

## Main Topic: Overview of the International Activities in 2012

### New Partnerships



#### The AGH University of Science and Technology, (AGH UST) Cracow, Poland

##### Memorandum of Understanding

The AGH University of Science and Technology in the historical city of Cracow, the former capital of Poland and seat of Polish kings, being always faithful to its motto 'Labore creata, labori et scientiae servio', during 90 years of its existence has educated over 150,000 engineers with high professional qualifications.

(contact initiated by **Prof. Bongarz** and **Prof. Jahr**)



#### Bahcesehir University, Istanbul, Turkey

##### Erasmus Agreement

Bahcesehir University is a young city university, on the European side of Istanbul, in the district of Besiktas, with a wonderful view on Bosphorus. The faculties of the university are: Arts & Sciences, Law, Economics & Administrative Sciences, Communication, Architecture & Design, Engineering, Health Sciences, Educational Sciences, Medicine.

(contact initiated by **Prof. Benim**)



#### Technical University of Cluj Napoca, Romania

##### Erasmus Agreement

The history of technical higher education in Cluj Napoca goes back to the beginning of the previous century, to the foundation of the Industrial College in 1920 in Cluj Napoca. Today, the Technical University of Cluj Napoca educates specialists in Mechanical, Electrical and Civil Engineering, as well as in Architecture. It has more than 12,000 students (contact initiated by **Prof. Niemann**)

### Incoming Students (Teaching)

In SS 2012 **three**, and in Winter Semester 2012/2013 **five** students visited our department, from **Turkey**, from the Universities: Istanbul Technical University and Sakarya University.



Can Cicioglu



Pinar Caglayan



Koray Uzun



Tunahan Günyeli



Martyuas Vaidelys



Oguz Ates

## Incoming Students (Internship)



Paco Fernandez Robles



Javier Llanos Lopes

During 2012, **seven** Students from **Spain**, (**Polytechnic University of Valencia, University of Cartagena**) and **one** student from **Portugal** (**Polytechnic University of Lisbon**) worked on different projects within the framework of different internship programs at the Institute FMDAuto of **Prof. Jahr**.



Beatriz Galindo Rodriguez



Jose Camacho Fliquette

## Outgoing Students (Internship / Practical Experience)



Till Biedermann

### Internship (Praxisphase) in the Netherlands

Till Biedermann, Mechanical Engineering, Bachelor (Maschinenbau, PEU), successfully completed his internship (Praxisphase) at the company *océ* in Venlo, **The Netherlands**, under the supervision of **Prof. Kameier**.

### Practical Experience (Praxissemester) in the USA

Markus Reich, Mechanical Engineering, Bachelor (Maschinenbau, PEU), started his practical semester (Praxissemester) at the University of Maryland, near Washington D.C. in the USA. Upon his successful application, his stay in the **USA** is being funded by an international internship program of the University. One can continuously apply to the internship program. The application deadlines are: 15. September (for the summer semester) and 15. March (for the winter semester). For further information, please check the website: [www.ceee.umd.edu/education/intern-apply-info](http://www.ceee.umd.edu/education/intern-apply-info) or contact **Prof. Neef**



Markus Reich

## Teaching Staff Mobility



In November 2012 **Britta Zupfer** visited the "Universidad Politecnica de Valencia", **Spain** for one week, within the Erasmus Teaching Mobility. Invited by Dr. Lola Forés she taught German to students of engineering. Ms. Zupfer is impressed: "The university is modern and very well equipped for language learning. The Spanish students were really enthusiastic – especially since a quite a few of them would like to visit Germany as an exchange student. Several Spanish students are keen on finding work in Germany after their graduation in Valencia. It is definitely worth visiting this university – not just because the beach is within an easy reach! Exchange students will most certainly also enjoy the relaxed atmosphere on campus (the photo left)".

## International Research



Dr. Irina Mitina

Dr. Irina Mitina from **Moscow, Russia** started to work (funded by DAAD) in the research group **E<sup>2</sup>** of **Prof. Adam**. Dr. Mitina is specialized on renewable energies, especially on the solar energy, as revealed by her pertinent background: She graduated from the Moscow State University as Environmental Engineer with emphasis on renewable energies. Following a post-

graduate research on solar thermal collectors under the supervision of Prof. Dr. Dmitriy Strebkov, she got her Ph.D. in 2009. She took part in numerous internships and courses on the solar and renewable energies in Italy, Germany and India. Currently, she is working in the "PVT-Norm Project" of Prof. Adam.

Mr. Sohail Iqbal, M. Sc. from **Chakwal, Pakistan** started to work as a scientific employee in **CFD Lab of Prof. Benim** in 2012. Mr. Iqbal is specialized in computational methods in fluid and solid mechanics as well as programming. Mr. Iqbal obtained his B.Sc. degree in Mechanical Engineering at the University of Engineering and Technology Taxila, Pakistan.



Sohail Iqbal, M.Sc.

Thereafter, he came to Germany and attended the Master Course Program "Computational Engineering" of Ruhr University Bochum for obtaining his M.Sc. degree. Currently he is computationally investigating flows in gas turbine combustors within the framework of a "Ziel2" research project of Prof. Benim



Emission measurements at ELGIN Gas Platform

**Prof. Weber** started a research project in cooperation with **NASA**. It is about performing research flights for investigating the emissions from the Turrialba volcano in **Costa Rica**, for calibrating the **NASA** satellites. Further international research projects are: Investigation of the transport of airborne pollutants across the border from **Poland** and the **Czech Republic** in cooperation with the „Landesumweltamt Sachsen“; Projects with the **University of Geneva** and the **Norwegian Institute of Air Research, Oslo**; Measuring flights for determining the



Prof. Weber on TV (Researchers Night) La Palma

methane emissions from the damaged offshore gas platform ELGIN in the North Sea in spring 2012; Official stand-by duty for measuring flights for the British Civil Aviation Authority and the British Government during the Olympic Games 2012 in London. Prof. Weber and his research group (Labor für Umweltmesstechnik) were attending and holding presentations at many international conferences at different places of the world including **Vienna (Austria)**, **Reykjavik, Selfoss (Iceland)**, **Miskolic (Poland)**, **El Hierro, Granada (Spain)**, **Geneva (Switzerland)**, **Manchester, Edinburgh (UK)**. Prof. Weber also held presentations on volcano research flights at the **University of Cambridge (UK)** and **Harvard University (USA)**.

**Prof. Jahr** continued his research project on the "Prediction of Leakages in Compensators" in cooperation with an company in **St. Petersburg, Russia**. A **Spanish** guest researcher was working, first, within the framework of an internship, and then as a scientific employee in a research project of Prof. Jahr. A large number of incoming students (**Spain**) worked at the Institute **FMDAuto** of Prof. Jahr in 2012.

**Prof. Niemann** was accepted as a member of the „**International Network** of Laboratories Design, Manufacturing and Innovation“, a cooperative platform for initiating and performing of **EU projects**. He was partner in the EU proposal „Cooperative Design and Operation of a Passive House“.



Prof. Köppke giving his talk at the OECD workshop

Between 23-25 May 2012, **Prof. Köppke** attended an **international** workshop organized by several parties (OECD Arbeitsgruppe für Chemieunfälle, Umweltbundesamt, Freistaat Sachsen), on the industrial accidents caused by natural hazards such as flood, storm, earthquake (examples: Tsunami, Japan, Hurricane Sandy USA, 2012). The main question was, if such natural catastrophes increase as a result of the climate change and how the industrial plants can be protected better. The working paper as an introduction into the subject, was prepared by Prof. Köppke. At the end of the workshop, a document about the conclusions and recommendations of the OECD Workshop Natech Risk Management was approved.



**Prof. Benim** spent a sabbatical semester (SS 2012) (Forschungssemester) at the **Faculty of Aeronautics and Astronautics** of the **Istanbul Technical University (ITU)** in **Turkey**. His research in cooperation with the colleagues from ITU was focused on combustion modeling in gas turbine combustors. Additional topics such as external aircraft aerodynamics, aeroelasticity and development of a Lattice Boltzman Method (LBM) based flow solver were further research areas. At the same time, Prof. Benim was cooperating with the researchers from the **Bahcesehir University (BAU)**, Istanbul, in the area of biofluid dynamics and biomedical engineering.

The research group „Fluid Engineering and Acoustics“ of **Prof. Kameier** joined two field campaigns in **Toulouse (France)**. In March, measurements was performed at the outflow valve of the Boeing 787-9. In an international team of French, American and German engineers from five companies and research institutions, work was performed on the altitude test rig of the French aviation research organization DRA in Balma. The optimization for noise reduction was completed within 10 days. Prior to the tests, flow simulations were performed by the group of Prof. Kameier. Since they were successful, the working atmosphere during the measurements in December 2012 was relaxed. Thus, Toulouse in late autumn with culture, sports (rugby), Airbus Visitors Site, French live music and party could be enjoyed until the morning hours.



## Publications in International Journals

- K. Weber, J. Eliasson, A. Vogel, C. Fischer, T. Pohl, G. van Haren, M. Meier, B. Grob ty and D. Dahmann, "Airborne in-situ investigations of the Eyjafjallaj kull volcanic ash plume on Iceland and over North-Western Germany with light aircrafts and optical particle counters", Atmospheric Environment 48 (2012) 9-21, doi:10.1016/j.atmosenv.2011.10.030.
- S. J. Leadbetter, M. C. Hort, S. von L wis, K. Weber and C. S. Witham, "Modeling the resuspension of ash deposited during the eruption of Eyjafjallaj kull in spring 2010", Journal of Geophysical Research 117 (2012) 1-13, D00U10, doi:10.1029/2011JD016802
- M. L. Carapezza, F. Barberi, L. Tarchini, M. Ranaldi, T. Ricci, J. Barrancos, C. Fischer, C. Lucchetti, G. Melian, N. Perez, P. Tuccimei, A. Vogel, K. Weber, "Hazardous gas emissions from the flanks of the quiescent Colli Albani volcano (Rome, Italy), Applied Geochemistry 27 (9) (2012) 1767-1782.
- A. M. Maqableh, S. A. Ammourah, A. F. Khadrawi, M. A. Al Nimr and A. C. Benim, "Hydrodynamics Behaviour of Fluid Flow in Micro-Venturi", Canadian Journal of Physics 90 (2012) 83-89.
- E. Aslan, A. Nahavandi, I. Taymaz and A. C. Benim, "A Comparison of Different Approaches in Modelling Non-Rectangular Boundaries by the Lattice Boltzmann Method", Progress in Computational Fluid Dynamics 12 (2012) 433-438.
- I. Taymaz, E. Aslan and A. C. Benim, "Numerical Investigation of Incompressible Fluid Flow and Heat Transfer across a Bluff Body in a Channel Flow", Thermal Science (2012) doi: 10.2298/TSCI120220145T.
- A. A. Mohammad and A. C. Benim (Eds.) Special Issue on "Computational Heat and Mass Transfer", Progress in Computational Fluid Dynamics, Vol. 12, No. 4, 2012.

## Publications in International Conferences

- K. Weber, A. Vogel, R. Reichardt and T. Zimmermann, "Research Aircraft Flight for Gas Leakage Investigation at the Elgin Wellhead Gas Platform in the North Sea - Initial Results"; Proceedings of 7th IASME/WSEAS International Conference on ENERGY and ENVIRONMENT (EE'12), Kos Island, Greece, July 14-17, 2012, pp 240 -243, ISBN: 978-1-61804-110-4.
- K. Weber, A. Vogel, C. Fischer, R. Reichardt, H. M. Moser, J. Eliasson and G. L schau, "Airborne Measurements of Volcanic Ash Plumes and Industrial Emission Sources with Light Aircraft - Examples of Research Flights During Eruptions of the Volcanoes Eyjafjallaj kull, Grimsv tn, Etna and at Industrial Areas", Proceedings of the „105nd Annual Conference & Exhibition of the Air & Waste Management Association", June 19 - 22, 2012, San Antonio, USA, A&WMA Pittsburgh, PA, USA, 2012, A 432.
- K. Weber, R. Reichardt, A. Vogel, C. Fischer, H.-M. Moser and J. Eliasson, "Computer Assisted Tracking of the Ash Plume Emitted by the Last Eruption of the Volcano Eyjafjallaj kull by Means of Aircraft Measurements", Proceedings of the "MicroCAD 2012 - International Scientific Conference", 29-30 March 2012, Miskolc, Hungary.
- K. Weber, R. Reichardt, A. Vogel, C. Fischer, H. M. Moser and J. Eliasson, "Computational Visualization of Volcanic Ash Plume Concentrations Measured by Light Aircrafts over Germany and Iceland during the Recent Eruptions of the Volcanoes Eyjafjallaj kull and Grimsv tn, in: Recent Advances in Fluid Mechanics, Heat & Mass Transfer, Biology and Ecology, ISBN: 978-1-61804-065-7, Harvard, Cambridge, 2012, 236 -240.
- A. Vogel, K. Weber, C. Fischer, A. J. Prata, and A. J. Durant, "Aircraft in Situ and Remote Sensing Measurements of Emissions from Etna volcano, Sicily", Geophysical Research Abstracts Vol. 14 EGU, 2012.
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- J. Niemann, Presentation at the "2nd Conference on Quality and Innovation in Engineering and Management (QIEM)", 22-24 November 2012, Cluj Napoca, Romania. (at the same time Member of the Scientific Committee)
- J. Niemann, Workshop participation at the "14th International Conference on Modern Information Technology in the Innovation Process of Industrial Enterprises", October 24-26, 2012, Budapest, Hungary.
- A. C. Benim, K. Kuppa, P. Wollny, B. Pfeiffelmann, A. Al-Halbouni, H. Rahms and A. Giese, "Numerical Studies on Modelling Supersonic Combustion", Proceedings of the "Sixth International Conference on Thermal Engineering: Theory and Applications, May 29 - June 1 2012., Istanbul, Turkey (2012) Paper No. 40.
- S. A. Ammourah, A. M. Maqableh, A. C. Benim and K. Chatterjee, "A CFD Simulation of Cerebrospinal Fluid Pulsatile Motion and Drug Delivery in the Human Ventricular System", Proceedings of the International Conference on Fluid Mechanics, Heat Transfer and Thermodynamics (ICFMHTT 2012) December 23-25, 2012, Phuket, Thailand (2012), Paper No. 71.

## EDITORIAL STAFF



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**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.**