in adjusting their technical and musical playing. Interestingly, Dr. Joseph Bowman explained that the Thai students have no preconceived idea of the trumpet being a "masculine" instrument. On Tuesday, I continued working

privately with the students. They often bring their friends to listen or to translate, although most speak English quite well.

On Wednesday, in addition to the private instruction, I conducted all of the students in the Trumpet Studio class. Approximately 25 students played together in Dennis Horton's "Suite" and Malcolm Arnold's "A Hoffnung Fanfare". The main goals in working with such a large ensemble include improving sight-reading, intonation, articulation, clean accurate rhythm, and balancing the important melody/theme with the harmonic and accompanying figures. It was a very good session and the students enjoyed the "blow"!



© Joseph Bowman

Following the Trumpet Studio, in the Pedagogical Class, I answered questions from Prof. Dr. Joseph Bowman and the students. Topics dealt with breathing, sound (singing), vibrato (no vibrato for brass in the Viennese tradition), musical ideas, position of the instrument and fingers, training fingers for speed (weight), warm-up routine, and the importance of practicing what one can't play, not just playing through what one can! I was also asked about methods for young players, since the students are preparing a method book for trumpet in the Thai language, a worthwhile project.

In the evening, I attended TPO's rehearsal of "Music from Final Fantasy" since I wouldn't be able to hear the concert on Saturday. In addition to the full orchestra, there was a large choir – impressive sounds in the Prince Mahidol Concert Hall. The only thing missing was the visual computer game on the large screen hanging over the orchestra.

On Thursday, I not only gave private instruction, but also talked and performed for a composition course. I was able to demonstrate how the trumpet and all brass instruments function through the natural series of overtones. Brass players need enough rests for recuperation of the embouchure. The trumpet, being the highest is the most strenuous in this respect. I played examples of "normal" trumpet solo openings and some not so pleasant ones. I stressed the important considerations for composers, who want their works to be performed! In my career, I performed approximately 30 world premiers, but I probably turned down 40 or 50 works due to extreme elements that I could not musically justify or connect with. If the difficult technique or range contributes to the beauty and power of the music, than it is worth making the effort to play it. It is also important for composers to keep in mind the basic characteristics of the trumpet for fanfares and a singing sound. This was the first time that I have been asked to do such a session, but it was a good experience for all. Dr. Tyler Capp (Chair and Prof. for Composition) felt it would inspire the students to enter a world of composing for brass instruments, which up until this time they had neglected.

On Thursday evening, the Pre-College began its annual series of spectacular programs. This year's theme was "Three Nights of Terror". The students write all of the scripts and choose the music used for these dramatic presentations. Sharing the first evening were the Concert Band and the Thai Instrument Ensemble. The Thai instruments were used in a ghostly fashion for old Thai legends. The highlight of the evening for me was the Concert Band's stunning performance of Eric Whitacre's "Ghost Train".

Friday was a long day of working with students. In the evening, I attended the "2nd night of terror" with pianos, guitars and voices. 16 students in witches and goblins costumes performed Prokofiev's "Dance of the Knights" on 4 pianos. It was another memorable evening. Due to my flight back to Vienna on Saturday, I was unable to attend the "3rd night of terror" with the orchestra and jazz band performing. The College of Music is fortunate in having such an elaborate and active Pre-College training program.

In summary, it was again a whirlwind week with many contacts and activities. I especially appreciate the warm reception from members of the faculty and students. Most profitable for me and the students is the fact that I have been able to work with many of them over several years from Pre-College to college level. They are appreciative of the extra support that I can give to Prof. Bowman and his trumpet professor colleagues.

THE BASSO CONTINUO-WORKSHOP AT MAHIDOL UNIVERSITY (THAILAND) AUGUST 6TH – 10TH, 2018

Projectleader: **Univ.-Prof. Mag.art. Dr.phil. Peter Hrcirik**

Professor for composition and aural training at the Anton Bruckner Institute for Choir and Ensemble
Conducting as well as Composition in Music Pedagogy

E-Mail: hrcirik@mdw.ac.at

Peter Hrcirik, born in Vienna in 1964, studied music education and instrumental music education (the latter for the subjects of organ and voice) at the University of Music (Musikhochschule) Vienna (graduated with distinction in 1990), also organ concert studies with Prof. Dr. Rudolf Scholz at the same university (concert diploma in 1991). Moreover, complementary composition studies with Prof. Dr. Erich Romanovsky and Prof. Mag. Heinrich Gattermeyer; interuniversity doctoral studies (doctorate in 1996).

Various research and teaching assignments at the University of Music and Performing Arts Vienna (mdw) since 1994; since 2012 junior lecturer for composition at the Anton Bruckner Institute, professorship in 2017. Since October 2018 deputy head of the Institute.

Focus of his teaching and research activities: basso continuo, harmonics, developments and processes of the 18th and 19th centuries.

REPORT

The idea for a **Basso Continuo-Workshop** was guided by my personal consideration of designing the contents of my own subject “Harmony” for foreign students in an attractive and practical way and to connect them with concrete playing on the instrument.

The organization of the workshop in advance was very competent and accommodating on the part of the Mahidol University.

My questions and suggestions were answered very satisfactorily, and in collaboration with the responsible staff a schedule was prepared, which ensured a high degree of individual support for a limited number of students.

In this special course, which ran from Monday, August 6th to Friday, August 10th, I taught six well-selected students.

On the first morning of my workshop, Monday August 6th, I discussed in some detail the course contents and gave a survey about the historical development of the figured bass-system by considering the changing composing structures of Baroque Music from 1600 to ca. 1770, the various playing techniques and, above all, the stylistic backgrounds of realization of the Basso Continuo as part of a **two-hour introductory lecture**. (The numerous and already duplicated handouts, contributed by myself, were, of course, very helpful for the joint work.)

A first **group session** in the afternoon gave me the opportunity to get to know the level of playing and the music theory-knowledge and skills of the individual students.

The other course days were all organized according to the same principle:

Each student received a daily half an hour of one-to-one tuition (**single lesson**), followed by a daily one-and-a-half-hour **group session** in the afternoon, in which we were able to develop and deepen various special techniques of playing the figured bass, e.g. in chorales, arias, instrumental pieces, recitatives, but also classical church music.

To work out together the continuo part of the Credo from Mozart's "Sparrow-Mass" was without a doubt a special highlight of our group sessions: the students could get a good impression and feeling of very typical Austrian church music-style and -sound of the late 18th century. The hypermodern equipment of the group rooms with 10 symmetrically positioned electric pianos including wall screens and a teacher piano with camera impressed me a lot. Of course, I have used the teaching structures that are possible with this equipment several times.

Twice the students also received a **written homework**, which was checked and discussed in the group sessions. Written elaborations of figured basses are, in my opinion, also an important experience for the learners.

On Friday 10th, we designed the last group session as a small **final concert** in which all students were able to present 12 (two pieces per student) mixed short baroque pieces (chorales, songs, arias, instrumental pieces, recitatives, composed by Telemann, Handel, Bach, Geminiani and others), whose Basso Continuo-lines were elaborated and realized by the students themselves, in front of a small auditorium of professors and organizational staff.

In the absence of any melody instrument players and singers, I myself played the instrumental solo parts (violin, flute, oboe) on a second piano and sang the vocal parts myself.

A personal suggestion: For any further performances of this kind, it would be worth considering whether it might be possible to collaborate with instrumental and vocal students from other departments.



The great interest of the students in this special topic, their diligence, their ability, their politeness and friendliness, their punctuality and reliability must be mentioned here very positively.

I also felt very well looked after and advised by the contact persons, the professors and the organizational staff during my stay at the campus.

The technical equipment of the college is really excellent. However, CD-players are missing in the rooms. (At Mahidol-Campus, they only work with usb-sticks. Obviously, in Thailand the CD is considered as an even more old-fashioned medium than in Europe.)

It was a great concession on the part of two ladies of the staff, that they have organized a portable CD-player for me immediately, so that I had the opportunity to play my brought CD- examples for demonstration to the students.

All in all, it was important for me to sharpen the students' awareness of the basso continuo **playing technique** and above all to create **historical awareness**.

Until the 1980s, the figured bass was considered mainly as a part of the theory of harmony. Meanwhile, the interest in the original sources has come to the fore, and attention is focused on studying how to perform in which country (French, Italian or German style) at what time the bass lines, and beyond, what different temporal and different geographical playing techniques have established. So it was a special concern of mine to **familiarize students with the most important historical sources and traditions**. The central statements of the most important Basso Continuo-tutorials of the late 17th and early 18th centuries were always our special interest during our 5 workshop-days.

Furthermore, I presented as a gift the English edition of the excellent modern Basso Continuo-tutorial based on original sources by Jesper Bøje Christensen. This book will be incorporated into the Mahidon-music library and hopefully be used often and profitably.

Staying on the fantastic campus, which is as modern as natural, was excellent. The embedding of large high-tech-buildings in a beautiful lake-landscape, walking from building to building on wooden pedestrian bridges, and the whole ensemble surrounded by lush tropical vegetation and fauna, including iguanas – that all must truly overwhelm a Central European!

*

Finally, I would like to express my special thanks to the following professors and organizational staff members:

Mrs. Dr. **Sornsuang Tangsinmonkong** (lecturer; the musically most important contact person for me during my stay)

Mrs. Dr. **Onpavee Nitisingkarin** (Chair, Piano Department; important in terms of organization in advance, elaborating the workshop-schedule)

Mr. Asst. Prof. Dr. **Joseph Bowman** (Professor of Trumpet, Associate Dean for International Affairs; my first contact person to Mahidol Music College)

Mrs. **Nartpraween Suppasri** (International Relations Officer; organizational staff)

Mrs. **Siriporn Lapthanaphanit** (International Relations Officer; organizational staff)

I have taken a very positive note of the course-week for myself: It has been a great experience for me to have worked with excellent students on this very impressive campus, and I hope to have broadened their musical horizons as well. Also I return greatly enriched by this stay at the Campus. The fact that Dr. Sornsuang Tangsinmonkong has assured me that the Music College would like to welcome me again for another course (or 2 courses!) in the coming year, I rate as positive feedback in relation to my five-day teaching at the Mahidol University.

YOUNG MASTERS Workshops and Young Artists' Exchange

Project leaders:

Univ.-Prof. Georg HAMANN is a member of the renowned Aron Quartet and first solo viola player of the Viennese chamber orchestra. Since 1992 he has taught violin and viola at the mdw – University of Music and Performing Arts Vienna and since 2018 he has been the head of the Hellmesberger Institute for String Instruments, Guitar and Harp in Music Education. He also heads a class of particularly gifted students at the Johann Sebastian Bach Music School. He teaches master classes for violin, viola and chamber music throughout Europe, Israel and Japan at regular intervals.

For his artistic and teaching achievements Georg Hamann has received the Appreciation Award of the Ministry of Science and the Gold Medal for Services to the Republic of Austria.

hamann@mdw.ac.at

Mag. art. Christos Marantos was born in Athens, studied piano at the “Ellinikon Odeion” Conservatory in the class of Max Hallecker and graduated with distinction in 1999. He then went on to study instrumental education at the University of Music and Performing Arts Vienna under Prof. Harald Ossberger and earned his bachelor's and master's degrees with distinction. He teaches master classes e.g. at the "Anton Bruckner Private University for Music, Dance and Drama", the "Carinthian State Conservatory" in Klagenfurt, the "Aswara Academy of Arts" in Kuala Lumpur and the "College of Music Mahidol University" in Thailand. Besides his performances as soloist and chamber musician, Christos Marantos has taught piano at the J.S.Bach Musikschule der Diakonie in Vienna since 2009.

christosmarantos@gmail.com

Report:

From 30 January to 8 February 2018, a concert tour was undertaken by two ensembles of the mdw - University of Music and Performing Arts Vienna to Mahidol University in Bangkok, Thailand. The five young musicians (aged 18 - 20) are part of the Young Masters Programme - a special mdw programme for gifted young musicians run in cooperation with the Johann Sebastian Bach Music School in Vienna. The two Young Masters Ensembles were accompanied by two teachers:

Supervisors / teachers:

Christos Marantos (organiser, piano)

Prof. Georg Hamann (viola)

Young Masters:

Maxim Tzekov (violin)

Fabian Köhring (flute)

Linus Köhring (viola/piano/composition)

Severin Neubauer (saxophone)

Severin Hechwartner (percussion)

Trio SMS:

Maxim Tzekov (violin)

Severin Hechwartner (percussion)

Severin Neubauer (saxophone)

Trio in Kürze:

Fabian Köhring (flute)

Linus Köhring (viola/piano/composition)

Maxim Tzekov (violin)

OBJECTIVE

The objective of this project was to give performances and also engage in joint rehearsals and performances with students of Mahidol University's College of Music, for whom master classes and workshops were held by the Viennese teachers Christos Marantos (piano) and Prof. Georg Hamann (viola, violin, chamber music).

TOUR PLAN Five concerts and several workshops were scheduled and took place:

Thursday, 1 February 2018:**Workshop given by Professor Hamann****Concert at the Austrian Embassy in Bangkok****Concert & reception to formally open the embassy's new multi-purpose room**

Ludwig van Beethoven: Serenade in D Major, op. 27 for flute, violin, and viola

Alessandro Rolla: Terzettino

Gerald Preinfalk: *Little Lola* for saxophone solo

Astor Piazzolla : Tango no. 1 from the Tango Suite

Linus Köhring: Fantasy on *Die schwarze Orchidee* for alto saxophone, violin, and vibraphone

Trio SMS: *Tango SMS* for soprano saxophone, violin, and vibraphone

Aleksey Igudesman: *Turkish Smiles*

Friday, 2 February 2018:

Workshops given by Professor Hamann und Christos Marantos

Concert in the Music Auditorium of the College of Music at Mahidol University

Eugen D'Albert: Sonata for Piano Solo (Linus Köhring)

Linus Köhring: *Boku no yume* for flute, violin, and viola

Trio SMS (arr.): "Cetvorno Horo", Bulgarian folk song for soprano saxophone, violin, and darbuka

P. I. Tschaikowsky: Valse-Scherzo op. 34 for violin and piano

Linus Köhring: Fantasy on *Die schwarze Orchidee* for alto saxophone, violin, and vibraphone

Trio SMS: *Tango SMS* for soprano saxophone, violin, and vibraphone

Astor Piazzolla (arr. Trio SMS): Tango no. 1 from the Tango Suite for soprano saxophone, violin, and vibraphone

Saturday, 3 February 2018:

Benefit concert for children suffering from diseases of the blood, organised by the Greek Embassy to mark 60 years of relations between Thailand and Greece; concert followed by a reception

Ludwig van Beethoven: Serenade in D Major op. 27 for flute, violin, and viola

Alessandro Rolla: Terzettino

W. A. Mozart: Sonata in E-flat Major for violin and viola

Aleksey Igudesman: *Turkish Smiles*

Trio SMS (arr.): "Cetvorno Horo", Bulgarian folk song for alto saxophone, violin, and darbuka



Greek Embassy / Bangkok, © Georg Hamann

Sunday, 4 February 2018:

Rehearsals for the concerts followed by sightseeing with students of Mahidol University's College of Music and Workshops given by Professor Hamann

Monday, 5 February 2018:

Concert at the Goethe Institute, Bangkok

Young Masters Vienna together with young musicians of the Salaya Chamber Orchestra / College of Music at Mahidol University

Ludwig van Beethoven: Serenade in D Major, op. 27 for flute, violin, and viola

Linus Köhring: Soundscapes for flute and piano

P. I. Tschaikowsky: Valse-Scherzo op. 34 for violin and piano

Trio SMS (arr.): "Cetvorno Horo", Bulgarian folk song for soprano saxophone, violin, and darubka

Linus Köhring: *Boku no yume* for flute, violin, and viola

W. A. Mozart: Flute Quartet no. 1 in D Major, K. 285 (Young Masters Vienna and students from the College of Music, Mahidol University)

W.A. Mozart: Divertimento in F Major (Young Masters Vienna and students from the College of Music, Mahidol University)

Tuesday, 6 February 2018:

Young Masters and students of Mahidol University performing together at Mahidol University's new hall

Linus Köhring: *Boku no yume* for flute, violin, and viola

P. I. Tschaikowsky: Valse-Scherzo op. 34 for violin and piano

Gerald Preinfalk: *Little Lola* for saxophone solo

Trio SMS (arr.): "Cetvorno Horo", Bulgarian folk song for soprano saxophone, violin, and darubka



Trio SMS, College of Music / Mahidol University, © Georg Hamann

Wednesday, 7 February: Return journey to Vienna

OUTCOMES

This trip provided the young musicians from both countries with opportunities for the exchange of experience in the form of activities that included working together to rehearse and perform chamber orchestra repertoire (peer learning, artistic inspiration, experiential exchange, knowledge transfer, mutual artistic experiences).

The workshops and master classes allowed the students from the host country to profit from the experiences of Professor Hamann, who presented and conveyed the special stylistic tradition of the *Wiener Klangstil* or “Viennese Sound”. Furthermore, getting to know an mdw professor awakened the Thai students’ interest in studying at the mdw as exchange students.

The young musicians from Vienna were able to gather experience playing concerts before an unfamiliar foreign audience, and they also became acquainted with how things are on an international concert tour as professional musicians. This may have an influence on these musicians’ individual professional profiles later on.

Since the young Vienna-based participants were also involved to a certain extent in this tour’s organisation and preparation, they gathered additional experience in this regard that may prove helpful to them should they end up working as freelance musicians in the future.

This trip made it possible to establish a new cooperative relationship that will enable the larger, 15-member “Young Masters Ensemble” group, as well, to experience this kind of cultural exchange with Southeast Asia in the future. Contact was established with instructors of Mahidol University (Dr. Paris Paraschoudis, Stefanie Waegner, Prof. Dr. Joseph L. Bowman) in the interest of realising new projects, some of which could be associated with a chamber music festival that is being planned by Mahidol University and would present an opportunity for a further exchange visit.

The concerts, which were very well attended and heard by several cultural affairs decision-makers from the embassies of Austria and Greece, likewise led to new contacts—and the Young Masters were invited to give further performances at these two embassies in the future. Additionally, both embassies indicated their openness toward providing financial support for future projects.

One of the Young Masters Programme’s central values is the social aspect of music. And in this regard, it was of particular significance that this young people’s tour included a charity concert, organised by the Greek Embassy, that benefitted children suffering from diseases of the blood.

Finally, for a future tour of East Asia that is to be conducted as part of the Young Masters Programme, both the Austrian Embassy in Bangkok and the Goethe Institute in Bangkok provided access to their important contacts and networks in the Malaysian capital of Kuala Lumpur.

DOCUMENTATION

The audio recordings and video footage from this trip by the Young Masters Programme’s musicians and teachers have been used to produce a documentary film:

- Film: <https://www.youtube.com/watch?v=fEyZqgew9Tc>

Masterclass/Workshop for Voice and piano accompaniment

Georgia Michaelides

Born in Nicosia, Cyprus. Opera and concert singer, Professor for voice at the University of Music and Performing Arts Vienna. Studied Voice technique, Opera, Lied and Oratorio and Piano at the MDW and graduated with honours.

Performed as a soloist with orchestras and gave numerous recitals in renowned music halls and festivals in Europe. Received favourable critic reviews for her outstanding performances.
Made recordings on Radio and TV.

Serves on juries for international voice competitions and regularly gives seminars and master classes for interpretation in Opera, Lied and Oratorio in Europe and Asia.

Address :

Em.o.Univ.-Prof. Georgia Michaelides,
Universität für Musik und darstellende Kunst Wien,
Institut A. Salieri (Institut für Gesang und Stimmforschung in der Musikpädagogik)
Anton-von-Webern-Platz 1, 1030 Vienna, Austria.
E-mail: michaelides@mdw.ac.at.

Megumi Mizuguchi

Born in Tokyo, Japan. Pianist and composer, Piano accompanist for singers and instrumentalists at the University of Music and Performing Arts Vienna. Studied piano and composition in Tokyo, piano in Warsaw, and Lied and Opera accompaniment at the MDW.

Performed as a soloist, chamber music soloist and accompanist with famous singers. Worked as a répétiteur at the Vienna State Opera, the Volksopera, and Festivals. Gave concerts worldwide. Made recordings on the Radio, on TV and CDs.

Albums with her compositions gained a great success in Japan and N. America. Recently she discovered her love of jazz which she includes in her repertory.

Address:

LV-Mag. Megumi Mizuguchi
Universität für Musik und darstellende Kunst Wien,
Institut A. Bruckner (Institut für Chor- und Ensembleleitung sowie Tonsatz in der Musikpädagogik)
Anton-von-Webern-Platz 1, 1030 Vienna, Austria.
E-mail: mizuguchi@mdw.ac.at

Introduction

This year Austria and Thailand celebrate 150 years of Friendship.

It was a great honor for me to be invited from the Mahidol University to give a masterclass for voice and piano accompaniment. Together with my colleague Ms Megumi Mizuguchi we offered a team-teaching masterclass for singers and pianists at the College of Music, Mahidol University, Bangkok. The goals of our teaching were:

To teach the Mozart operas based on the Viennese tradition with its characteristic style. As regards the Italian and French Operas of the 19th century, give lessons in comprehension of the Bel canto and French tradition as well as emphasis on style, vocal and breathing techniques.

As regards the German Lied, French Melodies and other Songs, interpretation, addressing the symbiosis of music and text, through the understanding of context of it, together with clear diction. As with the other options, vocal technique and breathing remain an emphasis of this course.

The masterclass

We arrived in Bangkok on Saturday 2nd of February and the course took place from Monday 4th to Friday 8th of February. On Friday afternoon the students gave a concert in the University theater which was open to the public.

Twelve voice students and five piano students took part to the masterclass. All of them were from the Mahidol University except three voice students who came from the Kasetsart University.

The teaching hours extended from 10.00 to 13.00 and 14.00 to 17.00 (sometimes until 18.00). The repertory was German, Italian, French and Spanish music with arias from operas and songs. Most of the students were very young between 18 and 22 years old. They sang demanding and interesting repertory both for singers and pianists.

At the beginning I worked more on the musical expression the style and the right pronunciation in each language. Gradually I did intensive work in technical matters and breathing technique. Ms. Mizuguchi worked on the same way with the piano students. It didn't take time to gain their confidence and they responded in our suggestions and ideas immediately. I was very happy to see the progress from one day to the next and the self-confidence they built up by performing.



Credits: mdw / Megumi Mizuguchi

I must say that it is not easy at all for the Asian people to sing in so many foreign languages with the write pronunciation. The fact that they do not have the opportunity to hear very often, live professional classical music in concerts and opera performances, makes things more difficult. It is a great fortune for them to have the opportunity to study with one of the teachers to be invited from Europe to help and to develop the music

studies. I am very pleasantly surprised to see and hear how much they love the European music although it goes not have a lot in common with the traditional music of their country.

Wolfgang Amadeus Mozart was the most presented composer in the course. The students brought arias from *Bastien Bastienne*, *Don Giovanni*, *Le nozze di Figaro*, *Così fan tutte*, *Vesperae Solennes de Confessore* and *Lieder*.

They sang arias from *G.F. Haendel*, *A.Dvořák*, *C. Gounod*, *C.M. von Weber*, *G. Bizet*, *G. Puccini*, and *F. Lehar*. We worked on a great variety of *Lieder* from *J. Brahms*, *F. Schubert*, *R. Schumann*, *H. Wolf*, *F. Listz*, *G. Faurè*, *H. Duparc*, *C. Debussy*, *F.P. Tosti*, *V. Bellini* and *L. Delibes*. I hope, we could give some new ideas of interpretation and technical subjects so that it will make their singing more conscious and stable.



Credits: mdw / Georgia Michaelides

The final concert

On Friday 8th of February the students gave a successful concert in the theater. The chairperson of Voice and Musical Theater Department **Ms. Haruno Tsuchiya** did the opening of the evening with a welcoming speech.

The first Secretary of the Austrian Embassy in Bangkok **Mag. Judith Schildberger** gave a Power Point presentation about the 150 years of Friendship and relations between Thailand and Austria.

The Assistant Secretary-General for Higher Education Commission, The Office of Higher Education Commission, Ministry of Education, Thailand **Ms. Chadarat Singhadechakul** talk about the importance of the cooperation between Thailand and Austria.

And finally, my greetings followed as well those of the Rector of MDW **Prof.-Mag. Ulrike Sych**.





Credits: mdw / Georgia Michaelides

The concert was very successful, and the students received enthusiastic applause. Their appearance on stage was souveraine and convincing. Their performance made the audience understand the contents of the arias and Lieder they sang. The guests were very impressed of the musical standard and talent of the singers and pianists.

First Secretary Mag. Judith Schildberger, sitting next to me, was very impressed from some students and congratulated me for my teaching. Her opinion was that they should get scholarship to study further in Austria. She also said that the cooperation between the two Universities should continue without interruption to support the musical studies at the Mahidol University.

The evening ended with the Certificate Giving Ceremony.

Towards an alliance for distributed ethnomusicology data

Project number: ASEA 2018/mdw/6

Alex Hofmann, Ph.D.
University of Music and Performing Arts Vienna

In Cooperation with:
Prof. Dr. Andreas Rauber
TU Wien

Partner in Asia:
Prof. Joeseph Bowmann
Mahidol University - College of Music



CVs of involved personel at mdw:

Alex Hofmann (hofmann-alex@mdw.ac.at):

Alex Hofmann is a researcher at the Institute of Music Acoustics (Viennese Sound Characteristics) at the University of Music and Performing Arts Vienna. The institute carries out research on acoustics of musical instruments, organology and performance science and holds a data-base with more than 14.000 entries on topics related to organology. His research focus lays on woodwind music performance, instrument acoustics, performance science, and computer music. He also worked as a sound designer (e.g. Native Instruments GmbH, Berlin) and contributed material to the open source software project Csound, where he was one of the initiators of the biannual International Csound Conferences held since 2011.

Ardian Ahmedaja (ahmedaja@mdw.ac.at):

Studied composition (with Erich Urbanner) and the theory of music (with Diether de la Motte) at the Hochschule für Musik und darstellende Kunst Vienna. Magister artium in 1995 on the basis of treatises on *Il primo libro di capricci* (1624) by Girolamo Frescobaldi and *Rendering* (1990) by Luciano Berio. Studied European ethnology and musicology at the University of Vienna. PhD in 1999 based on the work *Zur Melodik der albanischen Volkslieder. Eine Typologie der gegischen Lieder* [On the Melody of Albanian Folk Songs. A Typology of Gegë Songs]. Since 1999 researcher at the Institute for Folk Music Research and Ethnomusicology of the University of Music and Performing Arts Vienna. In 2003 initiated the establishment of the Research Centre for European Multipart Music. Research areas up to now have been local practices in Albania and neighbouring countries, maqam, music and minorities, religious and secular musical practice, transcription and analysis, multipart music. Fieldwork in several Balkan and Mediterranean countries, in the European Alpine region and in the USA.

Hande Saglam (saglam@mdw.ac.at):

Hande Saglam got degrees in Composition in Ankara - Bilkent University, Magister in music theory from the University of Music and Performing Arts Vienna (mdw) and received her doctoral degree in Ethnomusicology from the Department of Folk Music Research and Ethnomusicology (IVE), at the same University with the thesis "Differences among Alevi and Sunni Âşiks in Sivas". Between 2005 and 2017 she has been working at the mdw on different research projects on music and minorities. Since July 2015 she works as head of the institute's archive and deputy director of the IVE at the mdw. Her research interests are Music and minorities, Music from Turkey, Anatolian âşık tradition, bi- and multimusicality, archiving, methodology of fieldwork.

Introduction

While the South-East Asian musical heritage is particularly rich, it is highly diverse and scattered across multiple countries and regions. The same holds for existing ethno-musicological resources.

Music research involves various kinds of data, ranging from written sources (manuscripts, music sheets, publications, etc) to audio and video recordings in different formats (analogue, digital) with varying additional information (Metadata) about contents and contexts of the performances, the performers, their ideas and viewpoints, musical instruments and the way of their use and so on. Until now, researchers and institutions have developed primarily

individual ways to collect and store such data, either digitally or in a card-index cabinet. Data search in such self-contained storages is difficult and searching across multiple storages can be very time consuming. This presents a barrier for conducting contemporary, computer-aided musicological research. For instance, incompatible data structures prevent applying automated data analysis and indexing across music collections to provide new ways to access the data and gain new insights. This includes the use of visualization techniques and state-of-the-art machine learning methods on existing data sets, which may reveal hidden connections between different areas within music research.

Report of Action

Following a preparatory data collection, in a workshop held at the Mahidol University Bangkok from 28-30th January 2019, which brought together ethnomusicology and ICT experts from Austria, Thailand, Malaysia and the Philippines, all four research facilities presented their current data holdings and infrastructure. More specifically is included:

Mahidol University: Prof. Dr. Boonsit Yimwadsana (ICT), Dr. Krit Buranavitayawut (College of Music)

- in process of building a museum and research center about south-east asian music
- Collection consists of +300 musical instruments which are currently not catalogued,
- Music performance recordings which are due to the process of building the actual museum space stored in a storage someplace else.

Malaysia: Dr. Pek Lin Chong (private collection)

Recreational songs of the Kenyah

- Original form: *a capella* and involving informal group-singing, often including multipart singing and simple dance movements. The data was collected over a period of 20 years, initially using Sony video-cameras and audio-recorders, stored in Hi8 videocassettes/Sony digital video cassettes tapes and audio-cassette tapes. Subsequently transferred to VHS tapes/audio-cassette tapes. Specific sections were digitized and combined for presentations and teaching (wmv, avi and mp4 formats). Over the years, a substantial amount of data recorded has been lost due to fungus growth or degradation of the tapes. Selected repertoire (songs and instrumental music) were transcribed, translated and their musical characteristics analysed. The lyrics were transcribed and translated with the help of native speakers of the language
- Size of the dataset:
 - Field recordings:
 - Video: 112 GB [14 hours]
 - Audio: 2.6 GB
 - Applied ethnomusicology
 - Video: 7 GB
 - Audio : 68.3 MB

- Metadata:

- Dates, location, categories or names of songs, instrumental pieces or dances
- Names of performers/main performers.

Example of the data collection:

	Description of content, location of recording	Date recorded	Length of recording	Format of storage/Size of file			
				MP4	AVI	WMV	
1	Marudi and Long Lama: Songs-(<i>belian dado'</i>) Dance (<i>datun julud', kanjet laki, kanjet leto</i>)	1995 November	1 hr 42 min	1.95 GB	21.6 GB		
2	Long Lama and Long Laput: <i>belian dado'</i> , dance instrumental music (<i>sape</i>)	1995 November	55 min	1.08 GB	12 GB		
3	Long San: Songs (<i>belian dado', kerintuk</i>). Dance	1996 June	30 min		900 MB		
4	Long Moh: songs,dance instrumental music (<i>lutong</i>)	1996 December	1hr 19 min		1.72 GB	1.49 GB	
5	Long Laput: <i>Keluri</i> (instrument), Kenyah song Kenyah/Kayan dance	1997 December	1hr 24 min		1.83 GB		
6	Long Mekaba: Kenyah instrumental music, songs and dance	2002 November	1 hr 2 min		13.1 GB		
7	Uma Badang: Kenyah instrumental music, dance	2004 November	51 min	1.51 GB	16.9 GB		

Example of the analysis performed:

	Title of Song	Tone set	Mode	Ambitus	Metre
1	<i>Along</i> (Long Selatong)	M: $\underline{s} \underline{l} d r m s$ H: $s l d'$	Do-pentatonic	8	4/4
2	<i>Are Ruti</i>	M: $\underline{l} d r m s l d'$ H: $d s l d'$	Do-pentatonic	10	4/4
3	<i>Ateklan</i>	M: $\underline{s} \underline{l} d r m s$ H: $s l t d'$	Do-pentatonic	8	4/4
4	<i>Bangen-bangen</i>	M: $d r m s l d'$ H: $s l d' r' m'$	Do-pentatonic	8	4/4; 2/4
5	<i>Baya-Baya</i>	M: $s, l, d r m s$ H: $m s l d'$	Do-pentatonic	8	2/4; 4/4
6	<i>Belabau Alih Silon</i>	M: $\underline{l} d r m s l$ H: $d' l s$	Do-pentatonic	8	4/4; 2/4
10	<i>Lan-e</i> version 1 (Baram)	M: $\underline{s} \underline{l} d r m s l$ H: $r m s l d' r'$	Do-pentatonic	9	4/4 ; 2/4

Philippines U.P. Center for Ethnomusicology: Roan Opiso

The name, “U.P. Center for Ethnomusicology” was established in 1997 by the U.P. Board of Regents, in recognition of Professor Jose Maceda’s visionary work and authorship of

putting together an ethnomusicological collection of about 2500 hours of recorded music in open reel and cassette tapes, field notes, music transcriptions, song texts, photographs, music instruments, music compositions, personal files, about 2000 books and journals, all of which he personally initiated and developed as a unified institutional resource for music research.

The UP centre now has as a digital collection of audio recordings, texts, videos and images stored in external hard-drives. Data is catalogued and this metadata information is available in a online public access catalogue. Accessing the actual material would require researchers to either visit the centre or request for access per letter or email, sending a research proposal which will be evaluated by the management. The process of digitizing old material is currently ongoing.

MDW - Department of Folk Music Research and Ethnomusicology: Dr. Hande Saglam, Dr. Ardian Ahmedaja

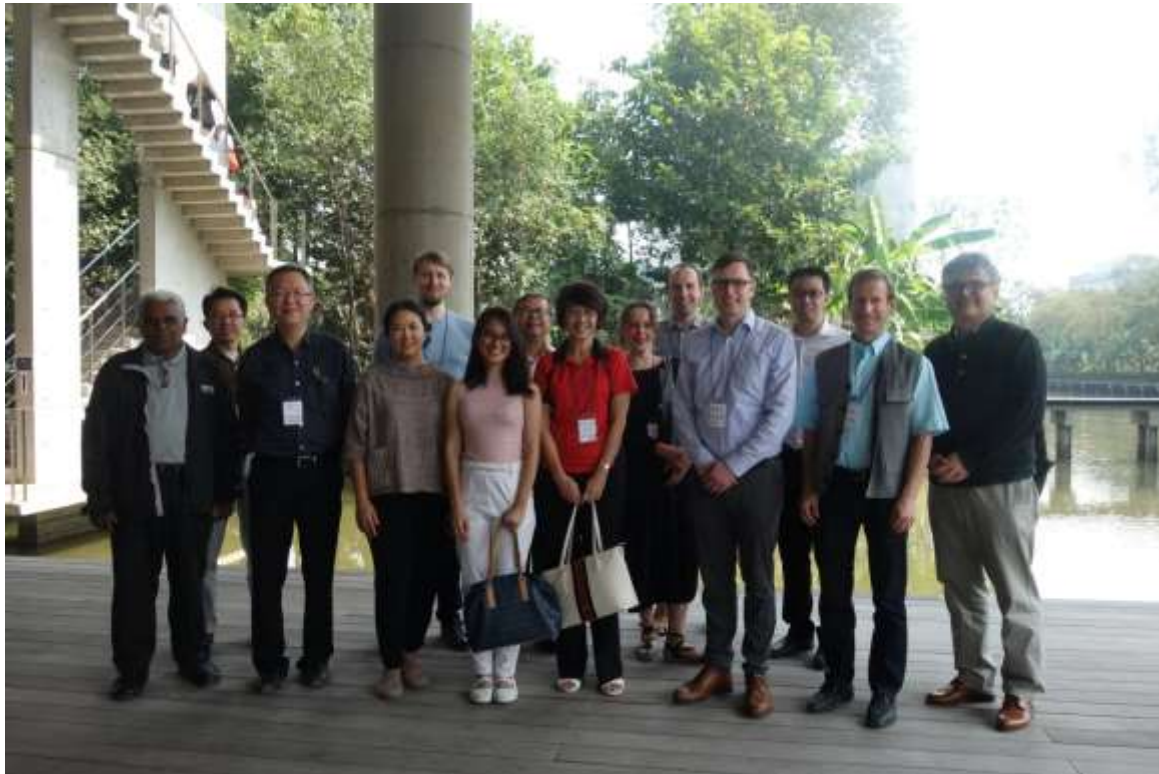
The **Department of Folk Music Research and Ethnomusicology** is currently digitizing and archiving their fieldwork recordings with the aim to make the data accessible for internal and external scientific researchers. This involves more than 10.000 hours of audio-video material locally stored on a server at the university with the according Metadata stored in a local database with the ArchivisPro software. This software provides well prepared masks and a keyword list. However, moving the data in a semi-automatic process to the mdw repository is foreseen.

Future steps

To proceed towards the establishment of a networked research infrastructure for ethnomusicological research 3 concrete action streams were identified:

- 1) Policies: research institutes are encouraged to adopt policies that establish research data management as a core activity, defining the respective responsibilities and providing the required services. To this end, existing research data management policies as presented during the workshop (the templates developed by the LEARN project, the specific RDM policy adopted by TU Wien) will be shared and discussed at the various institutions, identifying adaptations needed in the local contexts.
- 2) Applying Music IR research technologies to ethnomusicological content: Subsets of data have been identified by the participating institutions. Following some clarification of formalities, these data sets will be shared in the next month with the aim of having students collaboratively work on these, extracting features and learning concepts as provided by the metadata. These results will be returned to the data owners for evaluation and feedback collection.
- 3) Repository infrastructure: A set of Opens Source Repository solutions will be prepared by TU wien and made available to the participating institutions in a conveniently deployable version (e.g. virtual machines, docker containers). These will be populated by each institution with some selected data items to evaluate their fitness for musicological research purposes.

A follow-up workshop is planned for beginning of July 2019 to share and discuss the insights gained in the project. A further meeting may be scheduled towards the end of 2019 to evaluate progress, identify gaps and to outline the subsequent steps towards the establishment of a networked infrastructure and advanced MIR-assisted research on the data holdings.



Participants of 1st Workshop on Distributed Ethnomusicology Data and MIR in the Framework of ASEA-Uninet, taken in January 2019 at the Mahidol University Campus. (Photo by Nartpraween Suppasri / International Office Mahidol University)

Short-term music scholarships (incoming) in the framework of ASEA-UNINET



isa is the **International Summer Academy** of the mdw – University of Music and Performing Arts Vienna. Each year, over 250 participants from more than 40 different countries receive training geared to highly advanced and talented musicians as part of this programme, which is held south of Vienna in Austria's Semmering region.

isa was established in 1991 as an initiative of the mdw – University of Music and Performing Arts under the leadership of Univ.-Prof. DDr. h. c. **Michael Frischenschlager**. It was born amidst the euphoria generated by the fall of the Iron Curtain and had as its goal the facilitation of musical encounters and international networking for particularly gifted young students, in particular for those from Central and Eastern European (CEE) countries.

Beginning with the 15th edition of isa (2005), Univ.-Prof. Dr h.c. **Johannes Meissl** worked consistently to develop the International Summer Academy into an event that draws its identity from its mix of courses, topically diverse workshops, the associated festival, academic reflection, innovative interdisciplinary artistic projects, and the building of networks based on new friendships. World-class quality and participants from 45 countries around the globe combined with the overall "isa-experience" have by now made the mdw's International Summer Academy into an event that is unique the world over.

Master classes, workshops, lectures, interdisciplinary projects, and concerts give rise to a unique creative experience for aspiring young artists. And the intense atmosphere in which all this takes place leads to new friendships and networks.



The key theme for isa18, the International Summer Academy's 28th edition, was "Music and Democracy". Thanks to the support of ASEA-UNINET, two music students from ASEA-UNINET member institutions were invited to participate.



© Stephan Polzer

Scholarship Awards 2018:

NAMWONG Thachapol (viola, Chulalongkorn University, THAILAND)

SAMPHALANG Kotchakorn (horn, Mahidol University, College of Music, THAILAND)

Report

Isa - International Summer Academy” of the mdw -University of Music and Performing Arts Vienna within the framework of ASEA Uninet.

12th- 26th August 2018, Payerbach, Vienna

By Kotchakorn Samphalang, Thailand

Introduction

isa – International Summer Academy is the summer campus of the mdw – University of Music and Performing Arts Vienna. This annual event sees more than 300 students from over 40 nations come together in the Semmering region for two weeks of master classes led by high-calibre instructors. The associated isaFestival presents international stars and top-flight young musicians in over 40 concerts at venues from the Semmering area to Vienna.

[isaMasterClass](#) takes place in the Semmering and Rax region and features master classes for instrumentalists and composers. isaMasterClass targets highly advanced undergraduates with performing experience. Alongside these two-week master classes with leading artistic personalities, isa participants can take advantage of additional offerings in the form of workshops, lectures and coaching sessions.

The isaFestival presents highlights from isa’s 14 days of intensive artistic work in nearly 40 concerts! Apart from opportunities to perform your academy repertoire, the festival also includes concerts that feature outstanding interpretations by participants, performances by wellknown isa faculty members, and several concerts of the “Open Chamber Music” series in which selected isa participants can present themselves together with professors!

Masterclass Description

According from introduction I was attended name is “wind soloist”. A duration of masterclass has been two weeks and had two professor. André Cazalet from Paris for first week and Marie-Luise Neunecker from Berlin for second week, course structure is lesson are taught by one professor or by a pre-determined combination of professors. Each participant receives at least 6 lessons of 45 minutes each. And they present a intense artistic work in nearly 40 concerts. And they were offered three meals daily.

The isa – International Summer Academy, wind soloist start at Payerbach, Vienna.

Sunday, 12.8 First day I travel from Vienna to Payerbach by train and when I was at Payerbach they has staff drove me to the place and then I met Marius Gussmann how is a course organization in this year. For the first day only travel day.

Monday, 13.8 First week start on this day today. In the morning had Welcome meeting (student and professors) in the dinning hall. They are introduce a professors and things to do in the festival I had

to check the pinboard in the main Hotel Lobby every day, then meeting professors in the afternoon to make appointment for the next day, André Cazalet. And in the evening they has isa18 opening Ceremony and Party in Schloss Reichenau.

Tuesday, 14.8 today I was study with André Cazalet (Mozart, Concerto no.3, 1st and 2nd movement)

Wednesday, 15.8 study with André Cazalet (Mozart Concerto no.3, 2nd and 3rd movement)and then attended to Alexander Technique, is a method for improving freedom of movement and enhancing performance in all activities of life. The Alexander Technique is used to reduce effort, relieve pain, and improve posture and breathing, and many performer use it to achieve greater ease and accuracy movement. Then we made an appointment to study one by one.

Thursday, 16.8 I attended interpretation class and study with André Cazalet (Bagatelle)

Friday, 17.8 study with André Cazalet (Gliere, Horn Concerto in Bb, 2nd Movement), then attended Applied Music Physiology, they talk about motion and interpretation technique exercises designed to form a connection between physiologically purposeful motion pertaining to one's instrument and the interpretation intended by the player, then we did a warm-up, flexibility and strengthening exercises for both before and during practice; guidelines for healthy practicing. In the evening attended Work in Progress Concert

Saturday, 18.8 Physiology class, last study with André Cazalet (Gliere, Horn Concerto in Bb, 3rd Movement) in the evening In Ghega's Footstep – Jubilee Concert 20 Years of the UNESCO world Heritage Site Semmering Railway. And have a Party.

Sunday, 19.8 Our professors performed "Mass Isa18"

Moday, 20.8 I met professor 2nd week with Marie-Luise Neunecker, talk and introduce herself and made an appointment to study on that day.

Tuesday, 21.8 study with Marie-Luise Neunecker about basic of breathing and how to play on horn very smoothly. And went to Church Concert

Wednesday, 22.8 I attended Alexander Technique one by one class that is very great class because It make me very relax used to when I practice with my instrument and daily life. Then study with Marie-Luise Neunecker (Mozart, Concerto no.3). In the evening went to From the Mater Classes Concert.

Thursday, 23.8 In the morning I attended Your Career, This lecture and discussion will give an overview of the classical music Industry and demonstrate how classical music can work on improving their own career. The requirements for being a successful classical musician have rapidly changed in the last decades. Mastering an instrument became the base for a 360-degree-profile profile of an artist. Participants of this lecture will gain an insight into the music market, strategic career planning, management processes, marketing skills. Then study with Marie-Luise Neunecker (bagatelle).

Friday, 24.8 In the morning I had rehearsal with piano player for played the concert in the afternoon. Then In the Afternoon I played the Concert for Evaluate the results my work of the whole 2 weeks. In my opinion I Satisfied with the concert. Our professors and student to win will played the last concert "ISA18 Prize- Winners' Concert"

Saturday, 25.8 Coffee Concert is Concert in the garden.

Sunday, 26.8 Check out and back home.

In conclusion I spend time for 2 weeks In Payerbach to receive a knowledge with great professor and great staff. I receive a lot of knowledge that I never know before and attended a lot of workshop, lecture, concert and coaching sessions. I am very appreciate that I am a part of ISA18. I am very hard work for a the best result, I hope my knowledge gained will benefit others.

Finally, I would like to thank you ASEA Uninet Music-Grants, Who chose me to receive the scholarship. And I also thank you Isa - International Summer Academy" of the mdw -University of Music and Performing Arts Vienna to take care of me (Thailand people) as well.



Horn Class



Professors' Concert



With Marie-Luise Neunecker

Credits of all photos: Kotchakorn Samphalang

ROMEO AND JULIET

Workshop for the Hanoi Academy for Theatre and Cinema
March/April 2018



Credit: Huyen Nga

ROMEO AND JULIET 2018 was planned as a co-production of:
Hanoi Academy
Hanoi Youth Theatre
ASEA-UNINET
Prof. Anna Maria Krassnigg from the Max Reinhardt Seminar, MDW
Univ. Prof. Beverly Blankenship from Institute 9, MDW

CV Beverly Blankenship: Director and writer Beverly Blankenship grew up in Europe and the United States. She trained as an actress at the Max Reinhardt Seminar in Vienna. After her first contract at the Salzburger Landestheater she went to Australia, where she started to direct and write. Beverly Blankenship returned to Europe in 1992 where her productions can now be seen at major Drama Theatres and Opera Houses. Since 2012 Beverly Blankenship is full professor at the University for Music and Performing Arts in Vienna, where she directs one of the opera studios.
E-Mail: Blankenship@mdw.ac.at

Prof Krassnig and Prof Blankenship planned to direct the first two segments.
Nga Huyen and Lai Nhu Bui from the Hanoi Academy were to direct the last two segments.
The finished production was to be shown by the Hanoi Youth Theatre at its venue.

The students were cast.
The cuts in the text had been sent.
The stage and costume plan had been discussed.

Unfortunately the director of the Hanoi Youth Theatre fell very ill and had to resign.
The co-operation of the Hanoi Youth Theatre with the Hanoi Academy was dropped in the ensuing planning for a new director. Prof Krassnigg and I were not informed of this fact. Until the last minute before our arrival in Hanoi we were planning for a production with the students of the Hanoi Academy at the Hanoi Youth Theatre.

Maybe because of this change in plans, the staff of the Hanoi Academy did not plan the workshops of ROMEO AND JULIET properly.

The students did not have their texts when I arrived (!), had not learned their texts, and they were occupied with their final exams. These circumstances made my work very difficult. After two very successful workshops at the Hanoi Academy, the third workshop was not a success.

The responsible Professor for this particular class never turned up for any of the work, there was no supervision of the students by speech and movement teachers. This support had been organised by me at the end of the previous workshop, in order to help the students deal with the complexity of Shakespeares' texts. The lack of preparation was very stressful for me.

Because of the difficulties with my workshop, I complained to the Head of the Academy . he was very shocked. Together with him, I then organised a different, more motivated student group for the second workshop by Prof Krassnigg. These new students were eager to prove themselves and the Academy finally put its weight behind the workshop, with the responsible professor and other teachers involving themselves with the preparation of the workshop with Prof Krassnigg.

For future projects a more detailed contract needs to be made with the Hanoi Academy, detailing the needs and goals of the workshop. The Hanoi Academy needs to make someone responsible for the artistic Goals of any workshop held for the Academy. The responsible Professors and teachers need to know that they are being observed by the Head of the Academy.

Prof Krassnigg's Workshop with the new student group was a big success.

The staff and the Head of the Hanoi Academy had been very alarmed at my difficulties and threw themselves into the work with Prof Krassnigg.

The resulting showing of the work by Prof Krassnigg and the students was received enthusiastically by the Hanoi Academy. The Hanoi Academy expressed strong interest in continuing the work with the MDW.

This makes us feel very positive that any future projects with the Hanoi Academy will be handled and executed with great care, and that we can predict good quality artistic work in the future.

A Documentary, organised by Prof. Krassnigg, was made about the work with the Hanoi Academy:
https://www.youtube.com/watch?v=STTm7mO4_Vk

Capacity Building in Conservation in Thailand

Paintings Conservation Workshop

Project Participants

o.Univ.-Prof. Mag. Dr. Gabriela Krist, project leader,
Institute of Conservation, University of Applied Arts Vienna,
gabriela.krist@uni-ak.ac.at;

Gabriela Krist has been university professor at the University of Applied Arts Vienna since 1999 and is head of the Institute of Conservation. She studied conservation at the Academy of Fine Arts Vienna, as well as art history and archaeology in Vienna and Salzburg. For many years she worked for ICCROM in Rome and at the Austrian Federal Office for the Care of Monuments (Bundesdenkmalamt). She leads education cooperation programmes, conservation campaigns and workshops in India, Nepal, Mongolia and Thailand.

Dr. Tanja Bayerova,
Institute of Conservation, University of Applied Arts Vienna,
tanja.bayerova@uni-ak.ac.at;

After finishing her chemistry studies, Tanja Bayerová joined The Monuments Board of the Slovak Republic and later the Faculty of Restoration, the University of Pardubice, Czech Republic. Since 2000 she has been a conservation scientist and senior lecturer at the Institute of Conservation. Her primary research interest is the technical study of painting materials and techniques that formed the base of her PhD completed in 2015.

Mag. Bernhard Kernegger,
Department of Studies, University of Applied Arts Vienna,
bernhard.kernegger@uni-ak.ac.at;

Bernhard Kernegger joined the University of Applied Arts after his education as pianist and music pedagogue, where he has been responsible for the university and quality development. Currently he is responsible together with seven division managers for the administrative and strategic operation of the University of Applied Arts. He supervises the fields of studies, international activities and university and quality development.

Project Report

First contacts between the Austrian University of Applied Arts Vienna and the Thai Silpakorn University were established in 2017 with support from the former Austrian Ambassador of Thailand.

Mutual visits, fact-finding meetings and preparatory talks in 2017 revealed a great potential for worthwhile joint activities.

It became amply clear that the major goal is to foster capacity building in Southeast Asia in the field of cultural heritage preservation. There is a great need for conservators throughout the whole Southeast Asia, but at the moment no functioning programme of study or training exists.

The Austrian and Thai partner universities agreed to bundle their competences and fill this gap.

Activities include holding of training workshops, developing of an international education programme and building up suitable premises, both under the patronage of ASEA-UNINET.

Particularly, the building up of profound practical education strategies is the most challenging and also most expensive aspect in developing a new conservation study programme, but also a field of expertise of the Angewandte.

A first conservation workshop was thus organized in February 2018 funded by the two universities.

From 3 to 7 September 2018 the already second Painting Conservation Workshop of the Institute of Conservation was held at the Silpakorn University with financial support from ASEA.

The workshop was a great success with more than 20 participants mainly students from Silpakorn University and its International College. Many of them already joined the first workshop in February 2018. An encouraging signal of the Thai colleagues' interest in the workshop series.

Besides, also other honourable guests were present: Eva Hager, Austrian ambassador, Wanchai Sutananta, President of Silpakorn University, Sompid Kattiyapikul, Dean of SUIC (Silpakorn University International College) and Board Member Chainarong Indhara-meesup.

Parallel to the workshop roundtable discussion and work meetings between Prof. Krist, Mag. Kernegger and authorities of the Silpakorn University were exploited to jointly work on a suitable curriculum for the planned joint Master study programme.

The second workshop thematically attached to and built on the previous first workshop in February but provided more in-depth insights and a more scientifically orientated focus.

Major topics discussed comprised the general role of sciences in the process of conservation and condition survey. A focus was placed on paint layers. The basic terms and definitions, composition of paint layers and the reasons why it is necessary to make investigations of paint layers were clarified. Further the main artists' pigments and binders were introduced.

Theoretical parts were closely linked with practical sessions. Participants were trained how to take minute samples from painting mock-ups and how to observe the taken fragments under three small portable microscopes. Further they learned how to prepare cross section including the mounting of the samples into silicon moulds and covering them with epoxy resin, the grounding and polishing process. Finally the prepared samples were observed under the small microscopes. In addition paintings were assessed and observed under UV light using the portable UV light lamp.

The final presentation of case studies in combination with questions of participants and lively discussions, finished with short and very positive feedbacks.

In addition, the last workshop day was reserved for lectures of Bernhard Kernegger, who talked about the institutional profile of the University of Applied Arts, and Gabriela Krist, presenting the Institute of Conservation.

The conservation workshop was concluded with the ceremony of signature of the Memorandum of Understanding between the Silpakorn University and the University of Applied Arts Vienna emphasising the mutual interest in future collaboration.

Publications

- Krist, G. (ed.), Beyond Borders – Conservation goes International, Edition Angewandte, 2019.
- Krist, G., Neue grenzüberschreitende Kooperationsmöglichkeiten auf dem Gebiet der Kulturguterhaltung, in: Bundesministerium für Europa, Integration und Äußeres, Festschrift zum Jubiläum 150 Jahre Aufnahme von diplomatischen Beziehungen zwischen der Österreichisch-Ungarischen Monarchie und dem Königreich Siam bzw. Thailand, 2019 (forthcoming).

Outcome

The workshop was an important step towards further capacity building in the field of cultural heritage conservation in Thailand. The established collaboration between the Austrian University of Applied Arts Vienna and the Thai Silpakorn University could be further strengthened and intensified with the support provided by ASEA.

A continuation of the workshop series is of utmost importance for both project partners and a follow-up workshop is highly requested by the Thai university to be held in 2019 in Bangkok, Thailand. ASEA kindly granted additional funding for this event.

Particularly, the discussions around the development of a programme of study and training in the framework of the workshop in September were very fruitful and promising.

The preliminary concept for a joint Master's Degree course focuses on conservation in intercultural cooperation. The University of Applied Arts will use its expertise to support the establishment of corresponding workshops – present aspirations include the planning and realisation of a Conservation Centre. Furthermore, the Institute of Conservation could help in the further training and education of teaching staff.

The new programme of studies is to be established at the Silpakorn University International College (SUIC), a leading college in preserving national arts and cultures, which provides international education programmes in Asia. Here, all the university's English-language international programmes are on the curriculum. The SUIC was founded in 2003 and is celebrating its 15th anniversary this year.

Currently, the curriculum is further elaborated in detail. Mutual visits are planned in 2019 to finalize the programme of study and probably come into effect 2019/2020.

Other Activities and Cooperation

The Austrian and Thai universities submitted an application for the Bernd Rode Award 2019, which appreciates higher education collaborations between European and South-East-Asian universities in the framework of ASEA-UNINET.

Photos:



Left: Workshop “Paintings Analysis”, Bangkok, September 2018, © Silpakorn University.

Right: “Drafting a new Curriculum” meeting, University of Applied Arts Vienna and Silpakorn University, House No.1, Bangkok, September 2018, © Tanja Bayerová, Institute of Conservation, University of Applied Arts Vienna.



Left: Signing MoU between Silpakorn University and the Vienna University of Applied Arts, Bangkok, September 2018, © Silpakorn University.

Right: Evening at the Austrian Embassy in Bangkok, © Tanja Bayerová, Institute of Conservation, University of Applied Arts Vienna



UNIV.PROF. MARIO ANTONIO DIAZ VARAS

University Professor in Solo Singing

Mirabellplatz 1

5020 Salzburg

E-Mail: Mario_Antonio.DIAZ_VARAS@moz.ac.at

In 2018 no projects funded by ASEA-UNINET took place at the *Mozarteum University Salzburg*.

Choreomusicology - Theories, Methods and Approaches from a Cultural Perspective

Project number: ASEA 2018/ KUG /1

Researchers involved

Elina Djebbari is a Postdoctoral Research Associate at King's College London for the ERC funded project Modern Moves. Her research project investigates the 'return' of Afro-Caribbean music and dance practices in postcolonial Africa. Her PhD in Ethnomusicology from EHESS (Paris) dealt with the national cultural policies and the heritage process using traditional music dance performances in Mali, throughout the National Ballet, the private dance companies and the state-sponsored festival Biennale Artistique et Culturelle.

Made Mantle Hood is currently Associate Professor of ethnomusicology at Universiti Putra Malaysia and has been lecturer and research fellow in ethnomusicology and Indonesian Studies at Monash University and Melbourne University. While studying at Universität zu Köln, he was the recipient of both a one-year Fulbright and two-year DAAD scholarships and awarded a research assistantship at the Berlin Phonogram Archive. In 2010, his book entitled *Triguna: a Hindu-Balinese Philosophy for Gamelan Gong gede Music* was published by Lit Verlag Press in Muenster. He researches musical diversity and the negotiation of tradition and is the Secretary of ICTM PASEA.

Sydney Hutchinson is associate professor of ethnomusicology and Judith Seinfeld Distinguished Faculty Fellow at Syracuse University (Syracuse, New York, USA). She has published widely on salsa, merengue, and Mexican American dance. Her publications have won awards from the Society for Ethnomusicology, Society for Dance History Scholars, and American Folklore Society and she has held fellowships from the Alexander von Humboldt Foundation, American Association for University Women, and the American Folklife Center (Library of Congress). Hutchinson is currently authoring a textbook on Caribbean music and a new monograph on the entangled musical-political histories of the Dominican Republic and Haiti.

Mashino Ako acquired the BA (1991) and MA (1996) from Tokyo University of Arts (BA), and the doctoral degree (Ph.D) from Ochanomizu University (Japan) in 2002. She currently teaches ethnomusicology, anthropology of music, world musics, traditional cultures of Asia, Balinese gamelan and others as a lecturer at several universities, including Tokyo University of Arts, Meiji University and Kunitachi College of Music in Tokyo, Japan. She is also an active performer of Balinese gamelan gong kebyar, gender wayang, and geguntangan.

Siri Mæland is a dancer, lecturer and convener specialised in Traditional Dance and Dance Analysis at the Norwegian Centre for Traditional Music and Dance, Trondheim since 2001. Lecturer BA degree in Ethnochoreology ,BA Programme for Traditional Dance Performance (2001-2012), MA degree Choreomundus (2012-) at the Norwegian University of Science and Technology (NTNU). She holds an MA in Ethnomusicology and her Ph.D. thesis on dance at NTNU/University of Clermont Auvergne is in the moment under evaluation of her doctoral committee. She has been a member and engaged in academic work (giving papers, writing articles) in the study group of Ethnochoreology in ICTM (International Council for Traditional Music) since 2006.

Elina Seye is Senior Lecturer in Musicology at the University of Helsinki in Finland. She has a PhD from the University of Tampere, where she has also worked as a lecturer. Her doctoral thesis *Performing a Tradition in Music and Dance* (2014) deals with Senegalese sabar dance events, and her current research considers the sabar tradition in other performance contexts. She has also conducted research on African musicians in Finland.

Kendra Stepputat is Assistant Professor in Ethnomusicology at the Institute of Ethnomusicology, University of Music and Performing Arts Graz, Austria. Her research topics include Balinese performing arts, in particular kecak, and tango argentino in European perspective. She has published articles in the Yearbook for Traditional Music, Asian Music, and is editor of Performing Arts in Postmodern Bali (2013) and co-editor of Sounding the Dance, Moving the Music (2016).

Colin Quigley is Course Director for Ethnomusicology at the University of Limerick, Ireland, and Emeritus Professor at University of California Los Angeles, where he held appointments in Dance Ethnology, Ethnomusicology, and Folklore programs. His publications include "The Hungarian Dance House Movement and Revival of Transylvanian String Band Music," in The [Oxford] Handbook of Music Revivals (2014); "Confronting Legacies of Ethnic-National Discourse in Scholarship and Practice: Traditional Music and Dance in Central Transylvania" in Journal of Folklore Research. His other area of research interest is reflected in the earlier publications: Close to the Floor: Irish Dance from the Boreen to Broadway (2008), Music from the Heart: Compositions of a Folk Fiddler (1995), and Close to the Floor: Folk Dance in Rural Newfoundland (1985).

Sándor Varga (PhD) is lecturer / adjunct at the Department of Ethnography and Cultural Anthropology of the University of Szeged (Hungary), and coordinator of the specialization in dance folkloristics, and Choremundus Programme (International Master in Dance Knowledge, Practice, and Heritage) of the University. Since 2013 he has been working as a scientific co-worker at the Institute for Musicology of the Hungarian Academy of Sciences. He is a member of the ICTM, the Hungarian Association of Ethnographers, and the president of the Hungarian Association for Ethnochoreology. Sándor is traditional dancer, worked also as a choreographer, trainer and dance-house leader for almost twenty years in the Hungarian folkdance scene. His main research areas are: dance folkloristics and social ethnography in villages of the Carpathian basin. Sándor's PhD (2012) presents the historical transformations in the dance culture of a 20th century village in the Transylvanian Plain.



Photo: Talieh Attarzadeh

Project description

A workshop meeting was carried out with the aim to publish a joint publication under the working title “Choreomusicology”. The workshop brought together experts in the fields of ethnomusicology and ethnochoreology (see list above) who have crossed borders between the two fields in their research and publications, and who represent a broad range of locations and approaches both in terms of their research fields and their academic background.

During the workshop, we discussed our individual approaches to choreomusicology and reconsidered existing literature dealing with sound–movement relations. Furthermore, we developed a concept for the publication which will make it much more than a collection of individual articles and provide readers with substantial insights into sound–movement relations in various cultures as well as an overview of concepts and research methods in the field of choreomusicology. With this publication, we would like to both stress the importance of the choreomusical approach for future research, and fill what we recognized as gaps in previous writings.

On the basis of our discussions, we defined four areas that we feel need more scholarly attention. These areas are roughly defined by the keywords corporeality, local conceptions, social relations, and translocality. In order to arrive at an approach that will go beyond individual case studies, each of these areas will be covered by two (in one case, three) authors. A jointly written more theoretical introduction to each theme will be followed by two case studies that demonstrate the ideas discussed. These four thematic sections will be framed by a general introduction written by the two editors, and a summary cum reflection by Marit Stranden.

The articles within these four areas look each with great detail into differing aspects of sound-movement relations, offering not only a thorough overview of previously published literature on each topic but transgressing existing research with insights from the fields and methods used in ethnochoreology and ethnomusicology.

The topic corporeality addresses sound and movement structures in connection to the body, including embodiment of sound, alteration of the performer's body, but also sound and movement relations between several bodies in a performance situation. In the topic local conceptions the authors address how local ontologies help to reconsider sound-movement relations apart from the standard binary separation taken for granted in most academic discourse. In the chapters on social relations the authors look primarily into the relation between musicians and dancers, focussing on hierarchical structures and how change over time uncovers hidden principles therein, and how in turn such social structures influence genres on a structural level. Finally, translocality focusses on historical circumstances and cultural definitions of sound and movement that lead to transition and significant changes in the relation of music and dance, in particular in genres that are widespread and firmly established in localities away from a perceived place of origin.

In combination, the four areas combined cover what we consider the most important aspects that define, shape, transform and sustain performing arts genres and their sound-movement relations.

The project was carried out in the exact manner as planned. All anticipated goals so far could be reached in the envisioned time. The tangible outcome and final goal for this project is the planned publication, which is in preparation (see next point).



Photo: Talieh Attarzadeh

Publication of Results

The proposal for a special issue with the title “Choreomusicology” of the peer-reviewed journal “World of Music (New Series)” has been accepted by the series editors. The special issue draft is currently under review with the plan to publish as the second (autumn) issue 2019.

Following Activities

At this year's world conference of one of the two biggest international associations for ethnomusicologists and ethnochoreologists (ICTM, International Council for Traditional Music) in Bangkok (11.-17.6.), we will present a panel with the title “Choreomusicology” on the topics from the workshop and the upcoming book to a broader, academic audience.

Academic Exchange: lectures and workshops

Project number: ASEA 2018/ KUG /2

Researchers involved

Prof. Dr. Tan Sooi-Beng is a Professor of Ethnomusicology in the School of Arts, Universiti Sains Malaysia (USM) in Penang. She is the author of *Bangsawan: A Social and Stylistic History of Popular Malay Opera* (Oxford University Press, 1993), and co-author of *Music of Malaysia: Classical, Folk and Syncretic Traditions* (Ashgate Press, 2004) and *Longing for the Past, the 78 RPM Era in Southeast Asia (Dust-to-Digital, 2013)* which won the joint SEM Bruno Nettl Prize, 2014. She has carried out extensive research and written articles on Peace Building through the Performing Arts (supported by Ford Foundation), Community Theatre in Southeast Asia and Japan (Asian Public Intellectual Fellowship, Nippon Foundation), Multicultural Traditions of Malaysia (USM Research Grant), Popular Music in Southeast Asia and the Chinese in Diaspora (Toyota Foundation). She is the Editor-in-Chief of *Wacana Seni, Journal of Arts Discourse* and serves in the Advisory Editorial Boards of *Asian Music* (USA) and *Ethnomusicology Forum* (UK). Tan is actively involved in engaged community arts that cut across races and works with multicultural young people to conserve their diverse heritage in George Town, Penang. Together they have recreated the history of multicultural Penang through musical theatre such as *Kisah Pulau Pinang - The Penang Story* (2006), *Ronggeng Merdeka–Independence Ronggeng* (2007), *Opera Pasar –The Market Opera* (2008), *Ko-Tai Penang* (Penang Song-Stage) (2009/10) and *Ceritera Kebun Bunga–The Stor of the Botanical Gardens* (2011). These productions are process-oriented, tradition-based and attempt to revive street performances in Penang.

Unfortunately the second invited speaker from the University Sains Malaysia, Dr. Johan Othman, was not able to come to Graz as planned, due to personal reasons.

Project description

While in Graz, Dr. Tan Sooi-Beng gave two guest lectures. The first one was entitled *Engaged Activist Research: Dialogical Interventions Towards Revitalizing the Chinese Glove Puppet Theatre in Penang* and included in the inter-university MA course “music and human rights”. Her second guest lecture *The Development of Popular Music and Theatre in Malaysia in the 20th Century* was included in the lecture series “current issues in musicology” at both KUG and KF.

In addition to her positively received and well-attended lectures, several meetings with staff from the Institute of Ethnomusicology were held. One of the outcomes is the plan for a joint publication and an initial symposium on the topic of translocality in Southeast-Asian performing arts. This follow-up project (project title “academic exchange and Planning for inter-institution project entitled translocality and performance”) has been granted support by ASEA-UNINET for 2019.

ASEA-UNINET-Report 2018

Outgoing students

14 students of the Medical University of Graz participated in the 2018 clinical electives at our ASEA-Uninet partner universities in Indonesia, Thailand and Vietnam.

Due to cancelled electives, the remaining budget could be used to refund fees that had been levied at the University of Medicine and Pharmacy in Ho Chi Minh City. The remaining budget was returned to the OEAD.

Participants

Chiang Mai University, Thailand:

- Drechsler, Kerstin
- Kuchler, Christian
- Kristof, Alena Maria
- Leitner, Magdalena
- Loizenbaur, Tobias
- Maisel, Franziska
- Milewski, Lisa
- Potthast, Georg Long Fei
- Ravn, Victoria
- Schill, Max

Med Uni Graz Abroad Photo Competition – 1st place (Potthast, Ravn)



© Georg Long Fei Potthast

Med Uni Graz Abroad Photo Competition – 4th place (Drechsler, Kristof, Leitner, Loizenbaur,)



© Tobias Loizenbaur

Gadjah Mada University Hospital, Indonesia:

- Binder, Johanna
- Lettner, Gregor
- Pritzel, Vincent

University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam

- Riedler, Romeo

Incoming Students

In January 2018 the Medical University of Graz could welcome four incoming student from the Gadjah Mada University, Indonesia

- Nyssa Alexandra, Division of Cardiac Surgery, 2.1.-26.1. 2018
- Andrew Limavady, Division of Cardiac Surgery, 2.1.-26.1. 2018
- Maulidiannisa Rianti, Department of Radiology, 2.1.-26.1. 2018
- Muhammad Risyad Fahreza, Department of Urology, 2.1.-26.1. 2018

In May 2018 the Medical University of Graz could welcome two incoming students from the Mahidol University, Thailand

- Yanin Suksangkharn, Department of Psychiatry, 30.4.2018-25.5.2018
- Piangmas Tasneeyapant, Department of Psychiatry, 30.4.2018-25.5. 2018

In July 2018 the Medical University of Graz could welcome two incoming students of the Gadjah Mada University, Indonesia

- Verrell Christopher Amadeus, Division of Cardiac Surgery, 2.7.-27.7. 2018
- Vincentius Nathanael Sulaiman, Division of Dermatology, 2.7.-27.7. 2018

Between August and October 2018 the Medical University of Graz could welcome two incoming students from the Chiang Mai University, Thailand

- Brahmahitadara Kantapong, Department of Orthopaedics and Trauma, Division of Cardiac Surgery, 20.8.-14.9. 2018
- Jirath Suriyasathaporn, Division of Cardiac Surgery, Division of Otorhinolaryngology, 17.9.-12.10. 2018



Program
Coordinator:
Univ.-Prof. Dr. Erich Schmutzhard
Department of Neurology
Medical University of Innsbruck
Anichstr. 35
A-6020 Innsbruck



Report on Clinical Elective Exchange Program 2018

As part of the ASEA-UNINET network, 52 students from the Medical Universities of Graz, Vienna, Linz and Innsbruck were able to get to know medical practice at universities in Thailand, Vietnam and Indonesia in 2018.

22 students from the Medical University of Innsbruck each completed four-week stays at Chiang Mai University, Chulalongkorn University, Mahidol University - Faculty of Tropical Medicine, Mahidol University – Ramathibodi Hospital, Gadjah Mada University and the University of Medicine and Pharmacy.

We had a total of 12 incomings throughout the year. At the University Hospital for Visceral, Transplantation and Thoracic Surgery, the Department of Orthopedics, the Department of Urology, the Department of Paediatrics, Department for Gynecology and Obstetrics the exchange students could collect their experience in Innsbruck.

Univ.-Prof. Dr. Erich Schmutzhard

Program Coordinator

Medical University of Innsbruck - International Relations Office
Sonnenburgstrasse 16 / I - A-6020 Innsbruck, Austria



ASEA-UNINET Teaching Course on Neurocritical Care Medicine
at the
Dr. Panjwani Center for Molecular Medicine and Drug Research
International Center for Chemical and Biological Sciences (ICCBS)
University of Karachi, Pakistan, 7th March – 8th March 2019

Erich Schmutzhard, MD, DTM&H(Liverpool)

(ret.) Professor of Critical Care Neurology

ASEA UNINET Coordinator of the Medical University Innsbruck

and

Raimund Helbok, MD, MCTM(Bangkok)

Assoc. Professor of Critical Care Neurology

both

Department of Neurology

Medical University Innsbruck

Austria

In continuance to the Neurocritical Care Teaching Courses, held in Kuala Lumpur in December 2015, August 2016 and March 2018 the organizing bodies, namely ASEA UNINET, Medical University Austria and the International Center for Chemical and Biological Sciences, University of Karachi, Pakistan had agreed to organize an intensified 2 days course on all major aspects of critical care neurology, ranging from severe ischemic stroke, intracranial hemorrhage, severe traumatic brain injury, acute cerebral hypoxia and anoxia, life threatening infectious and inflammatory diseases of the nervous system to technical issues like intracranial pressure, cerebral perfusion pressure and, last but not least, all invasive multimodal neuromonitoring techniques. All these topics were addressed and intensively discussed by the faculty, i.e. Univ.Prof. Dr. Erich Schmutzhard, and Assoc.Prof. Dr. Raimund Helbok, both Medical University Innsbruck (MUI), Department of Neurology, Division of Neurocritical Care Medicine, Innsbruck, Austria, and the participants.

The local organizing partners Dr. Syed Tarique Moin, Prof. Dr. M. Iqbal Choudhary, Director of ICCBS and Prof. Dr. Mohammad Wasay, Professor of Neurology, University of Karachi, did a perfect job to motivate and activate the regional and national „potential“ neurocritical care medical community to participate in this Teaching Course, they introduced the course and the lecture-sessions and ensured a smooth and uneventful procedural and technical sequence. Prof. Erich Schmutzhard and Assoc.Prof. Raimund Helbok, both MUI, Austria gave the lectures and acted as moderators of the Q&A sessions and the clinical grand rounds..

As outlined in the attached programme, both days were dedicated to lectures and Q&A sessions as well as Clinical Grand Rounds; in these clinical Grand Rounds selected participants presented extremely interesting and sometimes highly challenging cases. Under the guidance of Univ.Prof. Dr. Erich Schmutzhard and Assoc.Prof. Dr. Raimund Helbok these cases were thoroughly „dissected“ and discussed. A final joint resumee, including all questions, answers, differential diagnostic aspects, diagnostic and therapeutic issues and thoughts and based upon the entire experience of the participants and the faculty yielded a highly acknowledged learning effect amongst the local and national participants, discussants and the faculty.

Beside these precious and highly acclaimed teaching and learning effects these 2 days were highly productively used to further and deepen Pakistani and European (Austrian) ties in future learning, teaching, student exchange and scientific collaborations.

Under the guidance of Dr. Syed Tarique Moin, Prof. Dr. Mohammad Wasay and Prof. Dr. M. Iqbal Choudhary, Director of ICCBS, the local organization was perfect in all respects. The challenge to provide all electronic teaching equipment and to moderate the highly intensive lectures and discussions and to host the Austrian faculty members was met in an absolutely perfect, flawless manner and with enormous hospitality.

The > 45 participants came from all over Pakistan. The participants/attendees were neurologists, neurosurgeons, anaesthesists, internal medicine specialists and pediatricians, both residents and specialists in their field as well as senior medical students.

The request to continue with such a teaching course in the region, to repeat it in a more extensive and prolonged way (3 days) and to extend this activity into other ASEA UNINET member countries was intensively brought forward. Within the next months these requests will be discussed with and within the administrations of the medical faculty of the University of Karachi, the Department of Neurology Innsbruck, ASEA UNINET Austria and with respective ASEA UNINET member universities.



Left: Prof. Dr. M. Iqbal Choudhary, ICCBS, University of Karachi, Pakistan; Right: Prof. Dr. Mohammad Wasay, Prof. for Neurology, University Karachi. © MUI/Erich Schmutzhard



Left: Prof. Dr. Erich Schmutzhard; Right: Assoc. Prof. Dr. Raimund Helbok, both Department of Neurology, Medical University Innsbruck. © MUI/Erich Schmutzhard



Left: Assoc. Prof. R. Helbok, Prof. E. Schmutzhard; Right: Prof. M. Wasay in front of the lecture hall participants listening to a lecture. © MUI/Erich Schmutzhard

PAKISTAN – AUSTRIA
under the auspices of ASEA UNINET
COLLABORATIVE AND INTERACTIVE TEACHING COURSE
Neurocritical Care Medicine / Critical Care Neurology

March 7 – 8, 2019

organized by
International Center for Chemical and Biological Sciences
University of Karachi, Pakistan

in collaboration with
ASEA-UNINET
and
Division of Neurocritical Care, Department of Neurology,
Medical University Innsbruck, Austria

Day 1

8:30 - 9:00	Registration
9.00 - 9.15	Welcome
09.15 - 13.00	
Session 1:	Neurocritical Care of Cerebrovascular Diseases
09.15 - 09.45	Intracerebral hemorrhage
09.45 - 10.15	Emergency and critical care management of cerebral ischemia
10.15 - 10.45	Hypoxic encephalopathy: ICU management and prognostication
10.45 - 11.15	Break
11.15 - 12.00	Medical Grand Rounds - case presentations and discussions related to the overarching theme of session 1 - presented by participants and Q & A
Session 2:	Neurocritical Care of Traumatic Brain Injury, Neuromonitoring and more
12.00 - 12.30	Severe traumatic brain injury
12.30 - 13.00	ICP-, CPP- and invasive neuro-monitoring in the NICU
13.00 - 14.00	Lunch
14.00 - 14:45	Management of status epilepticus, including refractory and super-refractory status epilepticus
14.45 - 15.15	Brain Death
15.15 - 16.30	Medical Grand Rounds - case presentations and discussions - related to the overarching theme of session 2 - presented by participants and Q & A

Day 2

09.00 - 13.00

Session 3:

Critical care of infectious and inflammatory diseases of the nervous system I

09.00 - 09.30

Acute bacterial meningitis

09.30 - 10.00

CNS Infections in the immunocompromised

10.00 - 10.30

Acute viral encephalitis

10.30 - 11.00

Cerebral malaria

11.00 - 11.30

Break

11.15 - 11.45

Autoimmune encephalitis

11.45 - 12.15

Toxin related infectious diseases of the nervous system: Tetanus, Botulism, Diphtheria

12.15 - 13.00

Medical Grand Rounds - case presentations and discussions - related to the overarching theme of session 3 - presented by participants and Q & A

13.00 - 14.00

Lunch

14.00 - 16.15

Session 4:

Critical care of infectious and inflammatory diseases of the nervous system II

14.00 - 14.45

Sepsis and the nervous system

14.45 - 15.30

Acute polyradiculoneuritis (GBS) and myasthenic crisis

15.30 - 16.30

Medical Grand Rounds - case presentations and discussions - related to the overarching theme of session 4 - presented by participants and Q & A

16.30 - 17.00

Adjournment and Farewell

Faculty / Speakers

Erich Schmutzhard, MD, DTM&H(Liverpool)

Professor of Neurology and Critical Care Medicine

Department of Neurology

Medical University Innsbruck, Austria

Raimund Helbok, MD, MCTM(Bangkok)

Associate Professor of Neurology and Critical Care Medicine

Department of Neurology

Medical University Innsbruck, Austria

Report on the ASEA-UNINET project 'Yogyahealth' for the year 2018

Matthias A. Lechner, M.D., Ph.D., FHEA

After the completion of his MD at the Medical University of Innsbruck, Dr. Lechner completed his GP training and a Doctor of Philosophy at University College London. During his GP training he worked in Yogyakarta, Indonesia, where he founded the Yogyahealth Programme together with friends and colleagues under the umbrella of ASEA-Uninet almost ten years ago. He was appointed as a Lecturer in 2014 and works mainly in the field of ENT/Head and Neck Surgery and Head and Neck Cancer research. He is a keen teacher and has been lecturing in many low and middle income countries. He was awarded a Fellowship by the Higher Education Academy (FHEA) in 2013.

Sagung R Indrasari, dr., SpTHT, Ph.D.

Dr. Sari is a Consultant ENT Surgeon at the Gadjah Mada University and Dr. Sardjito Hospital, Yogyakarta, Indonesia. She has a special interest in Nasopharyngeal Cancer which is endemic in Indonesia and the whole of South East Asia. She runs the NPC Awareness Programme in collaboration with the Yogyahealth Programme and is involved in research to drive forward an effective screening programme for nasopharyngeal cancer in the region. Dr. Sari is a passionate teacher who has taught many students and staff who attended the university and hospital during exchange programmes between Austrian universities and the Gadjah Mada University under umbrella of ASEA-Uninet.

Prof. Ova Emilia, dr., M.Med.Ed., SpOG(K), Ph.D.

Prof. Ova is a renowned Consultant Obstetrician and Gynaecologist and she has been inaugurated as Professor of Medical Education in 2016. She serves as the Dean for academic, students affairs and alumni at the Faculty of Medicine of the Gadjah Mada University. Prof. Ova was a co-founder of the Yogyahealth programme and has been running the cervical cancer screening programme as part of the Yogyakarta Women's Health Initiative for many years. Over the last 10 years, Prof. Ova has greatly supported the Yogyahealth Programme and all its related activities, facilitating student and staff exchange programmes and collaborative research, allowing our programme to make a significant contribution to intercultural understanding and dialogue.

Report

Firstly, we would like to thank Prof. Erich Schmutzhard, Prof. Bernd Rode, Prof. A Min Tjoa and ASEA-Uninet for their continuous support of the project Yogyahealth. Yogyahealth is a collaborative global health programme which was founded in 2008 together with research teams at the Department of Gynaecology and Obstetrics, Head and Neck Surgery and Public Health at the University Gadjah Mada, Dr. Sardjito Hospital and affiliated district general hospitals. This well established campaign

under the umbrella of ASEA-Uninet has been running for 10 years and has carried out a variety of projects, particularly in the fields of cancer and public health in Yogyakarta Province, an underdeveloped Region of Indonesia. Working with good friends and colleagues locally, Yogahealth has helped to screen over 2500 women for cervical cancer in rural areas as part of the Yogyakarta Women's Health Initiative (www.yogahealth.org). This initiative is led locally by Dr. Ova Emilia and Dr. Shinta Prawitasari who have gathered quantitative data and conducted training sessions to improve the public awareness of cervical cancer.

This year we focused our work on assessing the awareness and knowledge of women about cervical cancer, HPV infection and cancer prevention in urban and rural areas in Yogyakarta Special Region. Cervical Cancer is the 2nd most common cancer in females in Indonesia with around 21.000 new cases each year. Late detection of the disease leads to high mortality. A lack of screening options as well as a lack of knowledge lead to late presentation and therefore high mortality.

To understand and tackle this big public health issue we sent Dr. Teresa Pfeifferberger, a former student of the Medical University of Innsbruck, to Yogyakarta to assess the awareness of women in both urban and rural areas. In June and July 2018 she worked in close collaboration with the Gadjah Mada University under the supervision of Dr. Shinta to conduct this research project as part of the completion of a postgraduate Master's degree in Tropical Medicine and International Health at the London School of Tropical Medicine and Hygiene. Health education events were organised in both urban and rural areas. A cross cross-sectional survey among 132 women in urban and 101 women in rural areas were conducted. Her study has shown the difference of knowledge between women living in urban and rural areas as well as the big impact of education on the prognosis of individual knowledge. Further interventions such as the integration of health education, screening and vaccination events are planned.

In November 2018 results were presented and shared at the ASEA Uninet Expert Meeting at the Medical University of Innsbruck. We are very happy that we could welcome the Indonesian delegation including Dr. Paripurna, Prof. Ova, Dr. Prawitasari, Dr. Inrasari und Prof Dwi Pranowo to Innsbruck and present our departments of Gynaecology and Obstetrics and ENT.

In summary, this project has promoted health in Indonesia and contributed to the intercultural understanding between Indonesia and the Republic of Austria. We would like to acknowledge the invaluable help and support from the ASEAN-European Academic University Network (ASEA-UNINET).

Detailed Report

With our application, we requested funding for the project 'Yogahealth' (www.yogahealth.org), which was founded in 2008 as part of an ASEA-Uninet cooperation. This project has already been financially supported by ASEA-Uninet in recent years could be further developed with the help of this support.

It now includes three project arms, the Yogyakarta Head and Neck Cancer Prevention and Early Detection Program (www.yogahealth.org/ent), a project dedicated to the prevention and early detection of cancer in the ENT area, the Yogyakarta Public Health Promotion Link' (www.yogahealth.org/publichealth), which works in close cooperation with Yayi Suryo Prabandari, Principal Investigator of Quit Tobacco Indonesia (<http://quittobaccointernational.org/team-indonesia.html>) is focused on tobacco prevention and smoking cessation clinics, and the Yogyakarta Women's Health Initiative (www.yogahealth.org/womenshealth) , which specializes in the early detection of gynecological cancers.

In March 2015, Dr. Matthias Lechner, visited the Universitas Gadjah Mada and the various Departments of Dr. Sardjito Hospitals as Visiting Lecturer to advance the projects described below. He supplied a flexible naso-endoscope supplied by Olympus, Endosheaths provided by Medtronic, and Tristel's decontamination systems, which thankfully tripled the purchased quantity, to Dr. Sardjito Hospital in Yogyakarta and the Wonosari District Hospital in Yogyakarta Province.

After intensive preparations, our colleague, Liam Sutton (doctoral student), left for Indonesia in November 2015. In Yogyakarta, he worked under our guidance on 3 projects, including a project focused primarily on the care of tracheostomy patients, and in the previous year by Dr. med. Mona Mozaffari was initiated. He also brought additional equipment from Medtronic and Tracheostomy Tubes, which was provided by Kapidex, to Yogyakarta.

The biggest success of this project this year is probably the transport of expensive and important equipment to Yogyakarta, the continuation of the program aimed at reducing the rate of morbidity and mortality after tracheostomies and the continuous expansion of the cancer detection program (nasopharyngeal carcinoma) in The Wonosari province, the Cancer Awareness Program and the Cancer Screening Program, which not only diagnose ENT cancers, but also the cervical cancer program of the Yogyakarta Women's Health Initiative. The nasopharyngeal carcinoma collaboration also serves a research collaboration between the Innsbruck ENT Clinic, colleagues in Amsterdam and Utrecht and the collaboration partners in Yogyakarta, as well as our collaborative project specializing in the early detection of nasopharyngeal carcinomas in the Wonosari District Hospital (Yogyakarta Province).

As part of this initiative, hundreds of patients in rural areas in Yogyakarta Province were again screened for cancer this year. The homepage is currently being updated and the data of the Indonesian project partners integrated. With a focus on the risk-specific screening program, special focus was placed on nasopharyngeal carcinoma.

The establishment of the risk-specific cancer screening program in the ENT area is of utmost importance, as this region in central Java is one of the poorest regions in Indonesia. The mortality of the head and neck carcinoma is very high there, as carcinomas are often recognized only in late stages. Data collected at Dr. Sardjito Hospital in Yogyakarta shows that approximately 50% of all carcinomas in the ENT area are due to nasopharyngeal carcinoma. We also specialized in carcinoma-related carcinoma. In Indonesia, smoking rates have risen steadily, especially among men, since the 1970s, accounting for much of the deaths from head and neck cancer. Pre-malignant stages and initial symptoms are often recognized too late, which means for the patient that there is already local infiltration or metastasis of the malignant tumor. The therapy at this stage is then often only palliative, since a cure of the disease at this time no longer possible.

Publications

- Barriers to improving tracheostomy care in low and middle income countries: our experience of a 23 patient closed loop audit cycle. L. Sutton, M. Mozaffari, A. Mintarti, A. Narula, S.R. Indrasari, M. Lechner; Clinical Otolaryngology; 2018; doi: 10.1111/coa.13151
- Decentralizing of biopsies is a successful method to increase the number of early identifications of nasopharyngeal cancer in a rural area of Yogyakarta (Tan, Lechner, Fles, Sutton et al.; in preparation)

ASEA-UNINET Suranaree 2018

Projectleader

Erich Schmutzhard, MD, DTM&H(Liverpool)
Professor of Neurology and Critical Care Medicine
Department of Neurology
Medical University Innsbruck, Austria

History

The School of Medicine was founded by Mae Fah Luang University (MFU) on 18 January 2012 in response to government health promotion policies to raise the quality of universal health coverage, reform medical and public health management and especially to develop and increase the number of doctors to meet the needs of the upper northern region of Thailand. The MFU School of Medicine received approval for the Doctor of Medicine programme from the Medical Council on 7 February 2013 and started accepting students in the 2013 academic year. 32 students were accepted with Prof EmerLTG NopadolWora-Urai, Former President of the Royal College of Surgeons of Thailand, as the Dean of the School of Medicine.

Philosophy

The Doctor of Medicine programme is dedicated to producing talented, expert doctors with a passion for knowledge and self-discovery. Graduates should have the abilities and attitudes appropriate for the medical sciences and medicine, including treatment, health promotion, disease prevention, and rehabilitation. They should be practised in diagnosis, systematic analysis, communication, and the application of knowledge. They should be able to lead with morality and professional ethics, contributing their lives to society. Graduates should put the needs of the majority ahead of their own, being a dependable member of the society.

Objective

The School of Medicine aims to produce talented, expert doctors with a passion for knowledge and self-discovery, with abilities and attitudes appropriate for the medical sciences and medicine, and with the ability to be a leader and contribute their lives to society, putting the needs of society ahead of their own.

Vision

The School of Medicine aims to become a leading international-standard national and Greater Mekong Subregion medical institution with the emphasis on family medicine and community medicine, providing a solution to the shortage of doctors in these fields and treating patients and families in the Upper Northern region and the Greater Mekong Subregion.

Mission

The mission of the MFU School of Medicine is to be a higher-education institution dedicated to the production of medical graduates fully able to research solutions to community and local problems and develop new knowledge, including providing medical services and able to be based in the community. Medical graduates shall become dependable members of the community, contributing their lives to society in response to the demand for high-quality and sufficient human resources (consistent with the mission of the university). Dekan: Emeritus Professor Lt.Gen.Prof. Nopadol Wora-Urai, M.D., nopadol.wor@mfu.ac.th

More: https://en.wikipedia.org/wiki/Suranaree_University_of_Technology



The „class“ at SUT Medical School. © Siegfried Schwarz

14th Integrated Endocrinology Teaching Week at Suranaree University of Technology (SUT) and 3rd Teaching Day at Mae Fah Luang University (MFU) in Chiang Rai, Thailand

Project leaders

Prof. Siegfried Schwarz, MUI

Born 1950, promotion Dr. med.univ. 1975, University of Innsbruck Medical School
 Since then Assistant, later „Dozent“, later Professor at the Institute of Experimental Pathophysiology & Immunology, Biocenter of MUI),
 Habilitation 1983,
 Visiting Associate at the National Institutes of Health, Bethesda, USA, 1986-1988
 Retired 2015,
 Dr. h.c. sci. (SUT) 2016.
<https://siegfriedschwarz.wordpress.com/2016/01/14/siegfried-schwarz/>

Dr. Sanong Suksaweang, SUT

Education:

Doctoral:	2005	Ph.D., Pathobiology, Keck School of Medicine at the University of Southern California, Los Angeles, CA, U.S.A.
Master:	2000	M.S., Experimental and Molecular Pathology Keck School of Medicine
Bachelor:	1992	B.Sc., Medical Technology, with second class honor from Khon Kaen University

Working experiences:

2011 – Present	International Clinical Elective Coordinator
2009 – Present	Head of SUT-Medical Technology Clinics for Influenza Research Laboratory
2007 – Present	Design and organization with Prof. Siegfried Schwarz of the annual SUT Integrated Hematology/ Endocrinology Teaching week
2005 – Present	Medical Educator at School of Pathology and Laboratory Medicine, Institute of Medicine, SUT
2005 – 2006	Secretary for Medical Mega-Project of the SUT
1995 – 1997	Medical Technologist/Medical Laboratory Scientist, CDC/HIV-AIDS Collaboration Research Unit, Ministry of Public Health, Nonthaburi
1992 – 1995	Medical Technologist/Medical Laboratory Scientist, Bumrungrad International Hospital Laboratory, Bangkok

Awards and credits:

2014	Best Alumni Award for Faculty of Associated Medical Sciences of Khon Kaen University of 2014.
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Description of project

Since 2007 is Siegfried Schwarz, Professor for Pathophysiology at the Biocenter of MUI engaged to hold for 3rd year Medical students an Integrated Endocrinology/Hematology Teaching Week at SUT in Nakhon Ratchasima, 300 km east of Bangkok, this year for the 14th time. This teaching activity is based on a

Memorandum of Understanding (MoU) treaty between SUT and MUI, 2011 signed for the 1st time and renewed for another 5 years in 2018. Travel expenses are covered by the ASEA-UNINET network, cofounded by Prof.Dr. Dr.h.c.mult. Bernd Michael Rode of Innsbruck university.

The teaching week covers

1. formal lectures,
2. a work-up of a POL/PBL case (problem-oriented learning),
3. Practicas in
 - 3.1. practical venipuncture,
 - 3.2. on learning and performing an ELISA analytic technique,
 - 3.3. on learning on the PC the technique of molecular modelling.

The latter is focussed on a disease called diabetes insipidus (in which patients can loose up to 10 L urine/day, due to a lack of back resorption of water molecules in their kidneys). This disease can be caused by mutations in the gene arginine vasopressin (AVP). Using molecular modelling of the gene product AVP as well as neurophysin 2 (both from the same gene!), students will understand why a mutation in the former is recessive and in the other is dominant. Understanding this particular example opens the insight in hundreds of other genetic diseases.

4. A final Multiple choice quiz is held, before 1 student traditionally gives a short thanksgiving speech.
5. On the last day, Dr. Sanong and Prof. Schwarz perform a formal Academic visitation of SUT Medical students who spend their 2nd half (= the 3 clinical years) outside of SUT campus, i.e. in one of the Provincial hospitals of either Buriram, Surin or Chaiyaphum, 3 towns approximately 150 km away from Nakon Ratchasima. During this visit, students can/shall report freely to the SUT visitors about their learning situation, study times, working times, general living conditions. A summary of this reports is feededback to Prof. Sukij Panpimanmas, dean of SUT Medical school. The aim is, of course, to steadily improve the quality of the clinical studies of SUT medical students.

Besides SUT, Prof. Schwarz gives since 2016 also a Teaching day at Mae Fah Luang University (MFU) Medical School in Chiang Rai, 800 km north of Bangkok, this year for the 3rd time. Also, since 2016, MFU and MUI are connected by a MoU. During this teaching day, the same PC course and lectures as mentioned above under 3.3 (Diabetes insipidus) is held.

Both MoU's permit the mutual exchange of students from all 3 universities for performing an elective.

List of publications

none, except the following reports

<https://asea-uninet.org/>
<http://biocenter.i-med.ac.at/>
<http://www2.i-med.ac.at/expatho/index.html>
<http://www.sut.ac.th/2012/en/>
http://www2.i-med.ac.at/expatho/sut_cooperation_partners.jpg

2018a: <https://www.i-med.ac.at/mypoint/thema/717631.html>
2016/17: <https://www.i-med.ac.at/mypoint/thema/705399.html>
<http://www.i-med.ac.at/pr/docs/Bericht-SUT-2016.docx.pdf>
2015: <https://www.i-med.ac.at/mypoint/thema/696260.html>
2014: <https://www.i-med.ac.at/mypoint/thema/686439.html>
2013: <https://www.i-med.ac.at/mypoint/news/676164.html>
2012: <https://www.i-med.ac.at/mypoint/news/665999.html>
2011: <https://www.i-med.ac.at/mypoint/archiv/2011091502.xml> (MoU)
2010: <https://www.i-med.ac.at/mypoint/archiv/2010102901.xml>
2009b: <https://www.i-med.ac.at/mypoint/archiv/2009101601.xml>
2009a: <https://www.i-med.ac.at/mypoint/archiv/2009012201.xml>

Personal remark

Professor Schwarz considers this academic exchange program besides the achievements in teaching and learning also as a personal enrichment by deepening the relations of MUI with MFU and SUT but also his friendship with their students as well as Dean Nopadol Wora-Urai and Dr. Roger Callaghan of MFU and Dean Sukij Panpimanmas and Dr. Sanong of SUT.

We all are thankful to ASEA UNINET for the longlasting support.

Pictures (*Credits of all photos: Siegfried Schwarz*)



MFU Campus



Dean Prof. Nopadol Wora-Urai + Prof. Schwarz



Dr. Roger Callaghan, Coordinator at MFU



The 2018 class of Medical students at MFU



Venipuncture practicum at SUT



Clinical skills laboratory at SUT



Partners: Dr. Sanong Suksaweang and Prof. Siegfried Schwarz



PC course on molecular modelling



PC course on molecular modelling



Studying before the exam



Preparing the Multiple choice questions



The exam



Student's thanksgiving speech



Prof. Schwarz' farewell words



Dr. Sanong signing the
Certificates of Participation



Dean Sukij thanks Prof. Schwarz for his continuous teaching engagement at SUT. The dean mentioned also that by this, an internationalization is achieved as well as most „modern“ aspects of medical science are brought to SUT students. Also, this longlasting cooperation is considered by him as well as Rector Dr. Weerapong Pairsuwan of SUT as a „lighthouse“ project of the MoU between MUI and SUT, which they wish it would be „copied by all other faculties of SUT“.



The 2018 class of Medical students at SUT

„This university hereby pledges itself to excellence in all its missions: to improve the quality of life and to collect and create knowledge, moral ethos and wisdom for the everlasting development of mankind.“



Discussion with SUT Medical students at Chaiyaphum Provincial Hospital during the 2018 visitation



SUT Medical students at Chaiyaphum Provincial Hospital during the 2018 visitation. The woman with the child in the center of the picture works now as a doctor of Emergency Medicine, and was among the first SUT medical students in 2007.

The Connnection of MUI with Thailand within the ASEA-UNINET network

	2006	Visitation of a delegation from SUT of the University of Innsbruck in search for possibilities of cooperation
Aug. 1.-3.	2007	Symposium at SUT "Implementation of the Curriculum Emphasizing Primary Health Care". Prof. Schwarz giving for the 1st time the Molecular Modelling lecture+practicum module at SUT to the 1st batch of medical students at SUT
Aug.	2008	2. Integrated Endocrinology Teaching Week (T.W.), 3 copies of the book MOLECULES OF LIFE & MUTATIONS given to SUT, SUT "Appreciation" Document to Prof. Schwarz
July 27.-31.	2009	3. Integrated Endocrinology T.W.
Oct.	2009	Dr. Sanong working for 1 month in Prof. Wick's laboratory, giving lectures to Medical students of MUI
Aug. 2.-6.	2010	4. Integrated Endocrinology T.W., 4 professors from Chulalongkorn University in Bangkok also joined the molecular modelling course for learning
Aug. 8.-12.	2011	5. Integrated Endocrinology T.W., student Farfa from SUT being the 1st student of SUT who performed a clinical elective at MUI
September	2011	Signing of MoU between SUT and MUI at MUI by Rector Lochs
Aug. 26.-Sept. 2.	2012	6. Integrated Endocrinology T.W.
Oct. 19.	2012	Doctoral promotion of 1st batch of Medical students by HRH Princess Maha Chakri Sirindhorn, Prof. Schwarz being invited to join the ceremony, Article in MEDICUS
Aug. 11.-18.	2013	7. Integrated Endocrinology T.W., Honorary Plaque of SUT given to Prof. Schwarz
Aug. 18.-24.	2014	8. Integrated Hematology T.W., Teaching the teachers of SUT Medical School the method of POL/PBL, by order of Dean Vanich Vanapruks
March 3.-8.	2015	9. Integrated Endocrinology T.W. (same batch as in 8. IHTW), Denise Vorberg being the 1st student from MUI to perform a clinical elective at Surin Prov. Hospital
Nov.	2015	10. Integrated Hematology T.W.
March	2016	11. Integrated Hematology T.W., 1st Visit of Prof. Schwarz at Mae Fah Luang University in Chiang Rai, giving there for one day lectures and POL
Nov., 7.	2016	Honorary Doctoral Degree to Prof. Schwarz, endowed by HRH Princess Maha Shakri Sirindhorn of Thailand on behalf of her father, HRH King Bhumibol Adulyadej. MUI "Appreciation" Document given by Prof. Schwarz on behalf of Rector Helga Fritsch of MUI to Dr. Sanong
Dec. 26	2016	Signing of MoU by Emeritus Prof. Lt.Gen.Prof. Nopadol Wora-Urai, Dean of MFU Medical School
Feb.16	2017	Signing of MoU with MFU by Rector Helga Fritsch of MUI
Jan. 10.-14	2017	12. Integrated Endocrinology T.W. (same batch as in 11. T.W.)
Nov. 22.-25.	2017	13. Integrated Endocrinology T.W., 2nd Teaching Day at MFU in Chiang Rai
March 7.	2018	Signing of the MoU with SUT a 2nd time (renewal after 5 years), Honorary Plaque ("Order of Merit") of the MUI given by Rector Wolfgang Fleischhacker to Dr. Sanong
Nov. 22.-25.	2018	14. Integrated Endocrinology T.W., 3rd Teaching Day at MFU in Chiang Rai

ASEA-UNINET Project Report MedUni Vienna 2018

- **Board Meetings**

Vice-Rector Prof. Dr. Anita Rieder, ASEA-UniNet-Coordinator of the Medical University of Vienna as well as Dr. Human Salemi, Institutional Mobility Coordinator on behalf, took part at Board Meetings.

- **Electives**

Outgoings :

9 students of the Medical University of Vienna have taken part in the ASEA UniNet Medical Elective programme:

Thailand: CHULALONGKORN University Bangkok (3 Students)
MAHIDOL University Bangkok – Ramthibodi (1 Student)

Indonesia: UNIVERSITAS GADJAH MADA (3 Students)

Vietnam: UNIVERSITY OF MEDICINE AND PHARMACY HO CHI MINH CITY (2 Students)

Incomings:

A total of 3 students of the ASEA UniNet partner universities completed one month of study abroad at MedUni Vienna within the framework of ASEA-UNINET:

Thailand: KHON KAEN University (1 Student)

Indonesien: UNIVERSITAS GADJAH MADA (2 Students)

- **Visits of Guest Researchers from SO-Asia**
None

Vice-Rector Prof. Dr. Anita Rieder

ASEA-UNINET-Coordinator of the Medical University of Vienna

Reports
on
SP 24 Research Mobilities
in
2018

ASEA-UNINET SCHOLARSHIP REPORT

Anchalee Samphao / Thailand

Duration of the Stay: 21st November until 25th December 2018

From 21st November to 25th December 2018, I worked as a postdoctoral position under a supervision of **Prof. Kurt Kalcher** at the institute of chemistry, Karl Franzens University. In these four weeks, I was working on the topic of development of electrochemical immunosensor for detection of cancer biomarker.

The research was done on development of label-free electrochemical immunosensor based on Fe₃O₄@Au and GNP-MnO₂ modified on screen printed carbon electrode for detection of CEA. Nowadays, various nanomaterials have been employed to develop electrochemical immunosensors, such as carbon materials, metal oxides, metal nanoparticles, core-shell nanoparticles and semiconductors. Graphene nanoplatelets (GNP) have attracted much interest in nowadays because of their large surface area, high electrical conductivity, and fast electron transfer rate. Several researchers have proved that GNPs can be functionalized easily with numerous materials such as polymer films, ionic liquids, metal nanoparticles, metal oxides and quantum dots. The functionalization of those materials on GNP can effectively overcome the problem of GNP aggregation and can significantly improve the performances of the immunosensor. Particularly, manganese dioxide (MnO₂) is one of the most attractive and potential materials that commonly used for fabrication of different kinds of biosensing due to its excellent electrochemical analysis, high specific capacitance and low cost. Nevertheless, the only drawback of MnO₂ is not pretty good in electrical conductivity because of non-conductive oxide. However, the combination between GNP and MnO₂ can simultaneously solve the problem of poor conductivity of MnO₂ and aggregation of GNP.

Herein, the composite of manganese dioxide and graphene nanoplatelets (GNP-MnO₂) was employed to improve electrocatalytic activity of the immunosensor and core shell Fe₃O₄@Au nanoparticles was chosen as immune sensing platform. A label-free electrochemical immunosensor based on SPCE modified with GNP-MnO₂ and immobilized core shell Fe₃O₄@Au nanoparticles conjugated CEA-antibody (SPCE/GNP-MnO₂/Fe₃O₄@Au-anti-CEA) for the sensitive detection of CEA was proposed. The approach is based on direct binding of CEA to a fixed amount of monoclonal CEA-antibody on the sensing surface for the specific detection using linear sweep voltammetry (LSV) and electrochemical impedance spectroscopy (EIS) as detection techniques and [Fe(CN)₆]^{3-/4-} as mediator. The detection mechanism was based on the measurement of the peak current and charged transfer resistance owing to the redox reaction of [Fe(CN)₆]^{3-/4-}. When an immunoreaction formed on the SPCE/GNP-MnO₂/Fe₃O₄@Au-anti-CEA, the immunocomplex could hinder the direct electron transfer of the [Fe(CN)₆]^{3-/4-} towards the sensing surface due to the specific interaction between antigen and antibody, resulting in the electrochemical signal would change corresponded directly with the concentration of CEA. Therefore, the designed immunosensor could be applied for determination of CEA in clinical applications.

During I was in Graz, I had done on the synthesis of MnO₂ nanoparticles decorated on GNP and characterization of their electrochemical methods and scanning electron microscope. Furthermore, I had been working on a draft of an article which it was launched on the topic of a direct and sensitive electrochemical sensing platform based on ionic liquid functionalized graphene nanoplatelets for the detection of bisphenol A. Moreover, I gave a seminar on the topic of metal oxide and carbon nanomaterials-based electrochemical sensors and biosensors at University of Graz on 20th December 2018.

Taking into account my experiences gathered this year, I was in a good position to adapt and optimize my research even it was short but all of my work were done well and I was successful for the development of immunosensor.

Scientific and/or societal education results and publications arising from the project

For scientific results, we do hope to submit the manuscripts entitled **“Development of an electrochemical biosensor based on AuNPs-MnO₂-GN nanocomposite modified on paper based- screen printed carbon electrode for detection of cancer biomarker”** in Talanta (IF = 4.035)

Scientific and/or societal education results and publications arising from the last project

1. P.[Butmee](#), [G.Tumcharern](#), [P. Saejueng](#), [D. Stankovic](#), [A.Ortner](#), [J. Jitcharoen](#), [K. Kalche](#), A. Samphao (2019), **A direct and sensitive electrochemical sensing platform based on ionic liquid functionalized graphene nanoplatelets for the detection of bisphenol A**, Journal of Electroanalytical Chemistry 833 (2019) 1-5 (IF = 3.235)

2. [A. Samphao](#), P. Butmee, P. Saejueng, C. Pukahuta, L. Švorc, K.Kalcher (2018), **Monitoring of glucose and ethanol during wine fermentation by bienzymatic biosensor**, Journal of Electroanalytical chemistry, 816, 179-188 (IF = 3.235)

International Conference/meeting/congress proceedings

1. K. Kunpatee, K. Kalcher, [A. Samphao](#) (2018) **“ Flow injection amperometric sensor based graphene nanoribbons-ionic liquid-cobalt phthalocyanine composite modified screen-printed carbon electrode for detection of Fenobucarb”**, 2-7 December 2018 , Flow Analysis XIV, Arnoma Grand Bangkok Hotel, Bangkok, Thailand

2. C. Damphathik, G. Raber, A. Ortner, K. Kalcher, A. Samphao (2018) **“The determination of artemisinin in drugs and plants by high performance liquid chromatography and a developed electrochemical sensor”**, 2-7 December 2018 , Flow Analysis XIV, Arnoma Grand Bangkok Hotel, Bangkok, Thailand

Report on the stay at Graz University of Technology

Title of the report:

Boundary value problems for solutions of Cauchy-Riemann system in higher dimensions

Duration of the stay:

September 4 – November 15, 2018

Name of reporter:

Dao Viet Cuong

University of Transport and Communications

Analysis Department

No3, Cau Giay street, Lang Thuong ward, Dong Da district, Ha noi city, Viet nam

Email: vietcuongth@yahoo.com

Phone: +84-943456069

Host:

Wolfgang Tutschke

Graz University of Technology

Department of Numerical Mathematics

Steyrergasse 30, 8010 Graz

Email: tutschke@tugraz.at

Short biography

Guest (Dao Viet Cuong)

- Study of Mathematics in Ha noi
- Since 1997 staff member and lecturer at the University of Transport and Communications

Host (Em. Univ. Prof. Dr. Wolfgang Tutschke)

- 1995-2002: Full prof. at Graz University of Technology, retired 2002.

Result of the stay

During stay in the Graz University of Technology from September 4 to November 15, 2018, the common research on boundary value problems for monogenic function in usual Clifford algebras and Clifford algebras depending on parameters. I have been finished some chapters in my PhD-dissertation:

- Chapter 3: Dirichlet problem for monogenic function
- Chapter 4: Generalized Clifford algebras
- Chapter 5: Boundary value problems for monogenic functions in a generalized Clifford analysis.



SCHOLARSHIP REPORT

The ASEA UNINET Staff Exchange Program within
Department of Biosciences, University of Salzburg

Assoc. Prof. Dr. Jana Petermann

Supported by

Office of the Higher Education Commission (OHEC) &
Österreichischer Austauschdienst (OeAD)

The document written by Dr. Jiranan Piyaphongkul

Faculty of Liberal Arts and Science,
Kasetsart University, Kamphaeng Saen Campus
Thailand

Acknowledgements

This research under the ASEA UNINET staff exchange program is supported by the Office of the Higher Education Commission (OHEC) and by the Österreichischer Austauschdienst (OeAD) grant to the Department of Biosciences at University of Salzburg. I would like to extend my deepest gratitude to OHEC and OeAD for their generous grant. I would also like to express my sincere and profound gratitude to Assoc. Prof. Dr. Jana Petermann and all faculty members at Department of Biosciences for their keen and support throughout my research period. Finally, I am deeply thankful to Faculty of Liberal Arts and Science and Kasetsart University for supporting academic staff to develop international research network and collaboration and pushing our university to become the world's leading research university.

Short CV

I am Dr. Jiranan Piyaphongkul, a lecturer at Kasetsart University. I received my PhD degree in Bioscience from University of Birmingham in 2013. My email is faasjnt@ku.ac.th. I have expertise in researching in sustainable management ecosystems related to climate change issue. I have worked extensively with many organizations including voluntary research organisations. At present, I am a secretary of the trilateral cooperative project under Sino-Thai Joint Committee on the scientific and technical cooperation.

The scholarship report

The ASEA UNINET staff exchange program gives me chances to research in different academic institute and pursue my specific research topic by involving international cooperation and collaboration in Austria. The University of Salzburg is well-known University in Europe which offer a wide variety of subjects for students. From joining the ASEA UNINET staff exchange program during 1-31 May 2018 at Department of Biosciences, University of Salzburg, I have experienced at Assoc. Prof. Dr. Jana Petermann's lab group that this group is one of the best place to research on ecology because of a very productive and inspiring environment. Moreover, the lab technician, Mrs. Ilse Holzinger and students in this group are very kind helping and teaching me how to use equipment because it was first time to me. A mandatory introduction was arranged and they explain everything in detail and tell important events and activities arranged by the department that I should join. I have acquired a lot of knowledge, new skills and techniques on multitrophic biodiversity research which I can apply to do my research related to agricultural pests in Thailand.



Figure 1 The University of Salzburg has a reputation for teaching and research which provides the high quality facilities for staff and students.

To develop understanding of the concepts and experimental techniques for trophic interaction study, theoretical information and lab demonstration are provided at the beginning of the research exchange programme. Regarding research activity, the mini project was carried out as learning by doing can develop and implement creative ideas perform better in research. The aim of this mini project was to investigate the impact of urbanization on herbivory animal abundance focusing on insects because insects are key components of urban ecological networks and are greatly affected by anthropogenic activities. Thus, in this laboratory I did research about trophic interaction using plant-aphid as model. Aphids are relatively small, soft-bodied insects with long legs and antenna which belonged to order Hemiptera. As aphids require different host plants in which to thrive, therefore, prior to start the experiment aphids on several host plants at the botanical garden were investigated in order to learn as much as about aphids. Fortunately for researching in the month of May, spring arrived early this year and the weather was warm. Aphids were found in both winged and wingless forms. From survey, we found various kinds of aphids on different plants. The mummified aphids were isolated and kept in the Eppendorf tube and there were parasitoid emergence on the next few days. Because of the time limitation, the surveys were mainly in the botanical gardens. However, the research skills and techniques from this part are important for developing new project in Thailand because key major rice pests, e.g. the brown planthopper, *Nilaparvata lugens*, can be controlled in natural way by egg parasitoids. This aphid collection in the field can generate by initiating idea about the starting point to collect data on the parasitized rice planthoppers collected from both in the rice fields and in the light traps. These analyses could improve our understanding of the structure and dynamics of complex both natural and agricultural communities and can support the development of national strategies to reduce climate change impacts on agriculture.



Figure 2 The botanical garden at University of Salzburg



Figure 3 Aphids were found in cluster on stems and leaves in variety of plants.

Form preliminary study, two host plants including *Hedera helix* and *Sambucus nigra* were selected because they are widely distributed and locally abundance. *Hedera helix* and *S. nigra* were primary hosts of *Aphis hederæ* and *A. sambuci*, respectively. Aphid samples were counted and collected from various places in the urban and suburban zones in Salzburg. Simultaneously, location coordinates of

the sampling sites were recorded. Three branches per tree in each location were randomly chosen as replicates. Results showed that population abundance of *A. hederae* and *A. sambuci* in different locations was different which was higher in suburban areas than in the surrounding city landscape (Table 1). Nevertheless, only the abundance of aphids was recorded as time was limited. Other important data including abundance and community composition of aphid natural enemies estimated from the count of aphid mummies and predators and key abiotic factors should be recorded because they would also have an effect on aphid abundance and the activity of aphids and aphid predators. However, this mini project helped me to get started in trophic interaction research and initiate ideas and passion for further research in this field.



Figure 4 Field surveys and insect collection. Three branches of *Hedera helix* (above) and *Sambucus nigra* (below) were randomly selected. The total number of aphids were determined on these host plants around the inside and outside Salzburg city.



Table 1 Abundance of *Aphis hederae* and *Aphis sambuci* in urban and suburban ecosystems

plant species	aphid species	1 st branch	2 nd branch	3 rd branch	sum	coordinates North	coordinates East	distance from city center (Km)
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.8115	13.049611	1.77
<i>Hedera helix</i>	<i>Aphis hederae</i>	25	0	30	55	47.805346	13.039199	0.723
<i>Hedera helix</i>	<i>Aphis hederae</i>	6	15	12	33	47.807593	13.035573	0.819
<i>Hedera helix</i>	<i>Aphis hederae</i>	120	75	0	195	47.805833	13.038111	0.744
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.805833	13.038222	0.742
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.803167	13.035333	0.384
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.801556	13.039417	0.485
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.800806	13.038778	0.419
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.800222	13.043944	0.8
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.798194	13.048028	1.1
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.796194	13.046139	1.04
<i>Hedera helix</i>	<i>Aphis hederae</i>	35	80	45	160	47.795111	13.046806	1.14
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.798556	13.050306	1.27
<i>Hedera helix</i>	<i>Aphis hederae</i>	20	160	35	215	47.792833	13.029194	0.959
<i>Hedera helix</i>	<i>Aphis hederae</i>	500	150	110	760	47.793287	13.029854	0.791
<i>Hedera helix</i>	<i>Aphis hederae</i>	289	690	418	1397	47.785568	13.026914	1.73
<i>Hedera helix</i>	<i>Aphis hederae</i>	400	760	295	1455	47.785023	13.027152	1.71
<i>Hedera helix</i>	<i>Aphis hederae</i>	239	350	220	809	47.796491	13.027301	0.608
<i>Hedera helix</i>	<i>Aphis hederae</i>	450	436	340	1226	47.798735	13.023598	0.736
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.811488	13.047603	1.66
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.810822	13.04666	1.56
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.798472	13.051111	1.32
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.80175	13.050528	1.3
<i>Hedera helix</i>	<i>Aphis hederae</i>	0	0	0	0	47.800722	13.05275	1.44
<i>Hedera helix</i>	<i>Aphis hederae</i>	380	675	480	1535	47.782535	13.030034	2.01
<i>Hedera helix</i>	<i>Aphis hederae</i>	245	95	335	675	47.780835	13.04116	2.23
<i>Hedera helix</i>	<i>Aphis hederae</i>	115	138	220	473	47.781742	13.049491	2.38
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	0	0	0	0	47.805056	13.042861	0.897
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	0	0	0	0	47.805833	13.038222	0.742
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	0	0	0	0	47.805167	13.036667	0.625
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	0	0	0	0	47.805167	13.036667	0.625
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	0	0	0	0	47.803167	13.035333	0.384
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	0	0	0	0	47.805361	13.035389	0.617
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	0	0	0	0	47.805278	13.035639	0.619
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	390	500	815	1705	47.792705	13.028731	0.908
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	380	190	620	1190	47.792833	13.029194	0.831
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	50	100	85	235	47.793287	13.029854	0.791
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	510	675	495	1680	47.785023	13.027152	1.71
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	230	620	530	1380	47.798735	13.023598	0.736
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	9	250	740	999	47.811949	13.047095	1.68
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	0	0	0	0	47.800769	13.049182	1.15
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	0	0	0	0	47.800234	13.05043	1.25
<i>Sambucus nigra</i>	<i>Aphis sambuci</i>	0	0	0	0	47.800765	13.048105	1.1

One of research topics in this lab group involves exploring protists in bromeliads and water-filled tree holes in tropical forests, it is very important to know how to keep these protists alive to study in the lab. Therefore, another useful protocol on how to feed them using sterile technique was shared. By applying this technique, I can produce research on organisms in small water bodies such as tree hole in the agricultural and natural habitats in Thailand.



Figure 5 Maintaining protozoa stock cultures and storage

Beside research activities, I attended Terrestrial Ecology class for undergrad students. Such lecture was interesting to me. Even though, the class used German language, teacher assistants and students helped me by explain in English. The most useful technique is leaf area analysis using Image J program which is very powerful and intuitive image analysis software. For estimate serious pest and disease problems in the fields, damaged leaf area is one of the most important parameter. Using Image J for analysing scanned images of leaves and assessing percentage of leaf area lost to herbivory can save a lot of time and easy reproducible compare to the manual method using pixel count. This technique and knowledge is not only help me to initiate new research projects when I go back to Thailand, but also will be transferred to other Thai researchers who are interested by publishing a paper in Rice Journal (in Thai).

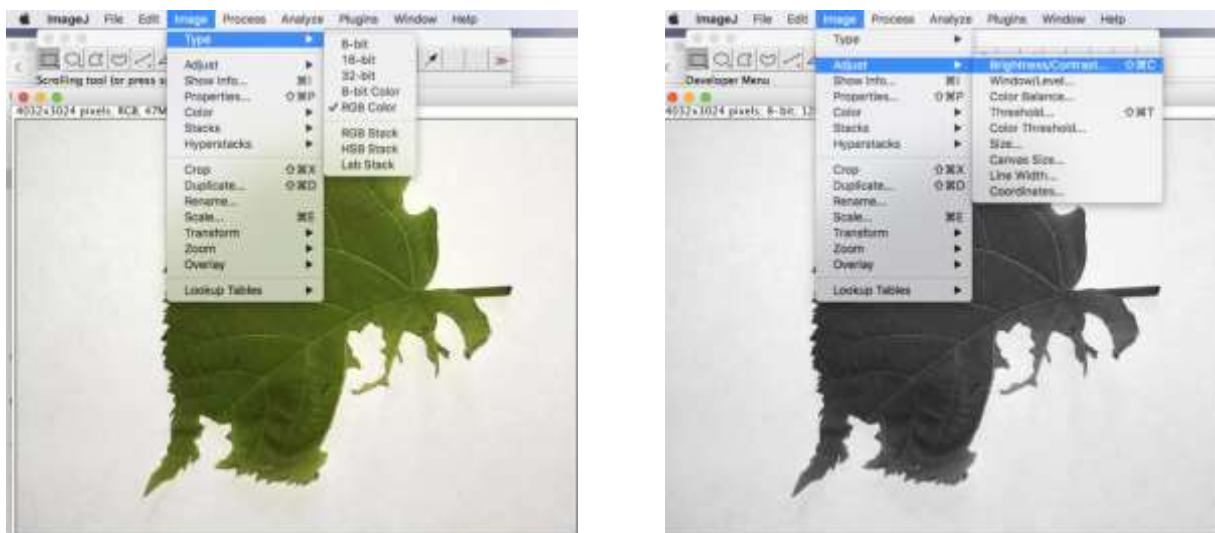


Figure 6 Using a free computer software called Image J through Terrestrial Ecology class for measuring damaged leaf area.

Enhanced international research networking and collaboration opportunities

Another main goal of this research exchange project under the cooperative agreement between the office of higher education commission, Thailand and Austrian government is the setup of this collaborative project is the initial step for establishing a long-term relationship and designing a future cooperative research program. Thus, the lab meeting is arranged for the presentation of the perform research projects. Besides, we discussed the opportunity and planning for future project initiating. Dr. Jana made some useful suggestions about international research funding sources. One of the most important benefit I have got from joining Jana Petermann's lab group is research connection with Dr. Alexander Wezel, researcher at ISARA, Lyon France. He is an expert in agroecosystem management. So, there is high possibility to strengthen collaboration through development of a new project together between Thailand-Austria-France.

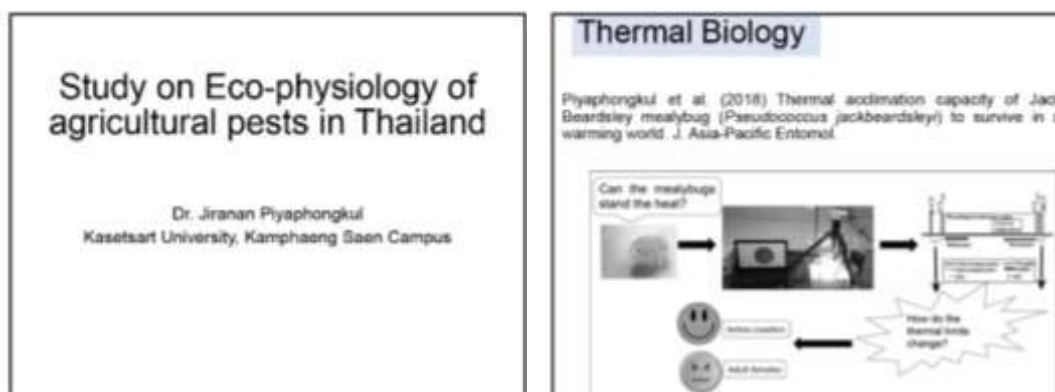
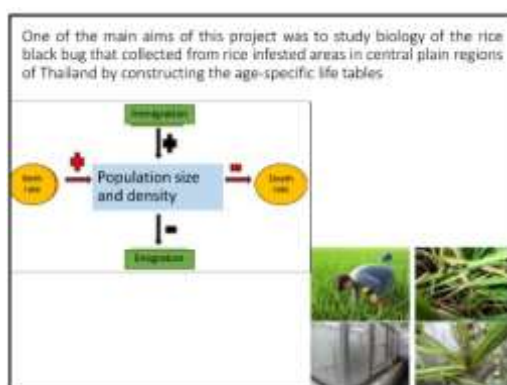
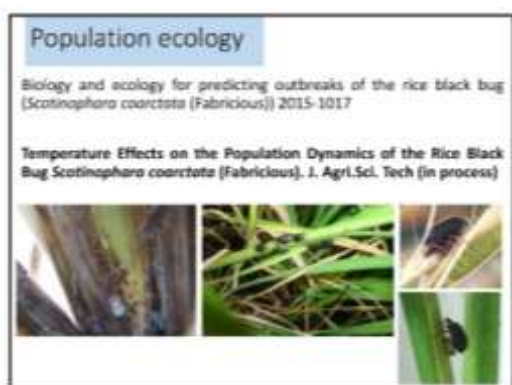
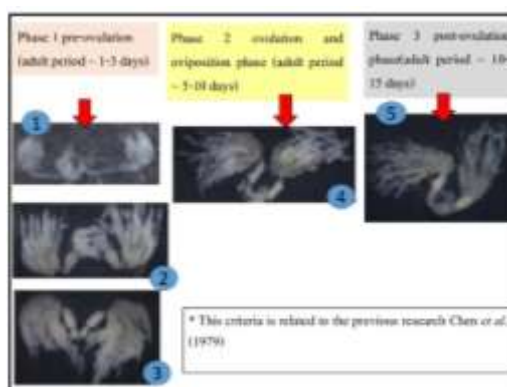


Figure 7 Partly presentation slides



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Kasetsart University / Jiranan Piyaphongkul

University of Salzburg / Jana Petermann

To sum up, I had an incredible research experiences here. Gaining knowledge and techniques from this cooperative project at Assoc.Prof. Dr. Jana Petermann are worthwhile and will be an immense scientific challenge. Greater understanding of the relationship among organisms may help to further elucidate the climate risk in agriculture. The results from this study will also play a significant role in the development of ideas concerning the interaction between dispersal and other key life history traits related to changing environment. In addition, this is the good beginning step and starting point for developing collaborative and cooperative research in the future. I enjoyed my exchange programme abroad in Salzburg very much. Everyone at the university was helpful and friendly at all times. I would like to say that doing this staff exchange programme is the best decision that I have made. Thank you so much for giving me opportunity to research here and this useful knowledge and techniques will be transferred to my students and other researchers.

Crystallisation of Fungal Carboxylic Acid Reductases

Duration of Research Stay

1st October 2018 to 31st October 2018

Contact Details and Biography

1. Jonathan Ling
Email: jonathanlingguyang@gmail.com
PhD student in Biochemistry at the National University of Malaysia (UKM). His research interest is centered around the functional and structural biology of biosynthetic enzymes.
2. Margit Winkler
Email: margit.winkler@tugraz.at
Independent researcher at TUGraz and group leader at acib GmbH. Her focus is the discovery, improvement and application of enzymes for synthesis.
3. Farah Diba Abu Bakar
Email: fabyff@ukm.edu.my
Associate Professor at the National University of Malaysia (UKM). Her research focus is on fungal molecular biology and biotechnology.

Scientific Report

Background:

The selective reduction of carboxylic acids to aldehydes is a difficult multi-step process in synthetic chemistry. Carboxylic acid reductases (CARs) are three-domain enzymes that operate in assembly-line fashion to catalyse the selective one-step reduction of carboxylic acid substrates to their corresponding aldehydes. Their exceptionally broad natural substrate scope makes them invaluable biocatalysts for potential applications in diverse chemical and synthetic processes. Our motivation was to study the three-dimensional architecture of CARs to unlock the full catalytic potential of CARs. This should enable a more holistic and integrated understanding of the CAR enzyme class as a whole, and expedite future efforts to tailor these enzymes by protein engineering.

Work conducted:

Plasmid constructs for recombinant expression were generated prior to the research exchange (*Neurospora crassa* CAR (NcCAR), its non-functional mutant (NcCAR_S595A), and single- (A and R) and di-domain (A-T and T-R) truncated genes). The full-length CARs were successfully expressed using the *E. coli* expression system. Unfortunately, no expression was observed for the single- and di-domain truncations. Thus, we are optimizing the domain boundaries / sequence cut-off sites for the single- and di-domain constructs.

During the research stay, large-scale protein purification was carried out in order to obtain protein preparations with high purity. The full-length CARs were purified via three chromatographic steps. A number of different combinations of chromatographic procedures were tested to obtain protein preparations with optimal purity.

Back in Malaysia, crystallization trials were attempted with protein preparations of different levels of heterogeneity and of different concentrations. Crystal screening was performed with a number of commercial screening kits at nanolitre scale using a robotic dispenser. A number of conditions gave rise to observable crystals. Optimization of crystallization is currently still being attempted in order to obtain better, diffraction-quality crystals.

Results:

- 5 new NcCAR constructs
- CAR protein preparations with 80-90% purity.
- Numerous crystals for NcCAR preparations

Intended publications:

Poster at Österreichische Chemietage

Transcultural Lives of Myanmar Migrant Children in Thailand: Self-identity and Sense of Belonging

Institution visited by Dr. Gunnar Stange

Research Institute for Languages and Cultures of Asia (RILCA) at Mahidol University, Thailand

Duration of the Stay

31 August – 30 September, 2018

Participating Researchers

Univ.-Prof. Dr. Patrick Sakdapolrak (applicant) is the leader of the research group Population Geography and Demography at the Department of Geography and Regional Research at the University of Vienna. He works at the interface of population dynamics, environmental change and development processes, with a focus on the topics of migration and displacement as well as health and disease. The central theme of his research is the question of how vulnerable groups live with risk.

Contact:

University of Vienna
Department of Geography and Regional Research
Universitätsstraße 7/5, 1010 Vienna, Austria
++43-1-4277-48730
patrick.sakdapolrak@univie.ac.at

Assoc. Prof. Dr. Kwanchit Sasiwongsaroj (host professor) is an associate professor at the Research Institute for Languages and Cultures of Asia (RILCA), Mahidol University, Thailand. Her research interests include cross cultural studies focusing on cultural differences between majority and minority ethnic groups, including migrants, and their consequences for their health and well-being.

Contact:

Mahidol University
Research Institute for Languages and Cultures of Asia
999 Salaya Sub-district, Putthamonthon District,
Nakhon Prathom
Kwan7chit@yahoo.com, kwanchit.sai@mahidol.ac.th

Dr. Gunnar Stange (visiting researcher) currently holds a position as assistant professor in Human Geography in the research group Population Geography and Demography at the Department of Geography and Regional Research at the University of Vienna. His research interests include peace and conflict studies, development studies, and forced migration. His regional focus is on Southeast Asia, mainly Indonesia.

Contact:

University of Vienna
Department of Geography and Regional Research
Universitätsstraße 7/5, 1010 Vienna, Austria
++43-1-4277-48732
gunnar.stange@univie.ac.at

Outcomes of the research collaboration in Thailand

The research project

Globalization and international mobility have led people to settle in vastly different cultural contexts. Transnationally situated families resulting from migration are becoming a more regular feature of children's lives in today's world. Thailand is one of three major economies in Southeast Asia and hosts over a half of the region's migrant workers. An influx of migrant workers from neighbouring countries has been noticeable and the flow has increased continuously. In 2018, there were three million migrants living in Thailand and an estimated 300,000 of those were children. It has been noted that migration experiences constitute substantial interferences in children's psychological development and well-being given the environmental and cultural changes they are exposed to. However, despite this trend, very few researches focus on children. Language and language acquisition are central issues in debates about transculturation, cultural identity in transnational migration, as well as integration in host countries. Notably, an importance of acquiring the language of the host country is acknowledged and has become a core element of today's integration policies in many European immigration countries. However, this challenge is a largely overlooked dimension of the migration policies of Thailand and several other countries in Southeast Asia. This study contributes to the current debates on transnational family migration by arguing for the centrality of language in the everyday lives and identities of young migrants. Qualitative methods will be used to 1) investigate the role of language playing in everyday lives of Myanmar children (aged 6–17) who have migrated to Thailand, and 2) explore the role of language in the processes of enculturation, acculturation as well as ethnic and cultural identity formation. The findings from this research will be of benefit to Thailand in its efforts to tackle the problem of language among migrants from the beginning and to answer the complex question of how cultural identity is shaped and how it impacts migrant children's well-being.

The research collaboration

The research project was initially planned to be jointly implemented with Save the Children Thailand in its project area Ranong in the South of Thailand, where 50 percent of the city's population are migrant workers and their families from Myanmar. To this end, we developed a semi-structured questionnaire during the first week of our collaboration. During a side visit in Ranong in mid-September, we learned, however, that Save the Children had unexpectedly changed the research design. The organization had decided to refrain from interviewing migrant children and focus on school teachers as interlocutors instead. Due to financial constraints, we therefore decided to postpone the field research to March, 2019, and started to work on a systematic literature review on "Language acquisition, sense of belonging, and integration of migrant workers' children in Thailand". We will continue this collaboration in November, 2018, when Kwanchit Sasiwongsaroj will visit the University of Vienna for three weeks.

Transcultural Lives of Myanmar Migrant Children in Thailand: Self-identity and Sense of Belonging

Institution visited by Assoc. Prof. Kwanchit Sasiwongsaroj

Department of Geography and Regional Research, University of Vienna, Austria

Duration of the Stay

1 November – 22 November, 2018

Participating Researchers

Univ.-Prof. Dr. Patrick Sakdapolrak (applicant) is the leader of the research group Population Geography and Demography at the Department of Geography and Regional Research at the University of Vienna. He works at the interface of population dynamics, environmental change and development processes, with a focus on the topics of migration and displacement as well as health and disease. The central theme of his research is the question of how vulnerable groups live with risk.

Contact: University of Vienna
Department of Geography and Regional
Research
Universitätsstraße 7/5, 1010 Vienna, Austria
++43-1-4277-48730
patrick.sakdapolrak@univie.ac.at

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Department of Geography and Regional Research
Universitätsstraße 7/5, 1010 Vienna, Austria
++43-1-4277-48732
gunnar.stange@univie.ac.at

Assoc. Prof. Dr. Kwanchit Sasiwongsaroj (visiting researcher) is an associate professor at the Research Institute for Languages and Cultures of Asia (RILCA), Mahidol University, Thailand. Her

research interests include cross cultural studies focusing on cultural differences between majority and minority ethnic groups, including migrants, and their consequences for their health and well-being.

Contact: Mahidol University
Research Institute for Languages and Cultures of
Asia
999 Salaya Sub-district, Putthamonthon District,
Nakhon Prathom
Kwan7chit@yahoo.com,
kwanchit.sai@mahidol.ac.th

Outcomes of the research collaboration in Thailand

The research project

Globalization and international mobility have led people to settle in vastly different cultural contexts. Transnationally situated families resulting from migration are becoming a more regular feature of children's lives in today's world. Thailand is one of three major economies in Southeast Asia and hosts over a half of the region's migrant workers. An influx of migrant workers from neighbouring countries has been noticeable and the flow has increased continuously. In 2018, there were three million migrants living in Thailand and an estimated 300,000 of those were children. It has been noted that migration experiences constitute substantial interferences in children's psychological development and well-being given the environmental and cultural changes they are exposed to. However, despite this trend, very few researches focus on children. Language and language acquisition are central issues in debates about transculturation, cultural identity in transnational migration, as well as integration in host countries. Notably, an importance of acquiring the language of the host country is acknowledged and has become a core element of today's integration policies in many European immigration countries. However, this challenge is a largely overlooked dimension of the migration policies of Thailand and several other countries in Southeast Asia. This study contributes to the current debates on transnational family migration by arguing for the centrality of language in the everyday lives and identities of young migrants. Qualitative methods will be used to 1) investigate the role of language playing in everyday lives of Myanmar children (aged 6–17) who have migrated to Thailand, and 2) explore the role of language in the processes of enculturation, acculturation as well as ethnic and cultural identity formation. The findings from this research will be of benefit to Thailand in its efforts to tackle the problem of language among migrants from the beginning and to answer the complex question of how cultural identity is shaped and how it impacts migrant children's well-being.

The research collaboration

As the field research of the collaborative research project with Dr. Gunnar Stange is postponed to July 2019 (see, report by Dr. Stange), during the three weeks of Prof. Sasiwongsaroj's visit, we worked on 1) a systematic literature review on "the numbers and trends of refugees, human trafficking, and stateless persons, including migrant children who were born in Thailand without birth certificate" and 2) data analysis (Save the Children Survey) on the number of migrant children in 54 communities in Ranong, Thailand, and their social and cultural conditions. This preparatory work will inform the field research scheduled for July, 2019.

WE, ELF, EIL and their Implications for English Language Teacher Education

Report by Navaporn Sanprasert Snodin

Duration of Stay: 1-28 June 2018

Principle investigators:

Project partner (Thailand):

Name: **Navaporn Sanprasert Snodin**

Degree: PhD (Assistant professor)

University: Kasetsart University

Department: Department of Foreign Languages, Faculty of Humanities

Address: 411/5 Humanities Building I
50 Ngam Wong Wan Rd
Lat Yao Chatuchak Bangkok 10900, Thailand

Email: nsnodin@gmail.com

Short Bio: Navaporn Snodin is an Assistant Professor of English and Applied Linguistics at Kasetsart University, Thailand. She is a holder of the prestigious Newton Fund Advanced Fellowship from the British Academy and the Thai Research Fund (TRF). Her research interests include English Language Education and Internationalisation of Higher Education.

The host professor (Austria):

Name: **Pia Resnik**

Degrees: Mag. Dr. phil. MA

University: the University of Vienna

Department: Department of English and American Studies

Address: Spitalgasse 2-4, 1090 Vienna, Austria

Email: pia.resnik@univie.ac.at

Short Bio: Pia Resnik is a Senior Lecturer at the Department of English of Vienna University. In the past, she worked at the Departments of English in Graz and Salzburg, Austria and spent research visits at Newcastle University, UK, the University of London, UK and Kasetsart University, Thailand. Her research interests include all aspects surrounding LX users of English – with a particular focus on multilinguals' verbalisation and perception of emotions.

Description of the project

My visit to the Department of English and American Studies, the University of Vienna, Austria, from 1-28 June 2018, which is jointly funded by the Office of Higher Education Commission, Ministry of Education of Thailand and the Austrian Agency for International Cooperation in Education & Research (OeAD-GmbH) under the scheme of ASEA-UNINET Staff Exchange mainly involves the following activities:

(1) giving a talk on English Language Education in Southeast Asia and Thailand; Teaching Culture in EFL Class; Mobility Experience of International People in Thai Higher Education (see the Appendix);

(2) promoting the ASEA-UNINET Staff Exchange Programme and discussing possibilities of academic and research cooperation between the University of Vienna and Kasetsart University. I have had discussion with Professor Julia Huttner and Professor Ute Smit and we intend to collaborate on a research project in the near future regarding English language education in Thailand and Austria.

(3) co-writing a book chapter with Dr. Pia Resnik for the Routledge Handbook of English Language Teacher Education which is the handbook to identify, discuss and problematize key issues in English Language teacher training, education and development.

Publications:

Snodin, N. and P. Resnik (2019). “WE, ELF, EIL and their Implications for English Language Teacher Education. In S. Walsh and S. Mann, eds. *Routledge Handbook of English Language Teacher Education*. London: Routledge. (in progress)



Fig. 1. The University of Vienna, Austria



Fig. 2. Talks on my research works and potential collaborations between Austria and Thailand



Fig. 3. My work space in the Department of English and American Studies



Fig. 4. Participating in the Approaching English Linguistics Class



Fig. 5. Participating in a poster presentation in English in a Professional Context class

© Fig. 1 - Fig. 7: KU / Navaporn Sanprasert Snodin

Scholarship Report

Project title: A Study of 3D Shape Matching in Robotic Charging System

Incoming Researcher (Thailand):

Name: Benjamas PANOMRUTTANARUG
University: King Mongkut's University of Technology Thonburi (KMUTT)
Duration of stay: 1/4/2018 – 30/4/2018

Host Professor (Austria):

Name: Assoc. Prof. Mario Hirz
University: Graz University of Technology

Deputy Head of the Institute of Automotive Engineering Head of the Automotive Mechatronics Research Division Vice Head of the Institute of Automotive Engineering Head of the Automotive Mechatronics Research Area

Prof. Mario Hirz has been awarded an M.S. degree in mechanical engineering and economics, a Ph.D. in mechanical engineering, and a *venia docendi* in the area of virtual product development. He is Associate Professor at the Graz University of Technology and a frequent guest lecturer at universities and in automotive industry throughout Europe, North America and Asia. Prof. Hirz is Vice-Head of the Institute of Automotive Engineering at Graz University of Technology and Head of the research area for Automotive Mechatronics. In his position, he is responsible for different international R&D projects. His research topics comprise design methods, knowledge-based engineering, efficient development processes, as well as innovative propulsion systems, concepts for sustainable transport, future mobility and mechatronics systems. Prof. Hirz is member of scientific associations, reviewer of journal and conference publications and co-organizer of conferences. He has published more than 200 works and has received several national and international awards.

Report:

At first, we were trying to investigate if Iterative Learning Control (ILC) can be implemented to the robotic charging station which is a prototype of charging system for electric vehicle at Institute of Automotive Engineering, Graz University of Technology. It turned out that there were no problems with either position control, velocity or force control since the robot arm has high enough precision. However, we have found that the robot arm sometimes cannot move to the position where the charging outlet is located since it uses an eye-in-hand camera to detect the position of the charging outlet and when it is used outdoor where we have different levels of light along a day, the vision system cannot clearly detect the charging plug and there would be no command to the robot arm. As a result, the robot arm stays still without moving to the target.

A study of how to find the charging outlet has been done. A 3D shape matching technique used in the Halcon program is implemented to identify the location of the outlet. The basic idea of the technique is to search the model in 2D images and use the surface-based 3D matching that searches the model in a 3D scene. The technique will be further studied to be implemented to a similar charging prototype at King Mongkut's University of Technology Thonburi.

SCHOLARSHIP REPORT by Peera WONGUPPARAJ

Home University: Burapha University, College of Research Methodology and Cognitive Science

Duration of stay: 01/06/2018 – 30/06/2018

CV: Dr. Peera Wongupparaj is currently a full-time lecturer and director of Centre of Excellence in Cognitive Science (CECoS) at College of Research Methodology and Cognitive Science, Burapha University in Thailand. Furthermore, he is also an Assistant Dean for Foreign Affairs. He earned his PhD in Psychology (Cognitive Neuroscience) from Institute of Psychiatry, Psychology, and Neuroscience, King's College London in 2016 under the supervision of Prof. Robin Morris and Prof. Veena Kumari. His PhD was funded by the Royal Thai Government Scholarship. He has received the Newton mobility grants (2017/2018) from The British Academy and been working with Professor Roi Cohen Kadosh from Department of Experimental Psychology, Oxford University and also received the UNINET-Staff Exchange Scholarship from Austria government and been working with Professor Anja Ischebeck from the Institute of Psychology, University of Graz in Austria. His work now focuses on human intelligence, memory, cognitive processes of people with depression and children with math difficulties.

Host professor (in Austria): Prof. Dr. Anja ISCHEBECK, University of Graz, Institute of Psychology

Report:

The research output arising from my research project entitled 'A neuropsychological investigation and development of a cognitive-based screening tool in children at risk of mathematical learning difficulties' will include the publication and initiation of a long-term collaboration with Prof. Anja Ischebeck's lab at Institute of Psychology, University of Graz. The ASEA-UNINET, Staff exchange scholarship allowed me to visit and work with Prof. Anja Ischebeck and her colleagues for a month on aforementioned project. With a great reputation on numerical processing research and world-class research facilities at Institute of Psychology, I had participated in many research trainings and meetings, along with other academic activities as shown in the following.

- 1) Lab meeting with the members of cognitive psychology and neuroscience group: I was invited to attend and participate in a short presentation presented by Prof. Ischebeck. The presentation covered the forefront of ideas and measurements on numerical and cognitive processing of adolescent groups (normal vs expert in math abilities). The deliberate methods on combining eye-tracking device and fMRI for studying cognitive strategies perfectly show how to utilize the two devices for monitoring and pinpointing the continuous and specific processes of mathematical cognition in humans.
- 2) Attending a multidisciplinary research project: I observed research projects of master students, supervised by Dr. Shane Fresnoza. These projects clearly demonstrated and emphasized the benefits of combining the ideas from social psychology with the precise measurement from cognitive neuroscience. The complied knowledge is both important in application and explanation, which will be taken on board for implementing the outputs of my research to community.
- 3) Attending and learning a co-registered Eye movements with EEG: I was under the tutelage of Prof. Christof Körner. The training was divided into two main sessions, that is, the co-registered setup of eye-tracking and EEG systems and these systems in action. These training are very helpful to my EEG lab and research project because my lab will have the eye-tracking system and it will be combined with EEG system in order to investigate the link between visual perception/attention and underlying cognitive processes via this co-registered systems.

- 4) Attending and learning fMRI: Following up from the inspiring talk by Prof. Ischebeck, I was invited to observe the co-registered eye-tracking and fMRI systems at TU Graz. It is a great opportunity to understand and to ask questions as to the benefits of employing these valuable systems to answer the research questions on fundamental mathematical concept such as fractions from a cognitive neuroscience perspective.
- 5) Meeting with Prof. Anja Ischebeck: I had a short presentation on the current research project involving the topics of a conceptual and theoretical frameworks and research methodology. Also, the pilot study on the screening tests for assessing Thai children with math difficulties were presented to Prof. Ischebeck. She kindly provided the constructive feedback on all aspects of my research project and these inputs will have been used to improve the quality of the current research project. Furthermore, her contribution will be result in a joint publication between my EEG lab and Prof. Ischebeck's lab as well.
- 6) Meeting with Prof. Karin Landerl: Apart from discussing the research project with Prof. Ischebeck, The short talk on my pilot study was presented to Prof. Karin Landerl from developmental psychology group. Likewise, Prof. Landerl provided valuable and insightful contributions to my project in terms of theoretical and practical viewpoints. Her contributions will also include a joint publication on this project and a further research collaboration.
- 7) Delivering a talk to academic staff and PhD students at Institute of Psychology: My talk on intelligence and working memory was kindly arranged by Prof. Ischebeck and many faculty members and doctoral students from the institute were involved. The talk lasted for 40 minutes and around 20 minutes for answering the interesting questions from the audiences.
- 8) Attending the 14th doctoral congress: This student showcase was arranged by the institute and many renowned professors also attended this event. The performances of doctoral students were exceptional and the comments provided by professors were very constructive to improve the projects as well. Many presentations from the doctoral students are in part relevant to my current research project and this is certainly beneficial to me to build the prospective networks with this young scholars.
- 9) Attending and learning TMS brain stimulation: The brain stimulation is now regarded as a promising and available option for improving the cognitive functions of children with math difficulties in many counties. I was invited to visit the brain stimulation lab at Medical University of Graz. Accordingly, the next steps of my current projects are discussed with Dr. Shane Fresnoza, an expert in brain stimulation at the institute. Dr. Fresnoza offers a consultant and technical supports and will involve in a further research collaboration as well.
- 10) Meeting with Prof. Nobert Tanzer and Miss Dorris Knasar: In addition to academic activities, I took this important opportunity to discuss with the coordinator of Erasmus+ international and the officer of international relations, University of Graz, as to the student and staff exchange programs. More specifically, the ASEA-UNINET provides initial and crucial steps for strengthening a research network between my EEG lab at Burapha University and Prof. Ischebeck's lab at University of Graz. We have discussed the further collaborations which may include joint projects concerning the effects of dopamine on working memory and intelligence from ERP and behavioral evidence and the brain stimulation on children with dyscalculia. To achieve these goals, Miss Knasar also suggests many available exchange programs that will bring the world-renowned professors, Prof. Ischebeck to my lab at Burapha University and will provide me the opportunity to work with Prof. Ischebeck again for the incoming year at University of Graz.

Project title	Transdisciplinary Approach in issues of Chinese Mobility and Transnational Cultures
Name	Assistant Professor Aranya Siriphon, PhD
Address	Department of Sociology and Anthropology, Faculty of Social Sciences, Chiang Mai University of northern Thailand. +66869176442, +6653943564, aranyas@yahoo.com . aranya.s@cmu.ac.th
duration of the stay, scholarship type	1 June to 30 June 2018 , a 1-month staff exchange scholarship within the framework of Ernst Mach ASEA-UNINET (Stipendien aus Mitteln des ASEA-Uninet Projektstipendien SP 24)
My short biography	My research interest lies in the field of Anthropological-based discipline and training, with the three conceptual subfields on Anthropology of mobility, Anthropology of transnationalism, ethnicity and diaspora, and border and trans-border studies. My recent work has focused on Chinese migrant entrepreneurs in transnational businesses in Thailand, address the impacts of Chinese migrants on the extra-territorialization in economic development and the cause of socio-economic inequality in Northern Thailand. My current research examines transnational Chinese diaspora and mobile practices, with a focus on the ethnographic exploration of the experiences, views and narratives of the Chinese mobile subjects, and their interactions with the ethnic Chinese communities in Thailand. My regional studies lie in Mekong area, the border of Northern Thailand and Northern Laos, the border of China and Myanmar, and Thailand.
Name of Host contact person	Dr. Petra Dannecker, Professor of Developmental Sociology, Director of Institute for International Development, Faculty of Social Sciences, University of Vienna. Sensengasse 3/2/2 1090 Vienna telephone; +43(1)4277-23912, F+43(1)4277-9289 email: Petra.dannecker@univie.ac.at

Study Project, Activities and Result

1. Attending seminars, workshops or academic events

- Attending the lecture series of seminar of Department of Development Studies, University of Vienna. The topic was “Walking the Ridge: Local Experiences of Nation-Building and Development in Upland Northern Laos”, by Paul-David Lutz, University of Sydney Wednesday, on 20 June 2018, 4.15-5.45 pm. Seminar room, IE, Department of African Studies

Spitalgasse 2, Courtyard 5, 1090 Vienna. The Chair person is Judith Ehlert (Department of Development Studies, University of Vienna)

2. Using library material and other academic resource

- Using e-book, e-journal database source provided by the Department of Development Studies, University of Vienna, mainly focusing on the relevant topics I am working, for example Chinese Entrepreneurs, the rise of China, New Chinese migrants and Entrepreneurs Capitalism, updating new concepts of mobility studies, anthropological methodology and concepts, transdisciplinary documents.

3. Writing an article draft, and a research proposal;

- Part of using e-book, e-journal database source at UNIVIE helped me updating information and arguments. It also allowed me to frame an idea, and began to write an article draft. The title of the draft is “Transnational Chinese Entrepreneurs and their Impacts to Thai Tourism Economy: Case study of Chiang Mai, Thailand”
- A research proposal drafted on the topic: Mobility, Gender and the Modern Subject of Desire: case study of Chinese Female Entrepreneurs in Chiang Mai City. It is supposed to apply a research grant from a Thai funding organization in the near future.

4. Enhancing the strength in international collaboration, and networks which work collaboratively through the KNOT project, (Knowledge Networks of Transdisciplinary Studies).

- KNOT project is coordinated by the Department of Development Studies, the University of Vienna. The project links partners from seven university in five countries; 1) Charles University (Czech Republic), 2) University of Bonn (Germany), 3) Ho Chi Minh City Open University (Vietnam), 4) Vietnam Academy of Social Sciences (Vietnam), 5) Southern Institute of Social Sciences (Vietnam), 6) Chulalongkorn University (Thailand), and 7) Chiang Mai University (Thailand). KNOT project aims at establishing vibrant and dynamic knowledge networks of multi-lateral and transdisciplinary studies, which evolve the theme topics of social inequality, climate change and migration. It is granted by the European Commission's Erasmus+ programme.

For this visitation, on Wednesday 13, 2018, Dr. Petra Dannecker, the head of the Department of Development Studies, the University of Vienna, invited me to join the classroom of M.A. students, give a brief introduction to 12 graduate students. The students are supposed to attend the summer school held by my institution, Chiang Mai University, Thailand during 17-30 July, 2018. The brief introduction I gave was about lectures contents, and eight fieldtrips for visitation which composed of general background, current situations,

and relevant issues regarding the KNOT project's theme in transdisciplinary approach, and issues-related theme of migration, environment, and social inequality. On Wednesday 20, 2018, I spent a few hours with the students, to allow them get more information about the summer school that they will attend in Chiang Mai, Thailand during 17-30 July, 2018.

5. Presenting a paper and share my research experience about Chinese mobility in Thailand

- I gave a presentation, writing a paper draft entitled “Mobility, Gender and the Modern Subject of Desire: A case study of Chinese Female Entrepreneurs in Chiang Mai City” at INTERNATIONAL WORKSHOP on Modernity, mobility, and gender in the Upper Mekong region: Anthropological and historical perspectives, TUESDAY, JUNE 12, 2018. 09:00-17:30, at Austrian Academy of Sciences Hollandstraße 11-13



The Poster to promote the event, at

INTERNATIONAL WORKSHOP on Modernity, mobility, and gender in the Upper Mekong region:

Anthropological and historical perspectives,

TUESDAY, JUNE 12, 2018. 09:00-17:30, at

Austrian Academy of Sciences Hollandstraße 11-13

Organized by Dr. Roger Casas, [Austrian Academy of Sciences](#) · [Institute for Social Anthropology](#)

ASEA-UNINET (SP 24) 2018 REPORT

Project title Application of U-Pb zircon dating to petroleum related strike-slip zones in Thailand

Duration 1 April 2018 - 30 April 2018

Researcher Assoc.Prof.Dr. Pitsanupong KANJANAPAYONT

Affiliation Department of Geology, Faculty of Science, Chulalongkorn University, Bangkok 10330, THAILAND

E-mail pitsanupong.k@hotmail.com

After graduation in Geology from the University of Vienna in 2009, Dr. Pitsanupong KANJANAPAYONT received a professorship at the Department of Geology, Chulalongkorn University, Thailand. He continues his research on the structural geology, tectonics, and geochronology especially the application of U-Pb zircon dating to the strike-slip systems in the southeast Asian region. His research also applies into the field of petroleum, coal, and gems deposits.

Host professor Ao.Univ.Prof.Dr. Urs KLÖTZLI

Affiliation Department of Lithospheric Research, University of Vienna, Althanstrasse 14, Vienna 1090

E-mail urs.kloetzli@univie.ac.at

Prof. Urs KLÖTZLI specializes in the development and improvement of micro-analytical techniques for isotope analysis in geological materials with a special emphasis on high-precision Laser-Ablation MC-ICP-MS dating techniques. His research includes radiometric dating and derivation of the duration of geological events and processes with a main focus on the orogenic and anorogenic formation and evolution of continental crust.

Project description

This project was continued in the frame work of the collaboration between the Chulalongkorn University in Bangkok (Thailand) and University of Vienna (Austria) through ASEA-Uninet for many years now. The data reduction, result discussion and conclusion were done in this time, after the sample preparation, mineral separation, and laboratory work of mass spectrometry were finished in the previous collaboration.

Furthermore, the final results will be submitted on the title “U-Pb zircon geochronology of the granitic and gneissic rocks from eastern and southern Thailand: Implication for crustal evolution and two steps granitic magmatism of the Sibumasu terrane during the Indosinian orogeny” to the Journal of Asian Earth Sciences [ISI Impact factor=2.335].

Assoc.Prof.Dr. Pitsanupong KANJANAPAYONT
Ao.Univ.Prof.Dr. Urs KLÖTZLI

Scholarship Report SP 24

Name **Septian Dwi CAHYO**
Nationality **INDONESIA**
Stay from **2/3/2018 to 31/5/2018**

CV: Septian Dwi Cahyo was born in Jakarta, Indonesia in 1992. He studied composition with Gatot Danar Sulistiyanto and electronic/computer music with Tony Maryana, and Patrick Gunawan Hartono. Since in the Senior High School until now, he study all about music with Dr. Royke B Koapaha. His compositions (Individual works and Collaborative works) have been featured at festivals such as Sound Adventure, Young Composers in Southeast Asia Competition & Festival 2013, the 21st Young Composers Meeting, Studio Musikfabrik meets ACME, Lokakarya #1 6,5 Composers Collective, Portrait Concert of 6,5 Composers Collective , Shanghai New Music Week, SETTS #1, Biennale Jogja XIII #3, Contemporary Carols, October Meeting, Celebration of One Year Asia Culture Center, 12th SUN RIVER PRIZE composition competition, Art Summit Indonesia, ASEAN Youth Ensemble (ASEAN Creation). and have been performed in Indonesia, Germany, Netherlands, China, Singapore, Thailand, South Korea. His music has been performed by Ensemble Mosaik, Orkest de Ereprijs, ACME, SETTS Ensemble, Ensemble Offspring, Classikan Ensemble, ASEAN Youth Ensemble. He also followed several music and composition workshop with Martijn Padding, Louis Andriessen, Errollyn Wallen, Cathy van Eck, Richard Ayres, Beat Furrer, Chen Yi, Dieter Mack. He graduated and got Bachelor of Arts degree from Indonesia Institute of The Arts Yogyakarta. And he is active in the Composition Community in Yogyakarta, 6.5 Collective Composers, Currently he received a scholarship from OeAD-Austrian Agency for International Cooperation in Education and Research to have short study at University of Music and Performing Arts Graz with his supervisor Prof. Beat Furrer. During his composition study with Beat Furrer he also took algorithmic composition class with Gerhard Nierhaus.



Septian Dwi Cahyo, © Septian Dwi Cahyo

Report:

During my stay in Graz for 3 months, I am studying music composition with my supervisor **Prof. Beat Furrer** in The University of Music and Performing Arts Graz or University of the Arts. Beside of studying music composition with Prof. Beat Furrer, I also join another class such as Algorithmic Composition with **Gerhard Nierhaus**, Dirigen with **Edo Micic**, History of Western Music with **Ernst Hötzl**, and Ensemble and Orchestertechnik with **Orestis Toufektsis**.

In composition class, mostly I discuss about my music composition with my supervisor, in this discussion he always gave some comments about my piece and he always use my piece as starting point to discuss something such as its problem, its possibilities and so on. And the interesting thing is, after my first meeting with Prof. Beat Furrer, he asked me to give presentation about gamelan music in the group class in the next week after my first meeting with him. In this group class, I gave presentation more specifically about Javanese gamelan, eventhough I also gave a brief examples of gamelan from another region such as Balinese gamelan and Sundanese gamelan. In this presentation I gave some basic examples about Javanese gamelan such as its instrumentation, melodic organizing, function of each instrument and so on.

Beside of my activities in Prof. Beat Furrer composition class, I also attend another classes, such as Prof. Georg Friedrich Haas class. in his class I got some knowledge about microtonality discourses, after the class, I asked him some question regarding the topic that he discuss, after that he ask me to give presentation about Indonesian Contemporary Music in his class on 16 May 2018, while I write this report I also collecting data about this topic and I found some interesting things about Indonesian Contemporary Music Composition and its history that I will present in Prof. Georg Friedrich Haas class.

In another class, Algorithmic Composition class, I learnt a new thing in this class I couldn't find something like this in my former University in Indonesia. In this class I got a new perspective of composing music which is they learnt algoritmic things such as Cellular Automata, Markov Model, L System and etc to become starting point to make music. In this class I ever discuss about my concept that derive from Javanese behaviour that always using their sacred number such as their birthday date as starting point to calculate and determine some ceremonial date such as weeding day and etc. Beside that concept, I also make another concept that deconstruce gamelan structure/form using L System.

Autofiction and the construction of self and memory in German speaking countries and Indonesia

Stefan Kutzenberger
University of Vienna

Project partner (Austria):

Stefan Kutzenberger, Dr. phil., Mag. Phil., University of Vienna, Department of European and Comparative Literature and Language Studies, Sensengasse 3a, 1090 Vienna

Stefan Kutzenberger is a Lecturer for Comparative Literature at the University of Vienna. His research interests include visualisation methods of literature, the intellectual and literary relations between Europe and South America, intermediality in Vienna around 1900, and the construction of the self in contemporary fiction.

Project partner (Indonesia, Airlangga University, Surabaya, Department of English and Cultural Studies):

Diah Ariani Arimbi, S.S., MA, PhD, Dean of the faculty of humanities

Nur Wulan, Dra, M.A., Ph.D.

Moses Glorino Pandin, S.S., M.Psi., M.Phil.Psi.

Salimah, S.S., M.Ed.

Titien Diah Soelistyarini, S.S., M.Si.

Project partner (Indonesia, Gadjah Mada University, Yogyakarta, Department of Indonesian Literature):

Novi Siti Kussuji Indrastuti, Dr., M. Hum.

Pujiharto Pujiharto, Dr., M. Hum.

Project partner (Indonesia, Institut Seni Indonesia, ISI, Yogyakarta - Indonesian Institute of the Arts):

Rektor Prof. Dr. M. Agus Burhan, M.Hum

Via ASEA-Uninet, I was given the opportunity to spend three weeks in Indonesia to strengthen the ties between the University of Vienna and the project partner-universities of Surabaya and Yogyakarta. The aim was, above all, to establish a first contact between the institutes for literature studies.

From February 11 to February 22 I stayed as a visiting scholar at the Department of English and the Department of Cultural Studies at Universitas Airlangga, Surabaya.

The University of Airlangga is just starting to include Comparative Literature in the curriculum of English and Cultural Studies, and as I am in charge of the course „Introduction of Comparative Literature Studies“ at the University of Vienna, I was happy to give a two day course that was attended by 60 students. Following these introductory classes I held workshops with the staff to discuss a possible curriculum for Comparative Literature. I learned a lot about the construction of gender and Islamic identities in Indonesian literary writing. We concluded that these topics should also be included in my classes at the University of Vienna. After discussing the differences of introductory classes for academic research between our universities we had the idea to establish a “Massive Open Online Course” on research and creative writing that I would hold from Vienna. That course should be open to all students at Airlangga University and start in October this year. The staff of Airlangga University took this idea very seriously and Mr. Moses Glorino Pandin visited me already on March 9-11 in Vienna to film the first four chapters of this possible online course. He now has to do the organizational work to bring this project to life. He is full of good spirits and very much looking forward to establishing this cooperation.

From February 23 to March 3 I stayed as a visiting scholar at the Department of Indonesian Literature at Universitas Gadjah Mada in Yogyakarta. I gave a public lecture open to all students of the department about the influence of Asian art (focusing on the javanese wayang kulit tradition) on art in fin de siècle Vienna. Around 100 students attended the presentation including the dean and various professors of the faculty.

The professors organized a workshop on my research topic „Autofiction and the construction of self and memory in literature“ and invited scholars and writers alike. It was a very fruitful discussion that broke all time frames and had to be repeated the next day.

After that successful workshop we decided to start a joint research project. Ms. Novi Siti Kussuji Indrastuti and Mr. Pujiarto Pujiarto will visit the Department of Comparative Literature in Vienna in June where we will discuss a joint publication about “The motive of death in Indonesian and Austrian literature”. The article will be published in a renowned journal by the end of the year.

The last day of my stay in Yogyakarta I was invited to meet Prof. Dr. Agus Burhan, rector of ISI (the Indonesian Institute of the Arts). We spent a few hours together discussing possible cooperations and I presented some ideas to augment their curriculum with courses of intermediality. The concept of ideas traveling between the arts is fascinating and should be explored and discussed in depth with more time at hand. That is why a delegation from ISI is planning on visiting the University of Vienna in July or September of 2019 to establish a joint research project.

My visit to the Universities of Surabaya and Yogyakarta was a great opportunity to expand my horizon as a lecturer and it showed me drastically how much we have to be aware of our eurocentric world view. I learned a lot about Indonesian literature, but even more about their university system. It was very fruitful and nice to exchange researching and teaching experiences with Indonesian colleagues and was very happy to see that I could connect with the Indonesian students and pass on them my passion for literature and the arts.

At an institutional level my visit helped to establish a first contact between the departments for literature and helped to sketch out collaborations. Some of them are already on track, like the massive open online course on comparative literature and creative writing for Airlangga University, Surabaya, and the joint publication on “Death in Literature” with Gadjah Mada University, Yogyakarta. Further reciprocal visits will take place and it is clear that we will develop ideas for future research projects to make our collaborations more sustainable.

Disposable screen-printed electrode modified with ionic-liquid/graphene composite for determination of rapamycin

Duration of the stay: 1 December 2018 – 31 December 2018

Contact details and a short biography:

Sudkate Chaiyo is a researcher at The Institute of Biotechnology and Genetic Engineering, Chulalongkorn University. His research interests concentrate on development of new electrochemical sensors for various fields. In addition, he is focusing on the invention of portable sensing devices for food, environmental, and clinical applications.

Address: The Institute of Biotechnology and Genetic Engineering
Chulalongkorn University, 254 Phayathai Road, Patumwan,
Bangkok 10330, THAILAND

Tel: +662-218-88078, +669-7005-9986

Email: Sudkate.c@chula.ac.th

Description of the scientific topics:

Here we report a disposable screen-printed electrode based on ionic-liquid/graphene composite (IL/G/SPCE) on a polyvinyl chloride (PVC) substrate. Utilizing this electrode, the determination of rapamycin is achieved by square wave voltammetry (SWV), which grafted the advantages of electrode, possessed big electrode surface-active area and wide window potential. In addition, the proposed method was applied to rapamycin in real samples including urine and human blood samples. It has been demonstrated that our sensor provides a more convenient electrode fabrication and the sensor to be disposed after a single use and make the sensor more portable.

Fabrication of the modified electrode

To prepare the SPCE, a working electrode (WE, area = 0.196 cm²) and a counter electrode (CE) were screen-printed in-house using carbon/graphite ink (product code: C2130307D1, Gwent Electronic Materials Ltd, UK) onto a polyvinyl chloride (PVC) sheet (Laser Print Card, Thailand, 150 µm thickness). This layer was cured in an oven at 55 °C for 30 min. Next, a silver/silver chloride (60:40) reference electrode was applied by screen-printing Ag/AgCl paste (product code: C2130809D5, Gwent Electronic Materials Ltd, UK) onto the substrate of the previous step. After curing at 60 °C for 30 min the screen-printed electrode is ready to use. For the electrode modification by drop casting, 5.0 µL of the IL/G composite solution was dropped onto the working electrode and allowed to dry completely at room temperature and atmospheric pressure for approximately 10 min.

Electrochemical measurements

The SPCE were connected to the respective terminals of the Autolab electrochemical analyzer for measuring voltammetric response. In all such experiments, 50 µL drop of standard or sample solution were dispensed on the SPCE covering the three electrodes to connect the electrochemical cell. For characterization of SPCE, IL/SPCE, G/SPCE and IL/G/SPCE, CV experiments were performed

in the presence of 5.0 mM $[\text{Fe}(\text{CN})_6]^{3-/4-}$ in 0.1 M KCl at the potential range -0.6 V to +0.8 V with a scan rate of 50 mV s^{-1} unless otherwise stated. EIS experiments were recorded between 0.001 Hz and 10 kHz with an excitation signal of 50 mV amplitude in the presence of 5.0 mM $[\text{Fe}(\text{CN})_6]^{3-/4-}$ in 0.1 M KCl. For electrochemical behavior of rapamycin at SPCE, IL/SPCE, G/SPCE and IL/G/SPCE. CV experiments were carried out in 0.1 mM rapamycin in 60:40 EtOH:0.1 M LiClO_4 pH 5 (V:V) over the potential range of +0.3 to +1.4 V with a scan rate of 50 mV s^{-1} . SWV were recorded between +0.4 and +1.4 V for different concentrations of rapamycin solutions prepared in 60:40 EtOH:0.1 M LiClO_4 pH 5 (V:V). SWV recordings were carried out under following instrumental parameters: frequency 10 Hz, amplitude 20 mV and step potential 5 mV. The oxidation peak of rapamycin at +0.98 V obtained in SWV was used for quantification. All experiments were carried out at room temperature ($22 \pm 2 \text{ }^\circ\text{C}$). All the applied potentials mentioned in this paper are referred to the internal Ag pseudo-reference electrode of the SPCE. The rapamycin quantitation was achieved by measuring the peak current and the standard addition method was used to evaluate the content of rapamycin in real samples.

Sample preparation

The urine and human blood samples were taken from healthy peoples in local hospital. The samples were stored in a refrigerator after collection. 4.0 mL of each sample was centrifuged for 5 min at 5000 rpm. All samples were diluted 30 times with 60:40 EtOH:0.1 M LiClO_4 at pH 5.0 (V: V) and was transferred on the SPCE covering the three electrodes to be analyzed without any further treatment. The accuracy of the proposed SWV method was explored by spiking urine and human blood samples with different concentrations of rapamycin.

For the method validation, the process was performed according to published literature with slight modifications. Briefly, an HPLC system (Shimadzu LC-20AD XR UFLC Shimadzu, Japan) with a chromatographic column of Luna 5 μm C18 column (150 mm \times 4.6 mm i.d.) from Phenomenex (CA, USA) was used. Mobile phase consisting of acetonitril and ammonium acetate buffer set at flow rate 1.5 ml/min. The analyte was detected and quantified at 278 nm using ultraviolet detector.

Analytical performance

The disposable screen-printed electrode modified with IL/G composite was used for the detection rapamycin by the SWVs under optimal conditions. As shown in Fig. 1A, the oxidation peak currents increase with the increasing of the rapamycin concentrations. The oxidation peak current of rapamycin linearly increases with its concentration from 0.1 to 100 μM (Fig. 1B), and the linear regression equation is $I_{\text{pa}}/\mu\text{A} = 0.6204(\text{C}/\mu\text{M}) + 0.3716$ ($R^2 = 0.9986$). Using the relationships: $\text{LOD} = 3\text{sd}/m$ and $\text{LOQ} = 10\text{sd}/m$, sd = the standard deviation of the background current and m = the slope of the related calibration curve, the limit of detection (LOD) and limit of quantification (LOQ) were evaluated to be 0.033 μM (or 33 nM) and 0.10 μM , respectively. The detection limit and linear range of the proposed electrode are comparable with and even better than those obtained by previous research. Reproducibility and stability are two important parameters for electrochemical sensors. In this work, the fabrication reproducibility for six IL/G/SPCE was investigated by comparing their current responses to 50 μM rapamycin. The calculated result shows that the relative standard deviation (RSD) is 2.92%, which is an acceptable reproducibility. The stability of the IL/G/SPCE was checked after it was stored in room temperature for one month. The current response decreases 3.1% ($n=10$) than the initial response, indicating a wonderful stability.

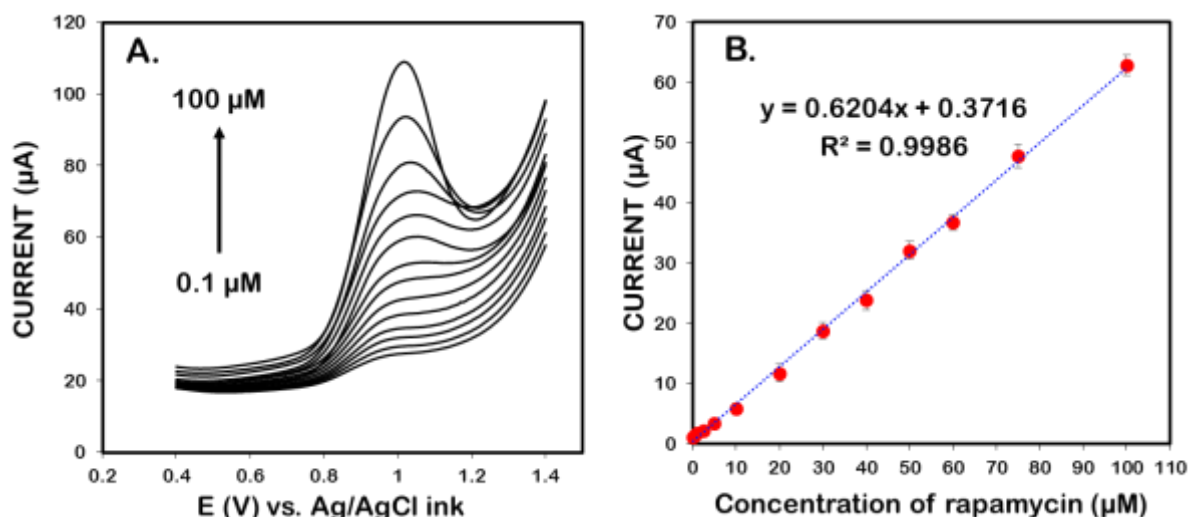


Fig. 1 (A) Square wave voltammograms for different concentrations of rapamycin, from 0.1 to 100 μM . (B) The calibration plot of the currents for the determination of rapamycin.

Sample analysis

To prove the practicability of the disposable screen-printed sensor used for detecting rapamycin, the IL/G/SPCE was applied to the independent determination of rapamycin in urine and human blood samples. Each sample of rapamycin was determined in triplicate ($n=3$). For the determination of rapamycin in real samples, various concentrations of rapamycin were spiked to urine and human blood sample. The recoveries for rapamycin in urine and human blood samples ranged from 91.0% to 104.5 % and RSDs were lower than 6 %. To evaluate the accuracy of the data provided by the proposed detector, the rapamycin concentrations were compared with data obtained using HPLC-UV method. A paired t-test was employed for this purpose. The calculated t value (1.66) was lower than the $t_{\text{theoretical}}$ value (2.14) at a confidence level of 95%, indicating that there are no significant differences between the results obtained with the electrochemical and HPLC-UV.

Report to ASEA-UNINET

Title of the project: INTERNAL QUALITY ASSURANCE AS A MATTER OF CULTURE AND CONTEXT- COMPARING AUSTRIA AND THAILAND

Duration of the stay: May 2, 2018-June 2, 2018



Contact details: a. Asst.Prof.Dr.Thasaneeya Ratanaroutai Nopparatjamjomras
Institute for Innovative Learning, Mahidol University, Thailand
E-mail: Thasaneeya.rat@mahidol.edu
b. Dr.Oliver Vettori
Dean, Accreditations & Quality Management /
Director, Program Management & Teaching and Learning Affairs,
Vienna University of Economics and Business (WU), Austria
E-mail: oliver.vettori@wu.ac.at

On May 2018:

A. Research Section

- Contact and make appointment with 3 universities in Austria for interview, which are Vienna University of Economics and Business, University of Veterinary Medicine Vienna, and University of Applied Arts Vienna.
- Collected data with 9 people in 3 universities of Austria
- Draft of data analysis
- Draft of literature part for paper publication
- Set up responsibility for paper publication

B. Professional Learning exchange with the following persons

- a. Dr.Oliver Vettori, Dean, Accreditations & Quality Management / Director, Program Management & Teaching and Learning Affairs, WU
- b. Dr. Karl Ledermuller, Head of Evaluation and Quality Enhancement, WU
- c. Petra Haas, Evaluation and Quality Enhancement officer, WU
- d. Julia Zeeh, Evaluation and Quality Enhancement officer, WU
- e. Stephanie Calhoun, accreditation officer, WU
- f. Johanna Warm, Teaching and Learning Development officer, WU
- g. Carina Weiß, Teaching and Learning Development officer, WU
- h. Julia Hoher, Program Development and Policy officer, WU
- i. Judith Ivancsits, Program Development and Policy officer, WU

j. Suzana Pejic, Assistant to the Director, Program Management & Teaching and Learning Affairs, WU

k. Lukus Hefner, Head of International Office, WU

l. Prof. Gary Bruton, Fulbright Hall Chair for Entrepreneurship, Institute for Entrepreneurship and Innovation, WU (From Texas Christian University, U.S.)

m. Prof. Jacques Lanares, Vice-Rector for Quality, Human Resources and Development of Teaching, University of Lausanne (delivered public lecture in WU)

n. Prof.Dr.Otto Doblhoff-Dier, University of Veterinary Medicine Vienna

o. Christa Pichler, Head of Quality Management, University of Veterinary Medicine Vienna

p. Monika Finsterwald, Head project of IQM-HE, University of Veterinary Medicine Vienna

q. David Campbell, University of Applied Arts Vienna

r. Bernhard Kernegger, University of Applied Arts Vienna

C. Additional Learning in Austria:

- OeAD extra curricular:
 - Laxenburg Castle visit on May 4, 2018
 - IIASA visit on May 4, 2018
 - Curriculum development in organic agriculture on May 15, 2018
 - Salzburg and Hallstat visit on June 1-2, 2018
- *Working style of Austrian people*, which is trying to make efficiency of works in working hours.
- *Life style of Austrian people*, which is spending weekends and holiday with family in interesting places, such as museum, zoo, swimming pools, etc.
- *Architecture of buildings in Austria* are interesting. There are mixing between old and new buildings in the same area.
- *Arts in Austria*. There are interesting places, such as Albertina museum and Belvedere palace (a world heritage site with art gallery).

Things to do in the future:

- Collect data in the other university in Thailand (data of other 2 Thai universities were collected before May 2018)
- Tabulate results of data analysis
- Write full paper

Project report

Project title: Combined LM and SEM study of the Mid-Tertiary palynoflora from the Mae Lai Basin, Northern Thailand

Name of the scholarship: Stipendien aus Mitteln des ASEA-Uninet, Projektstipendien SP 24

Reference number: ICM-2017-07936

Duration: 26 Feb to 19 April 2018

Principal investigator / Department / Faculty / Institute:

Dr. Wongkot Phuphumirat

Department of Applied Science, Faculty of Science, Prince of Songkla University,

Email: Pwongkot@gmail.com, +66936192525

Co-investigators/ Department / Faculty / Institute:

Ao. Univ. Prof. Dr. Christa C. Hofmann

Department of Palaeontology, Geocenter, Vienna, Austria, Althanstrasse 14, A-1090 Vienna

Email: christa.hofmann@univie.ac.at, +431427753574

Ao. Univ. Prof. Dr. Reinhard Zetter

Department of Palaeontology, Geocenter, Vienna, Austria, Althanstrasse 14, A-1090 Vienna

Email: reinhard.zetter@univie.ac.at, +431427753555

1. Introduction

In Northern Thailand, 42 sedimentary basins have been recognized (Morley and Racey, 2011). Many basins are identified as Tertiary deposits, possibly developing during the Oligocene to the Middle Miocene including, Chiang Muan and Pong basins (Phayao Province), Fang, Mae Chaem, Mae Lai, and Na Hong basins (Chiang Mai Province), Lampang, Mae Moh, Mae Teep, and Mae Than basins (Lampang Province), the Li basin (Lamphun Province), Mae Lamao and Mae Tun basins (Tak Province), and the Phrae basin (Phrae Province) (Songtham et al., 2005; Morley and Racey, 2011).

At the beginning of the formation of Chiang Muan, Li, Me Moh, Mae Tun, Mae Lamao, Nong Ya Plong (Petchaburi Province, Central Thailand) basins, a warm temperate climate occurs. Based on both macro and micro fossil evidence, forests were composed of conifers as well as broad-leaf deciduous mesothermal taxa, including *Dacrydium*, *Glyptostrobus*, *Podocarpus*, *Picea*, *Pinus*, *Tsuga*, *Sequoia*, *Taxodium* (Conifers), *Acer*, *Anus*, *Betula*, *Carpinus*, *Castanea*, *Castanopsis*, *Corylus*, *Carya*, *Engelhardia*, *Fagus*, *Ilex*, *Juglans*, *Liquidambar*, *Myrica*, *Pterocarya*, *Quercus*, *Ulmus*

(Angiosperm) (Endo, 1964; 1966; Ratanasthien, 1984; Meesuk, 1986; Watanasak, 1988; Songtham, 2000; 2003; 2005).

The climate turned out to be warmer in the Early Miocene and became a tropical climate until the end of the Middle Miocene, caused by the southward to southeastward movement of the Southeast Asian landmass from a temperate latitude to a tropical latitude (Songtham et al., 2003). In such tropical climate, conifers and broad-leaf deciduous mesothermal taxa were taken place by evergreen megathermal taxa, e.g. *Alangium*, *Ammania*, Anacardiaceae, *Anogeisus*, *Antidesma*, *Bombacacidites*, *Bursera*, *Calophyllum*, Cardamine, *Cephalomappa*, *Combretaceae*, *Dipterocarpus*, *Ficus*, *Homonoia*, *Hopea*, Leguminosae – Mimosoideae, Meliaceae, *Merremia*, Myrtaceae, *Oroxylum*, *Pandanus*, *Radermachera*, Sapotaceae, Sonneratiaceae, *Syzygium*, *Radermachera*, and *Spondias*. Spores from Cyatheaceae, *Lygodium*, Polypodiaceae, and *Pteris* were also found (Songtham et al., 2003; 2005; Sepulchre et al., 2010).

Even though there are a number of studies on spore and pollen fossil from the Tertiary in this region of Thailand, attentions have only been paid to the indicative sporomorphs of climate change while some other palynomorph taxa have been ignored due to a lack of pollen database (Endo, 1964; 1966; Ratanasthien, 1984; Meesuk, 1986; Watanasak, 1988; Songtham, 2000; 2003; 2005). In addition, previous studies were done using only a classical palaeopalynological technique which do not provide a high taxonomic resolution. Due to difficulties in identifying tropical palynomorphs, the single grain technique must be applied to ensure that the correct identification is obtained. As a results, the more accurate palaeoenvironment can be reconstructed.

This study is the first study describing the entire palynoflora from Mae Lai basin (Late Oligocene–Early Miocene, 30–21 Ma), Chiang Mai, based on LM and SEM examination. This allowed us to have more accurate information of species diversity of the palaeoflora and, therefore, more precise reconstruction of palaeovegetation and environment was obtained. This palynoflora may become a useful reference for the Mid–Tertiary palynoflora of Southeast Asia.

2. Methodology

1. Study site

The analyzed sediment samples were collected from Mae Lai basin, Chiang Mai Province. The age of the site is estimated to be in Mid–Miocene. The Mae Lai mine is in Hod District. The mine has now been abandoned and back-filled. The small opencast mine covered an area some 250 m by 300 m and exposed a largely shale and coal succession. Blue–grey clay below the main coal seam yielded vertebrates including the small mammal *Tarsius* sp., the ungulate *Stephanocemus* sp. and rodent teeth. They were determined to represent zone (Morley and Racey, 2011).

2. Materials and methods

The sediment samples were prepared according to procedures described in Erdtman (1954), Faegri et al. (1989), Zetter (1989), Zetter and Ferguson (2001), and Ferguson et al. (2007). The searching for microfossil were done until ensuring that all spore and pollen taxa were recovered. Fossil sporomorphs were analyzed under both LM and SEM using the single grain technique (Ferguson et al., 2007).

3. Results

Using the single grain technique, a total of 130 palynomorphs species were found in the sediment from Mae Lai basin. Of these, 20 taxa are from pteridophytes, while another 10 taxa correspond to gymnosperms. The remaining 100 taxa are from angiosperm. However, 57 taxa

among a total number of species have to yet been identified. The LM and SEM micrographs of all sporaomorph speceis were taken. The discovered sporomorph taxa were listed in Table 1.

Table 1. The list of sporomorph taxa discovered.

Plant group	Family or Genus	Number of taxon
Pteridophytes	<i>Davallia</i>	1
	<i>Lycopodium</i>	1
	Osmunda	2
	Indetermination	16
Gymnosperms		
	<i>Ephedra</i>	1
	Podocarpaceae	5
	<i>Podocarpus</i>	3
	<i>Phyllocladus</i>	1
Angiosperms		
	<i>Alnus</i>	1
	<i>Altingia</i>	1
	<i>Anacardiaceae</i>	7
	Arercaceae	2
	Asteraceae	1
	<i>Buxus</i>	1
	<i>Camellia</i>	1
	<i>Casuarina</i>	1

Table 1. The list of sporomorph taxa discovered (cont).

Plant group	Family or Genus	Number of taxon
	<i>Castanoidea</i>	1
	<i>Caesalpinia</i>	1
	<i>Celtis</i>	1
	<i>Choranthaceae</i>	2
	<i>Dryobalanops</i>	1
	<i>Elaeis</i>	1
	Euphorbiaceae	4
	Ericaceae	1
	Fabaceae	1
	Fagaceae	5
	<i>Fraxinus</i>	1
	<i>Kandelia</i>	1
	<i>Labiatae</i>	1
	<i>Livistona</i>	2
	<i>Myrica</i>	1
	Phyllanthaceae	1
	Proteaceae	9
	Rhamnaceae	1
	<i>Salix</i>	1
	Sapindaceae (<i>Jagera</i>)	1
	<i>Trema</i>	1
	Vitaceae	1
	Indetermination	40

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Reports
on
Bernd Rode Award 2017 Mobilities
in
2018

Report for the Research Visit

Prize of Bernd Rode Award 2017

Visitor / Awardee:

Prof. Dr.rer.nat. Dedi Rosadi, S.Si., M.Sc.
Head of Laboratory of Computational Statistics
Department of Mathematics, Faculty of Mathematics and Natural Sciences
Universitas Gadjah Mada
Sekip Utara, Yogyakarta ,INDONESIA
Email: dedirosadi@gadjahmada.edu, dedirosadi@ugm.ac.id
<http://dedirosadi.staff.ugm.ac.id>

Host Professor:

Univ.-Prof. Dipl.-Ing. Dr.techn. Peter Filzmoser
Head of research unit Computational Statistics
Institute of Statistics and Mathematical Methods in Economics
Technische Universität Wien (TU Wien)
Wiedner Hauptstrasse 8-10
1040 Vienna, AUSTRIA
Phone: +43 1 58801 10560
Fax: +43 1 58801 105699
E-mail: P.Filzmoser(at)tuwien.ac.at
<http://cstat.tuwien.ac.at/filz/>

Scholarship type : Bern Rode Award 2017

Duration of the stay : November 2018 (1 Month)

Summary of Output

During this visit (November 2018), we finish the first draft of our paper with the title „**Integer Mean-Variance Portfolio Optimization Model with Robust Covariance Estimator**“. During the visit, intensive discussion and simulation studies have been done especially on the computational aspect on how to obtain the solution to the robust portfolio optimization problem. We also discuss the relation of the optimization problem with the compositional data modeling in order to obtain new insight to the problem formulation.

Integer Mean-Variance Portfolio Optimization Model with Robust Covariance Estimator

Dedi Rosadi¹, Peter Filzmoser²

¹Corresponding author, Department of Mathematics, Universitas Gadjah Mada, Indonesia
dedirosadi@mugm.ac.id

²Department of Statistics and Probability Theory, Vienna University of Technology, Austria

Abstract:

This study presents an improvement to the mean-variance portfolio optimization model with the minimum transaction lots, by considering robust estimator of the covariance matrices to deal with the presence of outliers in the data. Five robust estimators were observed, namely Minimum Volume Ellipsoid (MVE), Minimum Covariance Determinant (MCD), Orthogonalized Gnanadesikan-Kettenring (OGK), S, and MM estimator. Genetic algorithm is used to obtain the solution to the optimization problem. We also introduce lot turnover measure and average weight deviation, beside the standard portfolio turnover measure. We provide simulation studies and the empirical results using several stocks from Indonesia Stock Exchange. From these numerical results, we find that in general, the robust model will provide stable portfolio's weights and the better portfolio's performance than the non-robust alternative.

Keywords: genetic algorithm, robust estimation, Markowitz portfolio, lot turnover.

Enhancement of the bioactivity of natural compounds from plants grown in Thailand

Duration of the stay - Dr. Monika Müller: 13.12.2018 – 1.1.2019

Dr. Monika Müller, Post doc at Department of Pharmaceutical Technology and Biopharmaceutics. University of Vienna. She has completed her PhD and postdoctoral studies from BOKU, Vienna, Austria. After that she worked as a research scientist at Bioprocessing Technology Institute in Singapore and then at the Department for Pharmaceutical Technology and Biopharmaceutics in Vienna, Austria. She has published more than 50 papers in peer reviewed journals.

Current research Interests: Bioactivity of natural compounds and isolation of active compounds, modification and formulation of natural compounds; stability and formulations of biopharmaceuticals, protein expression and downstream processing

Research partners:

Assoc. Prof. Dr. Kiattawee Choowongkamon, Department of Biochemistry, Faculty of Science, Kasersart University, Bangkok, Thailand

Research Interests: Protein purification, protein structure, protein NMR, protein crystallography, cloning and expression of proteins, protein simulation and biosensors

Ass. Prof. Dr. Wantida Chaiyana, Department of pharmaceutical science, Faculty of pharmacy, Chiang Mai University

Research focus: Delivery systems, including drug delivery system, nano-delivery system, transdermal delivery system; drug development, especially liquid and semisolid dosage form; cosmetic formulation development, quality control, performance evaluation, and satisfactory evaluation

Ass. Prof. Dr. Thanyada Rungrotmongkol, Department of Biochemistry, Chulalongkorn University, Bangkok

Research focus: investigation of biomolecular structure and function, mechanisms of drug action, ligand binding studies, source of microbial resistance and mechanistic insights into enzyme catalysis, by computational biophysics.

Dr. Chonticha Suwattanasophon, Pharmaceutical Technology & Biopharmaceutics, Faculty of Life Sciences, University of Vienna. (Postdoc)

Research Interests: Protein simulation, protein structure and cell culture assays.

Work conducted during the research stay:

1) Lecturing at Department of Biochemistry, Kasersart University within the interdisciplinary graduate program in Genetic Engineering. Topic of the lectures: Stability and formulation of biopharmaceuticals with focus on monoclonal antibodies.

Furthermore, collaboration works were discussed.

2) Finalizing publications in the field of natural products research including their formulation for usage in cosmetics and pharmaceuticals at University of Chiang Mai.

3) Finalizing publications in the field of natural product research combined with computational screening and modification by complexation with cyclodextrins at Chulalongkorn University, Bangkok.

Results

Plants used in traditional Thai medicine or consumed in diet contain a great variety of secondary plant metabolites which exert various bioactivities such as anti-inflammatory, anticancerogenic or antioxidant effects. In our studies, several traditionally used medicinal and edible plants demonstrate bioactivity in scientific investigations. Results from our recently published studies include anti-inflammatory and antioxidative effects as well as skin anti - ageing effects by extracts from *Ocimum sanctum* (Chaiyana et al, 2018) or promising anti-acne effects by Northern Thai Mango seed kernel extracts (Poomanee et al, 2018). Due to anti-inflammatory, antioxidant activities and its safe application *Coffea arabica* leaf extract was found to be a promising ingredient for alternative cosmetics (Kiattisin et al., 2018). Extracts from black sesame seed cake were found to exert antioxidant, anti-collagenase and anti-hyaluronidase activity and its active compound sesaminol diglucoside was isolated and identified (Nantararat et al, 2019). The studies were extended to edible insect extracts which also exerted anti-inflammatory and antioxidant properties (Chaiyana et al, 2019).

Based on computational screening, chalcones acting against topoisomerase II α and with cytotoxicity towards cancer cell lines could be found (Sangpheak et al, 2019).

The activity and beneficial effects of secondary plant metabolites are limited due to their instability and low bioavailability, resulting in limitations of biological effects. In further studies, strategies for the enhancement of the bioactivity of secondary plant metabolites are applied using various strategies. Bioactivity enhancement may be achieved by increasing the solubilization of secondary plant metabolites by complexation using cyclodextrins (CDs). In a recent study, pinostrobin was complexed using β -CDs to increase its biological effect (Kicuntod et al., 2018) as shown for the anti-inflammatory activity and cytotoxic effects against MCF-7 and HeLa cancer cell lines. Moreover, in inclusion complexes with β -CD and its derivatives, DM- β -CD and (2-hydroxypropyl)- β -CD, the solubility and dissolution rate was significantly increased.

Transdermal delivery of compounds from green robusta coffee bean extract were achieved using loaded nanostructured lipid carriers (Nitthikan et al., 2018). Stability of the bioactive compounds could be significantly improved.

In conclusion, extracts from various Thai plants were shown to be sources for compounds with notable bioactivities. Different strategies for the enhancement of the bioactivity and bioavailability of those compounds were successfully applied. Strategies used in these studies may be used to a range of other secondary plant metabolites; making them more attractive for application in alternative medicine, functional food products or cosmetics.

Publications

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Active Compounds from Herbal Plants against EGFR for the Inhibition of Cancer Cells.

Duration of the stay: 16-30 Nov 2018

Researchers:

1) Assoc. Prof. Dr. **Kiattawee Choowongkamon**, Department of Biochemistry Faculty of Science Kasetsart University, Bangkok, Thailand.

Research Interests: Protein Purification, Protein Structure, Protein NMR, Protein Crystallography, Cloning and Expression Protein, Protein Simulation and Biosensor.

2) Dr. **Chonticha Suwattanasophon**, Pharmaceutical Technology & Biopharmaceutics, Faculty of Life Sciences, University of Vienna. (Postdoc)

Research Interests: Protein Simulation, Protein Structure and Cell culture assay.

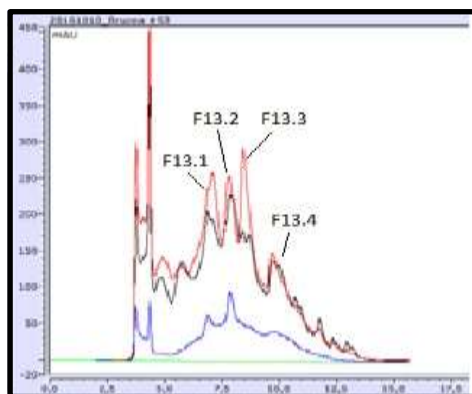
Work conducted during the research stay: To test the some active compound from *Brucea javanica* that inhibit in Hela and Mcf7 cell line using cell viability assay at Department of Biochemistry, Kasersart University.

Report:

The water extract of *Brucea javanica* Fruit were separated in to 13 fractions using HPC technique. Some fractions of *Brucea javanica* from preliminary studies are still not isolated and pure. Especially fraction 13th (Fig 1a) which is the most interesting Then, further purification of F13 were isolated to more four fractions (F13.1-F13.4) shown in Fig 1b.



(a)



(b)

Fig 1. Chromatogram of *Brucea javanica* Fruit in water extract of (a) Fraction no 13 (b) fraction no F13.1 – F13.4

Fraction 13.1 to 13.4 showed a good potency against the growth of cervical cancer (Hela) and breast cancer (Mcf7) cell lines as shown in Table 1.

Table 1: IC50 value of F13.1 to 13.4 of Hela and Mcf7 cell lines:

	IC50 (µg/ml)	
	Hela	Mcf7
F13.1	0.4	1.2
F13.2	0.31	0.5
F13.3	0.5	5.4
F13.4	0.48	6.2

Expression and characterization of LacA, a GH42 beta-galactosidase from the human isolate *Bifidobacterium breve*

Duration of the stay: 1-31 May, 2018

Name and university affiliation partner:

1. Dietmar Haltrich, Univ.Prof. Dipl.-Ing. Dr.techn.
Position: Head of Institute of Food Technology, University of Natural Resources and Life Sciences, Vienna
Address: Institute of Food Technology, Muthgasse 18, 1190 Vienna
Email: dietmar.haltrich@boku.ac.at
Phone: +43 1 47654-75211
Fax: +43 1 47654-75009
Biography: Prof. Dietmar Haltrich received his doctorate degree in biotechnology at University of Technology Graz, Austria and habilitation in biotechnology and microbial physiology at BOKU University of Natural Resources and Life Sciences Vienna in Austria. He now serves as BOKU's head of the Institute of Food Technology. He has expertise in the area of enzymes, fermentation, microbial physiology, enzyme technology and Enzymology. He has more than 240 publications in international peer reviewed publications, 12 book chapters and has 2 patents.
2. Thu Ha Nguyen Priv.-Doz. Dr.
Position: wiss. Projektmitarbeiter/in, Institute of Food Technology
University of Natural Resources and Life Sciences, Vienna
Address: Institute of Food Technology, Muthgasse 18, 1190 Vienna
Email: thu-ha.nguyen@boku.ac.at
Phone: +43 1 47654-75215
Biography: Dr. Thu-Ha Nguyen obtained her degrees from TU Delft in the Netherlands (Biochemical Engineering, MSc, 2002) and BOKU - University of Natural Resources and Life Science in Vienna, Austria (Food Biotechnology, PhD, 2006). She has been working at the Food Biotechnology Laboratory at BOKU Vienna as post-doc, senior post-doc and later as scientific researcher. Her research focuses on biotechnologically relevant enzymes from lactic acid bacteria and bifidobacteria and their application in biotransformations and biocatalysis as well as on protein expression, secretion and anchoring. She (co-) authored more than 35 peer-reviewed papers and several book chapters.

Work conducted during the research stay

A co-research project between the Faculty of Veterinary Medicine, Chiang Mai University, Thailand and the Institute of Food Biotechnology, BOKU University, Vienna, Austria on Expression and characterization of LacA, a GH42 beta-galactosidase from the human isolate *Bifidobacterium breve* was continued. The LacA beta-galactosidase was constructed into the plasmid and transformed to the *E. coli* at the Institute of Food Technology, University of Natural Resources and Life Sciences, Vienna. The obtained LacA plasmid is ready for further characterization.

Furthermore, I have been working on production of galacto-oligosaccharide (GOS) from *L. bulgaricus* and produced the total of 2 kilograms GOS by using lactose as substrate. The GOS products has been brought to Thailand for further collaborative study on the properties of GOS as feed additive in animals.

In addition, I have discussed with the 2 research partners include Prof. Dietmar Haltrich (head of the institute of Food Biotechnology, BOKU) and Mag. Georg Mlynek, (postdoc of the Centre for Optimised Structural Studies - Max F. Perutz Laboratories). The discussion covered planning for continuing the beta-galactosidase structures project, interpretation of the results obtained and drafting a manuscript for publication. Additional work from the Centre for Optimised Structural Studies - Max F. Perutz Laboratories is needed to complete the study.

Visiting research report

The study of a new lead-free ferroelectric fluorite-structured hafnium oxide (HfO₂) and investigation of electrical fatigue of lead free ferroelectric BCZT

Klaus Reichmann is associated professor and affiliated to the Institute of Chemistry and Technology of Materials at Graz University of Technology. He is active in the field of functional ceramics covering dielectrics, piezoelectrics, relaxor materials as well as conductive oxides. He is Vice Head of the Institute and Dean for Study Affairs for the study programmes Technical Chemistry and Environmental System Sciences. Since 2016 he is President of the Austrian Ceramic Society and since 2017 he is member of the Scientific Board of the Christian Doppler Research Association. E-Mail: k.reichmann@tugraz.at

Associate Professor Dr. **Soodkhet Pojprapai** completed his Ph.D. at UNSW, Australia in 2009. He currently works as a professor and researcher at the School of Ceramic Engineering, and School of Materials Engineering, Suranaree University of Technology, Nakhon Ratchasima, Thailand. His research field is functional ceramic materials such as ferroelectric materials. Recently, he received many international grants including ASEA-UNINET (from Austria in 2013), Newton Fund (from UK in 2015 and 2017). He also received Bernd Rode Award (Austria) as an outstanding researcher in 2017. E-Mail: soodkhet@g.sut.ac.th

This short report presents the research activities of Assoc. Prof. Dr. Soodkhet Pojprapai with Prof. Dr. Reichmann at Graz University of Technology and Dr. Deluca at the Materials Center Leoben Forschung GmbH. The characterization of the ferroelectric properties of BCZT and the ferroelectric thin film of La-doped HfO₂ was conducted. The preliminary results obtained from the investigation were reported in this document.

1. Executive summary

During visiting period, Prof. Dr. Reichmann and principal investigator (Soodkhet Pojprapai) performed scientific experiments based on ferroelectric properties measurement of BCZT ceramics and HfO₂ thin film. BCZT ceramic was fabricated at Suranaree University of Technology by using solid state reaction method. HfO₂ thin films with different amount of La dopants were fabricated at Synchrotron Light Research Institute, Thailand by sol-gel method. The permittivity as a function of temperature of BCZT ceramics and ferroelectric polarization hysteresis behavior of HfO₂ thin films were investigated at Graz University of Technology.

From the measurement, we observed the broad permittivity peaks of BCZT ceramic and Currie temperature is around 70 °C as shown in Fig (1). For HfO₂ thin film, we cannot find the PE hysteresis pattern. This could be because of the non-homogenous of the film which can be investigated from SEM as shown in Fig. 2.

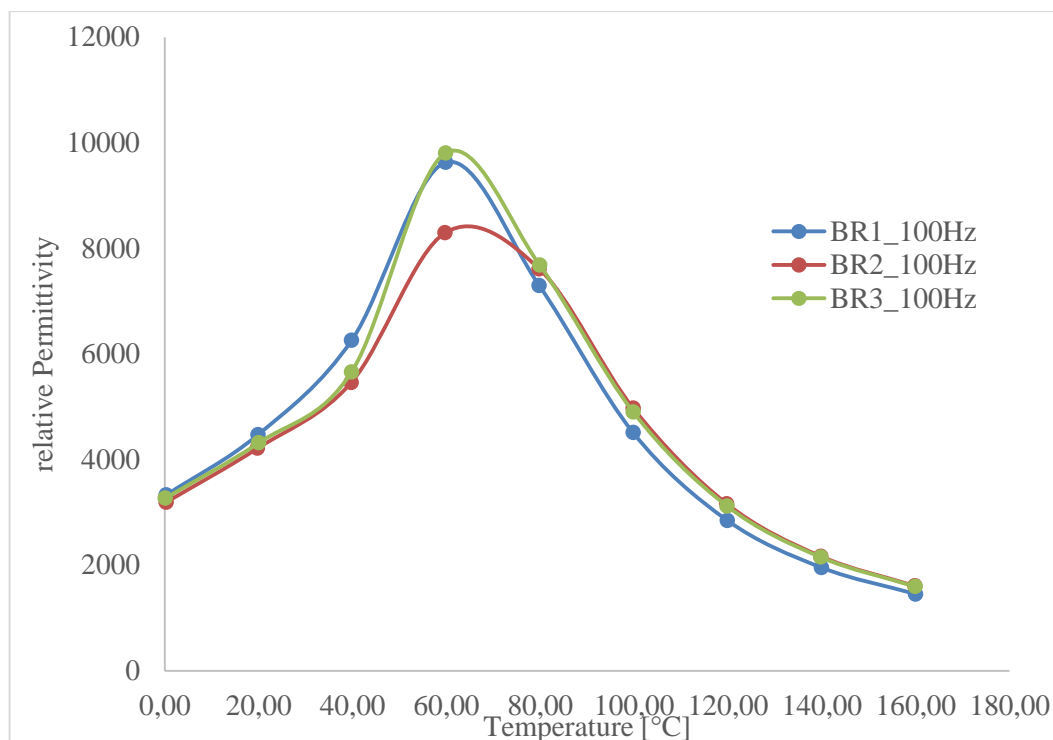


Fig. 1 Relative permittivity as a function of temperature of 3 samples of BCZT.

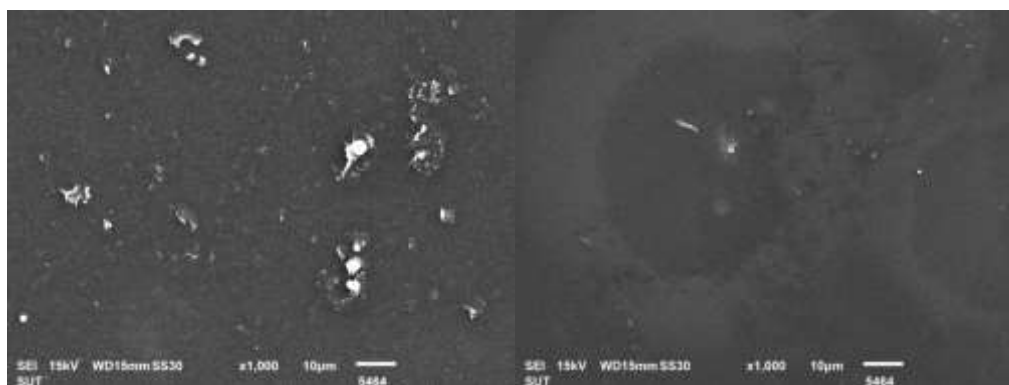


Fig. 2 Micrographs of HfO₂ thin film from SEM showing non-homogeneous structure; (left) Hf_{0.8}La_{0.2}O₂ and (right) Hf_{0.5}La_{0.5}O₂.

2. Research activities

The research activities during visiting the Graz University of Technology are described as following:

Week 1: Chief investigator discussed with Prof. Reichmann preparing Thin film samples for PE ferroelectric measurement.

Week 2: Chief and co-investigator conducted PE measurement of HfO₂ thin film.

Week 3: Co-investigator investigated the relative permittivity of BCZT ceramics as a function of temperature.

Week 4: Chief investigator discussed with Dr. Deluca at the Materials Center Leoben to continue the future collaboration related to lead-free ferroelectric ceramics.

3. Further work

Some remained works such as data analysis on PE ferroelectric measurement, and preparing manuscript for publication are carried on Suranaree University, Thailand. BCZT ceramic samples with different compositions will be sent to Prof. Reichmann to measure permittivity as a function of temperature.

Scholarship Report

Name: Suthida Authayanun

Contact detail: Srinakharinwirot University, Ongkharak, Nakhon Nayok, Thailand, 26120, Telephone: +66870821883, E-mail: suthidaa@g.swu.ac.th

Title of Project: Thermal coupling of high temperature polymer electrolyte membrane fuel cell (HT-PEMFC) stacks and metal hydride storage for automotive application

Scholarship Type: Bernd Rode Award 2017

Duration of the Stay: 1/06/2018 -29/06/2018

Biography

Suthida Authayanun is an assistant professor at Department of Chemical Engineering, Faculty of Engineering, Srinakharinwirot University, Thailand. Her research interests include the renewable hydrogen production, fuel cells and process simulation and design.

Viktor Hacker is a professor at Institute of Chemical Engineering and Environmental Technologies, Graz University of Technology, Austria. He is also the head of laboratory for fuel cell systems.

To support the commercialisation of fuel cells, the developments of hydrogen storage and hydrogen infrastructure are important issues. Presently, hydrogen storage systems based on metal hydrides are a preferable option due to their high energy densities and the low operating pressure of hydrogen. The integration of the HT-PEMFC stack and the metal hydride storage tank allows the usage of the heat produced in the fuel cell in the metal hydride storage to enhance the hydrogen release rate. The metal hydrides were found to be of particular interest because of their capability to reversibly store hydrogen safe, in large quantities with and with high volumetric density. Alkali metal-based complex aluminium hydrides are potential candidates for hydrogen storage materials at mild pressures and temperature with high theoretical hydrogen capacities. There are two types of light alkali metal derivatives (sodium alanates and lithium alanates) that are of special interest to

scientists and researchers because of their hydrogen capacity of approx. 7 wt% and low temperatures for hydrogen desorption.

In this work, the metal hydride hydrogen containers are assembled inside the fuel cell stack firstly to remove the released heat of the electrochemical reactions of the fuel cells like cooling plates and secondly to supply hydrogen for the fuel cells, using the released heat for the of hydrogen in the metal hydride hydrogen containers (Fig. 1). The effect of key operating parameters such as pressure, temperature, current density on the hydrogen desorption, power generation and released heat from the electrochemical reaction have been investigated. High temperature and low pressure operations enhance the hydrogen desorption rate and the hydrogen yield. The maximum hydrogen yield of 3.4 wt% is achieved at the temperature of 473 K and the pressure of 0 bar. The utilisation of the heat generated in the fuel cells for hydrogen desorption in the metal hydride tanks has been studied at different temperatures. The heat generated in the fuel cells is sufficient for the hydrogen desorption process and the system efficiency increases with increasing temperature.

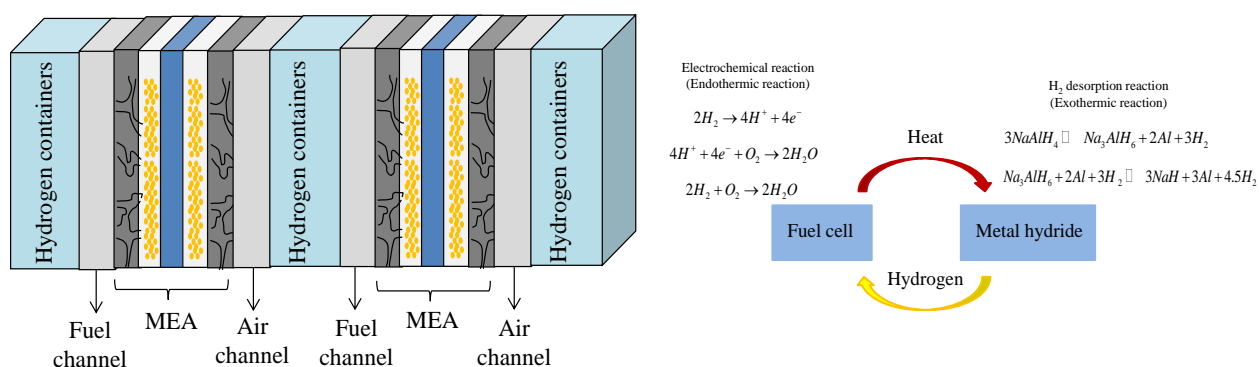


Fig. 1 Schematic of thermal coupling of metal hydride hydrogen storage and HT-PEMFCs.

Outputs

- Suthida Authayanun and Viktor Hacker, Theoretical study on thermal coupling of HT-PEMFCs and metal hydride storage system. (In preparation)

Report

Scholarship type: Bernd Rode Award 2017

Duration of the stay: 24 June – 29 July, 2018

Contact details and a short biography:

Name: Asst. Prof. Dr. Thanyada Rungrotmongkol, principle investigator

Department: Department of Biochemistry, Faculty of Science, Chulalongkorn University

E-mail address: thanyada.r@chula.ac.th

Title of the project: Molecular calculation on the activity and development of drugs

Objectives: To search for newly potent drugs by *in silico* and *in vitro* studies

Results

Based on fundamental mathematics and physics applied on protein structure, computational biology offers the potential of uniquely detailed, atomic-level insight into biomolecular structure and function, mechanisms of drug action, source of microbial resistance and mechanistic insights into enzyme catalysis. Successful examples in several biological problems are given as follows. In the outbreak of influenza A(H1N1)pdm 2009, models of the neuraminidase and M2-channel were built from the available 3D structures and the genomic sequence data of virions isolated from infected patients in southern California, A/California/04/2009 (H1N1). From molecular dynamics (MD) results, the stockpiling oseltamivir can inhibit this virus mainly through electrostatic interaction with neuraminidase, while the adamantanes cannot block the proton transfer through M2-channel due to S31N mutation. Using computer-aided drug design techniques, the newly designed and screened compounds specifically targeted at neuraminidase, dengue E protein, DNA topoisomerase and EGFR have shown high activity in enzyme and/or cell based assays. Protein conformational change upon ligand binding and molecular recognition in between drug/inhibitor-protein, peptide-protease, peptide-MHC class I/II, and host membrane sialylated glycans-glycoprotein have been revealed by MD and principle component analysis. Mechanistic details of enzyme-catalyzed reactions on proteolytic cleavage in viral and host proteases, DNA polymerization in HIV-1 RT, and Michael addition in thymidylate synthase was investigated by combined QM/MM techniques, which could describe the enzymatic reaction, catalytic rate constant, crucial residues, and short-lived species (transition states and intermediates) in a more accurate way.

Report

Scholarship type: Bernd Rode Award 2017

Duration of the stay: 16 June – 17 August, 2018

Contact details and a short biography :

Name: Miss Kamonpan Sanachai, Ph.D. student

Department: Department of Biochemistry, Faculty of Science, Chulalongkorn University

Advisor: Assistant Professor Dr. Thanyada Rungrotmongkol

Title of the project: Computational screening on quinone and pyrazolone compounds for bone marrow cancer treatment

Objectives: To theoretically elucidate the anticancer activity and its underlying mechanism(s) of potent compounds

Results

Janus kinase/signal transducer and activator of transcription (JAK/STAT) pathway is a well-known bone marrow cancer regulation system in the body. This system is the major signaling in response to immune system. Mutation of JAK can cause the bone marrow cancers and related diseases such as immunomodulatory diseases and neoplastic (mainly hematological) disorders. If JAK is inhibited, it could reduce the risk of cancers. In this research, the analogs of quinone and pyrazolone were focused for molecular screening towards JAK proteins, JAK1, JAK2 and JAK3. Molecular docking study was performed by FlexX and GOLD docking programs. The binding affinity of all compounds were ranked and compared with the known inhibitors, tofacitinib and ruxolitinib. The results revealed that interaction energy order ranked from both docking programs were similar. Furthermore, the interaction mechanism of drug (tofacitinib, a competitive inhibitor) with JAKs at atomic level was investigated using molecular dynamics simulations. The obtained results revealed that tofacitinib interacted with all kinds of JAKs at the ATP site. Intermolecular hydrogen bond strengths were relatively similar in all three types of JAKs. Leu and Glu residues in the hinge region strongly stabilized tofacitinib binding. The MM/PBSA and MM/GBSA binding free energies of tofacitinib/JAKs were ranked as JAK3 < JAK2 < JAK1. Based on the tofacitinib/JAK trajectories, the quinones, pyrazolones and drugs from available databases were screened for new drug candidate using virtual screening pharmacophore modeling technique. As a result, 6 hit compounds could be inhibitor for all JAKs, while 45, 11 and 34 compounds could be specially bind with JAK1, JAK2 and JAK3, respectively. The compounds with low binding energy than drug from docking study and the hit compounds from virtual screening pharmacophore modeling were selected for *in vitro* study for further developing anti-cancer agents against JAKs.

Report

Scholarship type: Bernd Rode Award 2017

Duration of the stay: 1 October – 7 December, 2018

Contact details and a short biography :

Name: Miss Wanwisa Panman

Department: Departmental of Petrochemistry and Polymer, Faculty of Science,
Chulalongkorn University

Advisor: Professor Dr. Supot Hannongbua

Title of the project: Molecular dynamics study of single-wall carbon nanotube wrapped with polypropylene

Objective: To demonstrate how AMY and CS could diminish such problems by non-covalent modification on outer surface of single-walled CNT using molecular dynamics (MD) simulations.

Results

Nowadays, the nanocomposite materials have been widely used in various applications due to their unique properties such as thermal and electrical properties. Polymer/carbon nanotube (CNT) nanocomposite is one the important nanocomposite materials that are manufactured for improving thermal conductivity and electrical properties of polymers. Unfortunately, polypropylene (PP)/CNT preparation is difficult because of CNT dispersion and aggregation. Accordingly, amylose (AMY) and chitosan (CS) are selected in the present study in order to demonstrate how AMY and CS could diminish such problems by non-covalent modification on outer surface of single-walled CNT using molecular dynamics (MD) simulations. The MD results reveal that AMY wrapped on CNT could induce the binding efficacy of PPs (atactic polypropylene (aPP), isotactic polypropylene (iPP) and syndiotactic polypropylene (sPP)) toward CNT by a significant reduction of distance between the center residue located on each amylose spiral and the adjacent one, especially for iPP and sPP systems. The radius of gyration shows that PPs spirally wrapped around CNT. Additionally, electrostatic attraction is found to be the main interaction inducing PPs to become spirally contacted with CNT. In case of CS modification, it can induce PPs 18 binding but not in a spiral-shape on CS outer surface. The radius of gyration of PPs in CS modified CNT system 19 conflicts with that of AMY model due to it interact with CNT/CS in snake-like shape of electrostatic interaction.

Appendix

Approved ASEA-UNINET Projects Proposals 2018

Classified by the Austrian member universities

Callout: TH Thailand
PK Pakistan
VN Vietnam
RI Indonesia
MAL Malaysia
MMR Myanmar
RP Philippines

University of Vienna

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Dept für Lithosphärenforschung, Fakultät für Geowissenschaften, Geographie und Astronomie	Petrochronologische Untersuchungen in Basement- und Intrusionssuiten von Thailand	Chulalongkorn University, Faculty of Science, Department of Geology	x						
Forschungsgruppe Multimedia Information Systems, Fakultät für Informatik	PhD Seminars and Joint PhD Supervision	Chiang Mai University, Faculty of Information Technology King Mongkut's University of Technology North Bangkok	x x						
Institut für Physikalische Chemie, Fakultät für Chemie	Hybrid materials for bioselective sensors	Kasetsart University, Faculty of Science, Department of Biochemistry and Faculty of Pharmaceutical Sciences Prince of Songkla University Hat Yai	x x						
Dept für Lithosphärenforschung, Fakultät für Geowissenschaften, Geographie und Astronomie	Application of microstructure analysis and geochronology to petroleum related strike-slip zones in Thailand	Chulalongkorn University, Faculty of Science, Department of Geology	x						
Department für Pharmazeutische	Natural products - characterization and modifications to increase the	Chiang Mai University, Faculty of	x						

Technologie und Biopharmazie, Fakultät für Lebenswissenschaften	bioactivity of active compounds	Pharmacy							
Institut für Physikalische Chemie, Fakultät für Chemie	Both groups involved into this project are highly active in the field of molecular imprinting, which is a technique allowing for synthesizing highly selective matrices based on fully artificial, polymer-based receptor materials. Molecular imprinting into polymers has established itself as one of the most productive tools in generating artificial recognition materials.	Prince of Songkla University Hat Yai, Faculty of Pharmaceutical Sciences	x						
Institut für Physikalische Chemie, Fakultät für Chemie	Structural study of hydrogels wound dressing based on Mesona chinensis and poly(vinyl alcohol) by using attenuated total reflectance Fourier transform infrared spectroscopy	Chiang Mai University, Faculty of Science, Department of Chemistry	x						
Institut für Theoretische Chemie, Fakultät für Chemie	NMR-Spektroskopie und Molekülrechnungen an Einschlussverbindungen	Chulalongkorn University, Faculty of Science, Department of Biochemistry	x						
Institut für Theoretische Chemie, Fakultät für Chemie	Theoretische Methoden des Drug Design	Chulalongkorn University, Department of Biochemistry, Computational Chemistry Unit Cell	x						
Institut für Bildungswissenschaft, Fakultät für Philosophie und Bildungswissenschaft	Borderlands and spaces - Exploring spheres of inclusive education in Bangkok and along Thai-Myanmar borderlands	Srinakharinwirot University, Department of Special Education,	x						
Institut für Geographie und Regionalforschung, Fakultät für Geowissenschaften, Geographie und Astronomie	The impact of relocation modes on livelihood rehabilitation and recovery after disasters - A comparative study of populations affected by the 2010 Merapi volcano eruption in Yogyakarta and the 2006 mud volcano eruption in Sidoarjo, Indonesia	Universitas Gadjah Mada, Faculty of Cultural Sciences, Department of Anthropology				x			
Institut für Kultur- und Sozialanthropologie, Fakultät für Sozialwissenschaften	Dark Tourism in the Wake of Natural Disasters in Indonesia	Universitas Gadjah Mada, Department of Anthropology Institute of Technology Sepuluh Nopember (ITS)				x			
Institut für Publizistik- und Kommunikationswissenschaft, Fakultät für Sozialwissenschaften	Feldforschung und Intensivworkshops zu lokal geformten kreativen Praktiken der visuellen Eindruckssteuerung von Jugendlichen aus urbanen Regionen in Malaysia, Vietnam und Österreich	University Kebangsaan Malaysia, Faculty of Social Sciences and Humanities, School of Media and Communication					x		
Department für	Healthy Aging und präventive Ernährung: die Rolle von Mikrobiota und der	Universiti Sains Malaysia School of					x		

Ernährungswissenschaften, Fakultät für Lebenswissenschaften	epigenetischen Regulation	Industria technology Chulalongkorn University, Faculty of Allied Health Sciences, Nutrition	x									
14 projects			number of participations of each ASEAN partner country			13	0	0	3	2	0	0

Vienna University of Technology (TU Wien)

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Institut für Kunstgeschichte, Bauforschung und Denkmalpflege	Sustainable Hygiene Concept as a mandatory conservation aspect for people, paintings on paper and drawings and the buildings of Museum Affandi <i>Project in cooperation with the Danube-University Krems</i>	Institute Seni Indonesia Universitas Gadjah Mada, Faculty of Engineering, Department of Architecture and Planning				x x			
Institut für Kunstgeschichte, Bauforschung und Denkmalpflege	Transformation of Traditional Architecture for a Sustainable Development in Flores, Indonesia	Gadjah Mada University, Faculty of Engineering, Department of Architecture and Planning				x			
Institut für Kunstgeschichte, Bauforschung und Denkmalpflege	The Influence of Daylight and Natural Airflow in the Architecture of the Museum Affandi, Yogyakarta <i>Project in cooperation with the Danube-University Krems</i>	Universitas Gadjah Mada, Faculty of Engineering, Department of Architecture and Planning				x			
Department für Raumplanung, Fachbereich Örtliche Raumplanung und Arbeitsbereich für Räumliche Simulation und Modellbildung	Regional Planning Strategies for a Sustainable Development in Tourism for the Region of Manggarai and the World Heritage Komodo Island, Flores Indonesia	Universitas Gadjah Mada, Faculty of Engineering, Department of Architecture and Planning				x			
Department für Geodäsie und Geoinformation	EMPOWERING LOCATION-BASED SERVICES IN TRANSPORTATION: STATE OF ART IN MALAYSIA AND AUSTRIA	Universiti Teknologi Mara, Faculty of civil engineering Universiti Malaysia Sarawak, Department of civil engineering Universitas Gadjah Mada,					x x		

		Department of Civil and Environmental Engineering				x			
Forschungsbereich für Verkehrsplanung und Verkehrstechnik	SMART TRANSPORTATION MOBILITY: STATE OF ART IN ASEAN AND AUSTRIA	Universiti Teknologi Mara, Faculty of civil engineering Chulalongkorn University, Department of civil engineering	x				x		
Forschungsbereich für Verkehrsplanung und Verkehrstechnik	SMART TRANSPORTATION MOBILITY: STATE OF ART IN ASEAN AND AUSTRIA - PHASE 2	Universiti Teknologi Mara, Faculty of civil engineering Universitas Gadjah Mada, Department of Civil and Environmental Engineering Chulalongkorn University, Department of civil engineering	x			x	x		
Institute of Software Technology and Interactive Systems	Head in the clouds – Digital Learning in Indonesia	Institute Teknologi Bandung				x			
Institute of Software Technology and Interactive Systems	Towards an alliance for distributed ethnomusicology data <i>Project in cooperation with the University of Music and Performing Arts Vienna (mdw)</i>	Mahidol University, College of Music	x						
9 projects			3	0	0	8	4	0	0

Vienna University of Economics and Business (WU)

Applicant	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Dean for International Affairs	International Summer University (ISU) Indonesia	Universitas Gadjah Mada, Faculty of Economics and Business				x			
Dean for International Affairs	International Summer University (ISU) Vietnam	Hanoi University of Science and Technology (HUST), Inspection and Legislation Office National Economics University, International Cooperation			x				
					x				

		Department							
2 projects	number of participations of each ASEAN partner country		0	0	2	1	0	0	0

University of Natural Resources and Life Sciences, Vienna (BOKU)

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Institut für Angewandte Geologie	Geoarchäologische Untersuchung einer prähistorischen Fundstelle auf einem reliktschen Bergsturz (Krabi, Thailand)	Chulalongkorn University, Department of Geology Silpakorn University, Department of Archaeology	x x						
Food Biotechnology Lab, Department of Food Science and Technology	ENZYMES FROM LACTIC ACID BACTERIA AND THEIR APPLICATIONS IN BIOSYNTHESIS OF HEALTH-RELATED PRODUCTS	Prince of Songkla University, Faculty of Agro-Industry, Department of Industrial Biotechnology University of Danang, Department for Microbiology and Molecular Biology Hanoi University of Science and Technology, School of Biotechnology and Food Technology	x		 x x				
Zentrum für Entwicklungsforschung (CDR)	Toxic components in the Indonesien food chain - Mycotoxin versus pesticide contamination in rice comparing conventional and organic production systems	Universitas Gadjah Mada, Department of Food and Agricultural Product Technology				x			
Institut für Bodenforschung (IBF)	Soil recultivation activities on ex-tin mining areas for agricultural use in Sumatra on Bangka Island	Universitas Gadjah Mada, Department of Food and Agricultural Product Technology, Department of Agricultural and Biosystem Engineering				x			
Department für Chemie	Entwicklung und Implementierung von analytischen Methoden zur Spezierung von Arsen und Seien in Reis	Hanoi University of Science and Technology, Department of Analytical Chemistry			x				
Deptartment für Lebensmittelwissenschaften und -technologie	Protein secretion and cell surface display in lactic acid bacteria	Vietnam National University HCMC, Department of Molecular and Environmental Biotechnology			x				

Department für Lebens- mittelwissenschaften und -technologie	Development of an oral vaccine against white-spot syndrome virus in shrimp	Hanoi University of Science and Technology, School of Biotechnology and Food Technology			x							
7 projects			number of participations of each ASEAN partner country			3	0	5	2	0	0	0

University of Veterinary Medicine, Vienna

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
VetCore Facility for Research	Workshop Biological Mass Spectrometry in Metabolomics, Proteomics and Drug Discovery	Khon Kaen University, Faculty of Pharmaceutical Sciences	x						
1 project			number of participations of each ASEAN partner country						
			1	0	0	0	0	0	0

Medical University of Vienna

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P			
Vizerektorat für Lehre / International Office for Student & Staff Affairs	Famulaturprogramm mit Universitäten in Thailand, Vietnam, Indonesien	Chiang Mai University, Faculty of Medicine	x									
		Chulalongkorn University, Faculty of Medicine	x									
		Mahidol University, Faculty of Tropical Medicine, Faculty of Medicine	x									
		Khon Kaen University, Faculty of Medicine	x									
		Gadjah Mada University Hospital, Faculty of Medicine				x						
		University of Medicine and Pharmacy Ho Chi Minh City			x							
1 project			number of participations of each ASEAN partner country			4	0	1	1	0	0	0

University of Music and Performing Arts Vienna (mdw)

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Institut Leonard Bernstein - Bläser und Schlagwerk	Meisterkurs für Trompete	Mahidol University, College of Music	x						
Institut 7 - Gesang, Lied, Oratorium	Materclasses für Kammermusik und Violine	Mahidol University, College of Music	x						
Institut Anton Bruckner	Generalbass-Kurs für Pianist_Innen (Einsteiger_Innen und mäßig Fortgeschrittene)	Mahidol University, College of Music	x						
Josef Hellmesberger Institut für Streichinstrumente	YOUNG MASTERS Workshops and Young Artists Exchange	Mahidol University, College of Music, STRING & CHAMBER MUSIC DEPARTMENT	x						
Institut A. Salieri	Masterclass,Workshop for Voice & Korrepetition. Schwerpunkte: Stimm- und Atemtechnik. Interpretation in der Wiener Tradition bei den Mozart Opern.	Mahidol University, College of Music, Institut für Gesang	x						
Institut 22 - Musikalische Akustik	Towards an alliance for distributed ethnomusicology data) <i>Project in cooperation with the TU Wien</i>	Mahidol University, College of Music	x						
Institut für Gesang und Musiktheater	OPERNLITERATUR (ARIEN): REPERTOIRE UND INTERPRETATION	Vietnam National Academy of Music, Institut für Gesang			x				
Joseph Haydn Institut für Kammermusik, Alte Musik und Neue Musik	Masterclas and concert with Hanoi Philharmonic Orchestra	Vietnam National Academy of Music Hanoi			x				
Vizerektorat für Außenbeziehungen	ISA (Internationale Sommerakademie) Incoming Stipendien	Mahidol University, College of Music Chulalongkorn University	x x						
9 projects			8	0	2	0	0	0	0

University of Applied Arts Vienna

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Rectorship	Capacity Building in Conservation in Thailand - Paintings Conservation Workshop	Silpakorn University, International College	x						
1 project number of participations of each ASEAN partner country			1	0	0	0	0	0	0

Montanuniversität Leoben

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Lehrstuhl für Allgemeinen Maschinenbau	Fatigue life extension of welded steel structures by High Frequency Mechanical Impact (HFMI) treatment under constant and variable amplitude loading	Universiti Teknologi Mara, Faculty. of Mechanical Engineering					x		
1 project number of participations of each ASEAN partner country			0	0	0	0	1	0	0

University of Graz

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Institute of Chemistry - Analytical Chemistry	Development of New Electrochemical Sensors Based on Nonparticles with Thai Universities	Ubon Ratchathani University, Department of Chemistry	x						
		Chulalongkorn University, Department of Chemistry	x						
Institute of Chemistry - Analytical Chemistry	Development of New Electrochemical Sensors Based on Nonparticles with Hue University	Hue University, Department of Chemistry			x				
Institute of Chemistry - Analytical Chemistry	„Mass spectrometry meets electrochemistry“. Development of complementary methods using elemental and molecular mass spectrometry for performance validation of electrochemical sensors	Ubon Ratchathani University, Department of Chemistry	x						
Institut für pharmazeutische Wissenschaften –	Untersuchungen zur Sicherheit, Qualität und Wirksamkeit von Arznei- und Gewürzpflanzen und deren Produkte	Prince of Songkla University, Faculty of Pharmaceutical Sciences Mahidol University, Department of	x						

Pharmakognosie		Pharmacognosy	x						
Institut für pharmazeutische Wissenschaften – Pharmakognosie	Optimierung von Extraktionsmethoden von hochwirksamen Naturstoffen aus pflanzlichem Material durch grüne Chemie kombiniert mit der Response Surface Methodik	Ubon Ratchathani University	x						
Institut für Systemwissenschaften, Innovations- und Nachhaltigkeitsforschung	Grey energy transitions in South-East Asia – flipside of sustainability transitions in developed countries?	Prince of Songkla University, Faculty of Environmental Management	x						
Institut für Geographie und Raumforschung	Plastic Planet: Global-Local Connectivities of Plastic Waste in Eastern Indonesia	Udayana University, Bali, Center for International Programs				x			
Institute of Chemistry - Analytical Chemistry	GCMS as analytical tool for monitoring environmental pollution (PAH, PCB's)	Hue University, Department of Chemistry			x				
Institut für Mathematik und wissenschaftliches Rechnen	Mathematical Theory and Application of Stabilisation by Noise of Partial Differential Equations	Hanoi University of Science and Technology, School of Applied Mathematics and Informatics			x				
NAWI Graz Geocentre (Petrology and Geochemistry)	GEOCHEMISTRY AND GEOCHRONOLOGY OF GRANITOIDS IN THE SOUTHWEST OF VIETNAM, IMPLICATION FOR THE MESOZOIC - PACIFIC MAGMATISM	Vietnam National University HCMC, Department of Petrology & Mineral Resources Chulalongkorn University, Department of Geology			x x				
10 projects			7	0	5	1	0	0	0

Graz University of Technology (TU Graz)

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Institute of Applied Mechanics	Calibration of Constitutive models for soils and coarse-grained rockfills	Suranaree University of Technology, School of Civil Engineering	x						
Institut für Bodenmechanik und Grundbau	Advanced Computational Geotechnics – A 5-days special course for students and practical engineers	Bandung Institute of Technology (ITB), Civil Engineering Department				x			
Institut für Wasserbau und	Sedimentation Prozesse Sperre Sengguruh (Central-Java)	Institut Teknologi Sepuluh Nopember				x			

Wasserwirtschaft		(ITS)										
Institut für Wasserbau und Wasserwirtschaft	Implementation of numerical methods for reservoir sedimentation processes	Institut Teknologi Sepuluh Nopember (ITS), Laboratory of Hydraulics and Coastal Engineering				x						
Institut für Biochemie	Hands on course on high performance liquid chromatography (HPLC) and thin layer liquid chromatography (TLC)	Institut Teknologi Sepuluh Nopember (ITS), Faculty of Science, Biology Department.				x						
Institut für Anorganische Chemie	The effect of chain length on mesomorphic and rheological studies of anhydrous branched-chain glycolipids	University of Malaya, Department of Chemistry					x					
Institut für Molekulare Biologie	Crystallization of fungal carboxylate reductase	Universiti Kebangsaan Malaysia, School of Biosciences and Biotechnology					x					
Institut für Felsmechanik und Tunnelbau	Short Course on Tunnel Technology and Contract Management	Universiti Teknologi Mara, Department for Infrastructure Engineering and Sustainable Management					x					
Institute for Molecular Biotechnology	Biocatalysis in non-conventional solvents	University of the Philippines, College of Science, Institute of Chemistry							x			
Institut für Physikalische und Theoretische Chemie	Kinetic Photochemical Investigations using a LED-based Spectrometer	Hanoi University of Science and Technology (HUST), School of Chemical Engineering, Department of Analytical Chemistry			x							
Institut für Prozess- und Partikeltechnik	Biogene Rohstoffe, Resource Efficiency and Cleaner Production in the Mekong Delta	Vietnam National University HCMC, Institute of Environment and Resources			x							
Institut für Numerische Mathematik	Numerical Methods for PDE Constrained Optimization Problems	Hanoi University of Science and Technology (HUST), School of Applied Mathematics and Informatics			x							
12 projects			number of participations of each ASEAN partner country			1	0	3	4	3	0	1

Medical University of Graz

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Vizerektorat für Studium und Lehre	Clinical Elective Exchange Program	Chiang Mai University, Faculty of Medicine Chulalongkorn University, Faculty of Medicine Khon Kaen University, Faculty of Medicine Mahidol University, Faculty of Medicine Gadjah Mada University, Faculty of Medicine University of Medicine and Pharmacy HCMC, International Relations	x x x x						
1 project			4	0	1	1	0	0	0
number of participations of each ASEAN partner country									

University of Music and Performing Arts Graz (KUG)

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Institut für Ethnomusikologie	Choreomusicology - Theories, Methods and Approaches from a Cultural Perspective	Universiti Putra Malaysia, Department of Music					x		
Institut für Ethnomusikologie	Academic Exchange: lectures and workshops	Universiti Sains Malaysia, School of the Arts, Department of Music					x		
2 projects			0	0	0	0	2	0	0
number of participations of each ASEAN partner country									

Danube University Krems

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
European Research	The Influence of Daylight and Natural Airflow in the Architecture of the	Universitas Gadjah Mada, Faculty of				x			

Centre for Book and paper Conservation-Restoration, Zentrum für Kulturgüterschutz, Department für Bauen und Umwelt	Museum Affandi, Yogyakarta <i>Project in cooperation with the TU Wien, Institut für Kunstgeschichte, Bauforschung und Denkmalpflege</i>	Engineering, Department of Architecture and Planning										
European Research Centre for Book and paper Conservation-Restoration, Zentrum für Kulturgüterschutz, Department für Bauen und Umwelt	Sustainable Hygiene Concept as a mandatory conservation aspect for people, paintings on paper and drawings and the buildings of Museum Affandi <i>Project in cooperation with the TU Wien, Institut für Kunstgeschichte, Bauforschung und Denkmalpflege</i>	Universitas Gadjah Mada, Faculty of Engineering, Department of Architecture and Planning Institut Seni Indonesia				x						
						x						
2 projects			number of participations of each ASEAN partner country			0	0	0	3	0	0	0

Johannes Kepler University Linz (JKU)

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Institute of Telecooperation	Search by Concept for Indonesian Language	Gadjah Mada University, Department of Information Technology and Electrical Engineering				x			
Institute of Telecooperation	International Workshop on Intelligent Web Applications (IWA2018)	Gadjah Mada University, Dep. of Information Technology and Electrical Engineering				x			
2 projects			number of participations of each ASEAN partner country						
			0	0	0	2	0	0	0

University of Salzburg

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Interfaculty Department of Geoinformatics - Z_GIS	Geoinformatics Supporting Climate Resilient Agriculture in ASEAN Region	University of Transport and Communications Hanoi, Faculty of Civil Engineering Chiang Mai University, Department of			x				
			x						

		Geography Chulalongkorn University, Department of Geography Universitas Indonesia, Department of Geography University of the Philippines, Depart- ment of Geography Universiti Putra Malaysia, Department of Geography Universiti Putra Malaysia, Department of Biological and Agricultural Engineering Universiti Kebangsaan Malaysia, Department of Geography	x			x			x
Department Geography and Geology, Division Urban and Landscape Ecology	Urban Agriculture and Urban Gardening. Educational Module: Focus Area of Cooperation: Economic and Social Sciences, Asian Study Programs	Chulalongkorn University, Social Research Institute (CUSRI) Kasetsart University, Faculty of Architecture, Division of Urban and Environmental Planning	x x						
2 projects			4	0	1	1	3	0	1

Mozarteum University Salzburg

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
No project in 2018			0	0	0	0	0	0	0

University of Innsbruck (UIBK)

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Institut für Allgemeine, Anorganische und	AIC – ATC – APC Joint Labs 2018	Chulalongkorn University, Austrian- Thai Center for Computer-assisted	x						

Theoretische Chemie		Chemical Education and Research (ATC) Universitas Gadjah Mada, Austrian-Indonesian Center for Computational Chemistry (AIC) University of Karachi, H.E.J. Research Institute of Chemistry, Laboratory for Theoretical and Computational Chemistry		x		x						
Institut für Banken und Finanzen	Bringing Behavioral and Experimental Finance Expertise to Thailand	Chulalongkorn University, Business School (CBS)	x									
Institut für Pharmazie / Pharmakognosie	Identifizierung von entzündungshemmenden Naturstoffen aus vietnamesischen und thailändischen Pflanzen	University of Medicine & Pharmacy HCMC, Faculty of Pharmacy			x							
Institut für Analytische Chemie und Radiochemie	Monitoring of HPV-C Therapy Drugs Using Capillary Electrophoresis	University of Medicine & Pharmacy HCMC, Faculty of Pharmacy, Department of Analytical Chemistry and Drug Quality Control			x							
4 projects			number of participations of each ASEAN partner country			2	1	2	1	0	0	0

Medical University of Innsbruck (MUI)

Applying department	Project title	ASEAN partner universities	T H	P K	V N	R I	M A L	M M R	R P
Univ.-Klinik für Neurologie, Neurologische Intensivstation	ASEA-UNINET Austauschprogramm	Chiang Mai University, Faculty of Medicine	x						
		Chulalongkorn University, Faculty of Medicine	x						
		Mahidol University, Faculty of Medicine	x						
		Khon Kaen University, Faculty of Medicine	x						
		Universitas Gadjah Mada, Faculty of Medicine				x			

		University of Medicine and Pharmacy HCMC, Faculty of Medicine			x					
Univ.-Klinik für Neurologie, Neurologische Intensivstation	ASEA-UNINET Austauschprogramm	Suranaree University of Technology	x							
Univ.-Klinik für Neurologie, Neurologische Intensivstation	Teaching Course in Neurocritical Care Medicine in Karachi, Pakistan	University of Karachi, H.E.J. Research Institute of Chemistry		x						
Univ.-Klinik für HNO	Weiterführung und Ausbau eines Präventions- und risikospezifischen Krebsfrüherkennungsprogrammes und Kooperationsprogrammes im Rahmen des unter der Schirmherrschaft von ASEA-Uninet gegründeten Programmes ‚Yogyahealth‘ für das Jahr 2018	Universitas Gadjah Mada, Department of ENT and Head and Neck Surgery				x				
Biozentrum, Sektion für Experimentelle Pathophysiologie und Immunologie	14 th Integrated Hematology Teaching Week at Suranaree University of Technology (SUT)-institute of Medicine in 18-26. November 2018	Suranaree University of Technology (SUT), Institute of Medicine	x							
5 projects			number of participations of each ASEAN partner country							
Sum of approved projects in 2018: 85			6	1	1	2	0	0	0	
Total number of participations of each ASEAN partner country: 129			57	2	23	30	15	0	2	

SP24 Mobilities 2018

including 1-Month Staff Mobilities (Thailand)

	Name	Home Country	Home / Host University in Austria	Scholarship	Home / Host University in the ASEAN country	Periode	
1	Jiranan Piyaphongkul	Thailand	University of Salzburg	1-Month Staff	Kasetsart University	01.05-31.05.18	
2	Navaporn Sanprasert Snodin	Thailand	University of Vienna	1-Month Staff	Kasetsart University	01.06-30.06.18	
3	Benjamas Panomruttanarug	Thailand	TU Graz	1-Month Staff	King Mongkut's University of Technology Thonburi (KMUTT)	01.04-30.04.18	
4	Pitsanupong Kanjanapayont	Thailand	University of Vienna	1-Month Staff	Chulalongkorn University	01.04-30.04.18	
5	Peera Wongupparaj	Thailand	University of Graz	1-Month Staff	Burapha University	01.06-30.06.18	
6	Wongkot Phuphumirat	Thailand	University of Vienna	1-Month Staff	Prince of Songkla University	01.03-31.03.18	
7	Suwat Nanan	Thailand	TU Wien	1-Month Staff	Khon Kaen University, Thailand	01.06-30.06.18	
8	Aranya Siriphon	Thailand	University of Vienna	1-Month Staff	Chiang Mai University	01.06-30.06.18	
9	Thasaneeya Ratanaroutai Nopparatjamjornras	Thailand	WU Wien	1-Month Staff	Mahidol University	01.05-31.05.18	
10	Septian Dwi Cahyo	Indonesia	KUG Graz	SP24 Incoming	Indonesian Institute of the Arts	01.03-31.05.18	
11	Tran-Van, Hieu	Vietnam	BOKU	SP24 Incoming	Vietnam National University	15.10.-15.11.18	
12	Setyabudi, Francis C.M. Sigit	Indonesien	BOKU	SP24 Incoming	Universitas Gadjah Mada	01.09.-28.09.18	cancelled
13	Nguyen, Dang Giang Chau	Vietnam	University of Graz	SP24 Incoming	Hue University	01.12.-31.12.18	
14	Sasiwongsaroy, Kwanchit	Thailand	University of Vienna	SP24 Incoming	Mahidol University	01.11.-22.11.18	
15	Stange, Gunnar	Austria	University of Vienna	SP24 Outgoing	Mahidol University (Gastuniversität)	01.09.-30.09.18	
16	Ling, Jonathan	Malaysia	TU Graz	SP24 Incoming	National University of Malaysia	17.09.-15.10.18	
17	Dao, Viet Cuong	Vietnam	TU Graz	SP24 Incoming	University of Transport and Communications (UTC)	01.09.-30.09.18	
18	Tutschke, Wolfgang	Austria	TU Graz	SP24 Outgoing	University of Transport and Communications (UTC) (Gastuni	16.11.-15.12.18	
19	Samphao, Anchalee	Thailand	University of Graz	SP24 Incoming	Ubonrarchathani University	01.11.-30.11.18	
20	Chaiyo, Sudkate	Thailand	University of Graz	SP24 Incoming	Chulalongkorn University	01.11.-30.11.18	
21	Stefan Kutzenberger	Austria	University of Vienna	SP24 Outgoing	Universitas Airlangga	10.02.-03.03.19	

Bernd Rode Award (BRA) 2017 – Winners

Junior Category

Dr. Suthida Authayanun	Srinakharinwirot University	€ 2.500,-*
Dr. Montira Intanon	Chiang Mai University	€ 2.500,-*
Pensak Jantrawut	Chiang Mai University	€ 2.500,-*

Senior Category

Assist. Prof. Dr. Soodkhet Pojprapai	Suranaree University of Technology	€ 2.500,-*
Prof. Dr.rer.nat. Dedi Rosadi, S.Si., M.Sc.Eng.Math.	Universitas Gadjah Mada	€ 2.500,-*
MMag.DI.Dr. Monika Müller	University of Vienna	€ 2.500,-*

Project Excellence

Asst. Prof. Thanyada Rungrotmongkol	Chulalongkorn University	€ 4.500,-*
Dr. Lisa Madlberger	Vienna University of Technology	€ 4.500,-*

* Financial Award must be reinvested into ASEA-UNINET projects

Bernd Rode Award (BRA) 2019 – Winners

Submission in 2018

Junior Category

Dr. Bao Quoc Tang	University of Graz, Austria	€ 2.500,-*
Apinun Kanpiengjai, PhD.	Chiang Mai University, Thailand	€ 2.500,-*
Anh-Dung Tran, MsC .	Technical University of Vienna, AT	€ 2.500,-*

Senior Category

Pongtip Sithisarn, PhD.	Mahidol University, Bangkok	€ 2.500,-*
Weena Gera, PhD.	University of the Philippines Cebu	€ 2.500,-*
Manuel Joseph C. Loquias, Dr. Math.	University of the Philippines Diliman	€ 2.500,-*

Project Excellence

Dr. Anchalee Samphao	Ubon Ratchathani University, Thailand	€ 3.000,-*
Assoc. Prof. Tran Thi Dinh	Vietnam National University of Agriculture	€ 3.000,-*
Univ.-Prof. Dr. Annette Ostendorf	University of Innsbruck, Austria	€ 3.000,-*

* Financial Award must be reinvested into ASEA-UNINET projects