

## Overview of the International Activities in 2017

### International Experience 4 You

The event, **"International Experience 4 You"**, the first of which took place in 2011 at our old campus in Golzheim, in the cosy atmosphere of the Café Freiraum, became traditional in the meantime. In July of 2017, a further edition of the event series was experienced, for the first time, at our new campus in Derendorf, in the hall of the Mensa. The event was organized by **Prof. Benim** and **Ms. Atalay** and sponsored by the **International Office (Dr. M. Katz)**. The purpose of the event has been to enhance information exchange between the domestic and visiting students of the Department of Mechanical and Process Engineering (FB MV) in an informal and enjoyable atmosphere, with live music, drinks, foods and shows. This time, moderated by **Michael Diederich** (scientific employee FB MV), **incoming students** were **presenting their country and their university** with **slide shows and games (France: Nicky Chaigneau, Sebastien Moreira, Emilie Wendling; India: Arko Majumder, Ginu Rosemary George; Turkey: Batuhan Karakas)**. **Live music** was performed by **Hayriye Mercan (Turkey)** and **Ali Nahavandi** (scientific employee FB MV). There was an **international food contest**, where the **national food** from **different countries** was prepared and presented by the participants of the contest to the palatal delight of the attendees of the event, who, then, gave their vote according to their gusto. The **winners of the international food contest** were: **1. Place: Asli Ipekoglu, 2. Place: Zehra Yanik, 3. Place: Hayriye Mercan**).



Hayriye (Turkey) and Ali



The audience



India: Ginu and Arko



France: Nicky, Emilie, Sebastien



Food contest winners: Hayriye, Zehra, Asli

## Student Mobility

Since our English speaking Master Study Program "**Mechanical Engineering**" has been launched, the number of our regular students from abroad has increased. In 2017, **twenty-two students** from **India (19)**, **Pakistan (2)** and **Tunis (1)** have been enrolled within this program. Through the continuing **IGCHE** program, the number of enrolled students from **India** has been **twelve** in our Bachelor Study Programs. Within the **Erasmus** program, we had **twenty-five incomings** for **teaching (21 Turkey, 2 South Africa, 1 Brazil, 1 Romania)** and **twelve** for **internship (8 Turkey, 4 France)**. We totally had **eight outgoings** for **teaching and internship (4 Indonesia, 3 Portugal, 1 Turkey)**.

## International Contacts / Staff Mobility

**Prof. Niemann** visited the **Stellenbosch University** and the **Cape Peninsula University of Technology** in **South Africa** for maintaining the existing contacts. Prof. Niemann has also made a trip to **Malaysia** together with **Ms. Fussenecker** and **Mr. Schlösser** and initiated contacts to two universities in Kuala Lumpur.

**Prof. Benim** hosted a group of visiting scholars from the **Kumasi Technical University of Ghana**.



*Mr. Schlösser, Ms. Fussenecker, Prof. Niemann with Malaysian colleagues in Kuala Lumpur*



*Prof. Benim with Ghanaian colleagues in Düsseldorf*

## International Conference Visits

**Prof. Adam** and co-workers visited the "12th Conference on Sustainable Development of Energy, Water and Environment Systems (sdewes 2017), Dubrovnik in **Croatia** and "The 30th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2017) in San Diego, **USA**.

**Prof. Niemann** visited the "International Symposium in Management (SIM 2017)" in Timisoara, **Romania** and "25th Southern African Universities Power Engineering Conference (SAUPEC 201)" in **South Africa**. Together with his assistants **Ms. Fussenecker** and **Mr. Schlösser**, Prof. Niemann also visited the "4th International Congress on Technology Engineering and Science (ICONTESS)" in **Malaysia**.

**Prof. Benim** and Mr. Pfeiffelmann were visiting the "10th International Conference on Computational Heat, Mass and Momentum Transfer (ICCHMMT2017) in Seoul, **Korea**.

**Prof. Weber** visited the conference "Signal Processing and Robotics 17 (SPRA'17)" in Cambridge, **UK** and the "SPIE International conference on Remote Sensing" in Warsaw, **Poland**, as well as the conference "Integrated Systems & Management for Energy, Development, Environment & Health (ISMAEHE'17)" in Bern, **Switzerland**. An outstanding conference visit of Prof. Weber was the "European Geoscience Union (EGU17)" in Vienna, **Austria**, with more than 10,000 visitors.



*Mr. Schlösser, Ms. Fussenecker At ICONTESS conference, Malaysia*



*Prof. Weber in front of Murray Edwards Coll. of Univ. of Cambridge*



*Prof. Benim in the old city of Seoul, Korea*

## International Research



*Prof. Paik and Dr. Fomin*

**Prof. Jahr** visited his previous PostDoc **Dr. Alexey Fomin** at the **Institute of Robotics** of the reputed institution **EPFL** (École polytechnique fédérale de Lausanne), **Switzerland**.

The photo on the left shows **Dr. Fomin** with the institute's director (**Robotics, EPFL, Switzerland**) **Prof. Jamie Paik**.

**Prof. Jahr** could successfully integrate a number of **IGCHE-Students** (from **India**) in the research teams in different research projects in his institute **FMDAuto**, out of which a number of **Bachelor-Thesis** emerged.

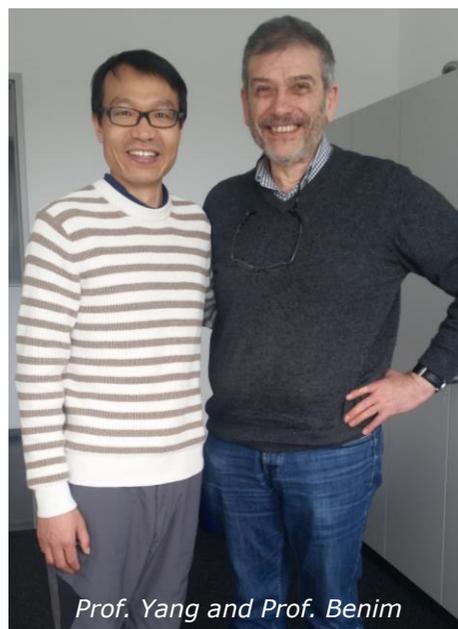
**Prof. Niemann** co-supervised a **M.Sc. Thesis** and a **Ph.D. Thesis** from the **Cape Peninsula University of Technology, South Africa**.

**Prof. Benim** hosted **Prof. Dr. Duoxing Yang** from the **Institute of Crustal Dynamics, Chinese Earthquake Administration, Beijing, P. R. China**, for three months, for joint research on the topic "Extension of the CE/SE Method to Turbulent Flows with Combustion". This visit was funded by the **German Research Foundation** (Deutsche Forschungsgemeinschaft, **DFG**).

A further international research collaboration in the laboratory of **Prof. Benim** has been **Mr. A. Hammoud**, who is a **Ph.D. student** at the University of Sciences and Technology Houari Boumedienne, **Bab Ezzouar, Algeria**, where **Prof. Benim** has been assigned as **co-supervisor** for the **Ph.D. Thesis** in the area of heat transfer enhancement by nanofluids. **Mr. Hammoud's** research stay in Germany is being funded by his home university.

**Prof. Benim** has been hosting **Dr. Saeedrashed** from **Erbil, Irak** (PhD from **Gaziantep University, Turkey**) as guest researcher, who is performing research on the simulation of environmental flows in large scale. **Dr. Saeedrashed** is currently funded by a fellowship program of the **Alexander von Humboldt Foundation**.

**Prof. Benim** also co-supervised three **M.Sc. Thesis** and from **Sakarya University, Turkey**. Additionally, he hosted a number of trainees, **four** from **Turkey** and **three** from **France**.



*Prof. Yang and Prof. Benim*



*Mr. Hammoud*



*Dr. Saeedrashed*



**Prof. Weber** had a research stay at the **University of Reykjavik, Island**, as guest of **Prof. Eliasson** and **Prof. Pálsson** concerning aircraft measurements of volcanic ash plumes. In the same area, **Prof. Weber** had contacts to the **Department of Geography** of the **University of Cambridge, UK**.

**Prof. Weber** and his team of the "**Laboratory of Environmental Measurement Techniques (UMT)**" continued the research cooperation with the "**Institute of Technologies and Renewable Energies, ITER**", **Tenerife, Spain**, having a joint exhibition and presentation at the "**EUROPEAN VOLCANOES NIGHT 2017**" on 29. September in La Orotava, Tenerife, Spain. During the period of earthquakes in October and subsequent degassing, **Prof. Weber** and his team supplied **ITER** with very sensitive gas measurement systems for the measurement of the poisonous gases  $H_2S$  and  $SO_2$  at critical areas on **La Palma**. In view of the present unrest of an **Icelandic volcano** and activities of the **Etna volcano** the **German Weather Forecast DWD** alerted **Prof. Weber** and the **UMT** team on 29. November to a research aircraft task within the **European VOLCEX** exercise. The **UMT** team was ready to fly with two aircraft, fully equipped with instrumentation for volcano emission monitoring, within four hours. This was especially acknowledged within the review-meeting of the "**International Civil Aviation Organization (ICA)**" in Lisbon, **Portugal**.

**Prof. Weber** and his **UMT** team continued the research on large scale fluxes of air pollution originating from power plants and industrial areas especially at the borders of the **Czech Republic** and **Poland**. This research was performed for the first time worldwide with combined measurements in the air by aircraft and on the ground by car. The research was funded by the **Environmental State Agency of Saxonia**. The air pollution data is now used by the **Environmental State Agency of the Czech Republic**.

## Official Positions at International Conferences

### Prof. Benim:

ASME Turbo Expo 2017, 26-30 June 2017, **Charlotte, NC, USA**,  
**Session Organizer** and **Co-Chair (Combustion Modelling)**.

10th International Conference on Computational Heat, Mass and Momentum Transfer, May 28-June 1, 2017, **Seoul, Korea**,  
**European Chair** of the Conference, **Invited Speaker**

International Conference on Materials & Energy (ICME 2017), 06-09 July 2017, **Tianjin, China**,  
**Member** of the **International Scientific Committee**

### Prof. Niemann:

International Conference on Manufacturing Engineering and Process (ICMEP 2017) 27-29 May 2017, **Lisbon, Portugal**  
**Member** of the **Technical Committee**

International Conference on Manufacturing and Industrial Technologies (ICMIT 2017) 27-29 May **Lisbon, Portugal**  
**Member** of the **Technical Committee**

International Conference on Mechanical and Aerospace Systems (ICMAS 2017) 09-10 November, Bucharest, Romania  
**Member** of the **Technical Committee**

### Prof. Weber:

17<sup>th</sup> International Conference on Signal Processing, Robotics and Automation (ISPRA '17) 24-26 February 2017, **Cambridge, UK**  
**Chairman, Invited Speaker**

## Publications in International Conferences and Journals

Rödder M, Frank L, Kirschner D, Neef M, **Adam M**: energiBUS4home – sustainable energy resourcing in low-energy buildings, *12. Conference on Sustainable Development of Energy, Water and Environment Systems (sdwes 2017)*, Dubrovnik, 4.-8.10.2017.

Reich M, **Adam M**, Lambach S. Comparison of different methods for approximating models of energy supply systems and polyoptimising the systems-structure and components-dimension, *The 30th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2017)*, San Diego, 2017-16 (2016) 1650011-1-15, doi: 10.1142/S0219519416500111.

Schlösser M, **Niemann J**. Industry 4.0 – Education out of a suitcase, *4th Internat. Congress on Technology Engineering and Science (ICONTES 2017) Kuala Lumpur, Malaysia*.

Fussenecker C, **Niemann J**. Implementation of eye-tracking technology into a holonic manufacturing system, *4th International Congress on Technology Engineering and Science (ICONTES 2017) Kuala Lumpur, Malaysia. The fifth best presentation award*.

**Niemann, J.**, Five contributions within the framework of FLIX, *International Symposium in Management (SIM 2017) Timisoara, Romania*.

**Benim AC**, Challenges in modelling turbulent combustion in land based gas turbine combustors", *Invited Keynote Lecture, 10th Int. Conference on Computational Heat, Mass and Momentum Transfer (ICCHM<sup>2</sup>T) May 28 - June 1 2017, Seoul, Korea*.

**Benim AC**, Iqbal S, Meier W, Joos F, Wiedermann A, Numerical investigation of turbulent swirling flames with validation in a gas turbine model combustor, *Applied Thermal Engineering* 110 (2017) 202-212.

Bhattacharyya S, Chattopadhyay H, **Benim AC**, Guin A, *Novel design of v-shape winglet turbulator for heat transfer enhancement in solar air-heater*, 10th Int. Conference on Computational Heat, Mass and Momentum Transfer (ICCHM<sup>2</sup>T) May 28- June 1 2017, Seoul, Korea.

Bhattacharyya S, Chattopadhyay H, **Benim AC**. Simulation of heat transfer enhancement in tube flow with twisted tape insert, *Progress in Computational Fluid Dynamics* 17 (2017) 193-197.

Bhattacharyya S, Chattopadhyay H, **Benim AC**, Computational investigation of heat transfer enhancement by alternating inclined ribs in tubular heat exchanger, *Progress in Computational Fluid Dynamics* 17 (2017) 390-396.

Pfeiffelmann B, **Benim AC**, Joos F, Multiphysics prediction of the performance of thermoelectric generators, *10th Int. Conference on Computational Heat, Mass and Momentum Transfer (ICCHM<sup>2</sup>T) May 28- June 1 2017, Seoul, Korea*.

Tahat A, **Benim AC**, Experimental analysis on thermophysical properties of Al<sub>2</sub>O<sub>3</sub>/CuO hybrid nanofluid with its effects on flat plate solar collector, *Defect and Diffusion Forum* 374 (2017) 148-156.

**Weber, K.**, Heweling, G., Fischer, C., Lange, M., The Use of an octocopter UAV for the determination of air pollutants – a case study of the traffic induced pollution plume around a river bridge in Duesseldorf, Germany, *International Journal of Environmental Science* 2 (2017) 63-66.

Pohl, T., Heweling, G., Fischer, C., **Weber, K.**, Traffic influenced nitrogen dioxide, ultrafine particle and black carbon concentrations at a busy urban street in Duesseldorf, Germany, *International Journal of Environmental Science* 2 (2017) 410-417.

Pohl, T., Schmitz, D., Fischer, C., Heweling, G., **Weber, K.**, A case-study for the investigation of inland ship emissions in real world plume dilution at the Rhine river in Duesseldorf, Germany, *International Journal of Environmental Science* 2 (2017) 258-265.

Pohl, T., Fischer, C., Heweling, G., Böhlke, C., **Weber, K.**, A comparative study as a quality assurance of stationary and portable hand-held ultrafine particle monitors, *WSEAS Transactions on Environment and Development* 13 (2017) 470-475, 2017.

**Weber, K.**, Scharifi, E., Fischer, C., Pohl, T., Lange, M., Boehlke, C., Mobile measurements of air pollutants with an instrumented car in populated areas, *Geophysical Research Abstracts*, Vol 19, EGU2017-16575, 2017.

**Weber, K.**, Heweling, G., Fischer, C., Lange, M., Pohl, T., Boehlke, C., Octocopter investigation of the vertical and horizontal variation of ultrafine particles, fine particulate matter and soot in the traffic plume emitted from a Rhine river bridge in Duesseldorf, Germany, *Geophysical Research Abstracts*, Vol. 19, EGU2017-14976, 2017.

**Weber, K.**, Fischer, C., Lange, M., Schulz, U., Naraparaju, R., Kramer, D., Design and construction of a testbed for the application of real volcanic ash from the Eyjafjallajökull and Grimsvötn eruptions to microgas turbines, *Geophysical Research Abstracts*, Vol. 19, EGU2017-13737, 2017.

Eliasson, J., Palsson, T., **Weber, K.**, State of volcanic ash prediction, *Geophysical Research Abstracts*, Vol. 19, EGU2017-13656, 2017.

### EDITORIAL STAFF



**This is an overview, which is not claimed to be exhaustive. Some activities have been omitted due to space limitations. We apologize, in advance, for any activity that might have unintentionally be omitted due to an oversight.**

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