

SCIENCE AND TECHNOLOGY SESSIONS

Science and Technology sessions aim at exchanging up-to-date works from wide scientific areas and thus to promote further multidisciplinary cooperation. Oral presentations focus on the future direction of specific subjects that are highly relevant to public and private organizations/companies as well as to the scientists and engineers in Europe and Korea. Poster presentations provide opportunities for participants to present their recent works in different fields and to link their works to related organizations.

General Presentation Session

General oral presentations are dedicated to diagnose the current state and future directions of selected scientific or technical fields. Invited introductions from the Korean institutes are also included to introduce the future cooperation between Korean and European communities.

27th July, 13:30 ~ 15:30, Room 2

Chairperson: Wonsun Park

- 13:30~13:50 **“Introduction to KITECH: Turning Its Dream into Reality”**
Hyouk-Chon Kwon*, *Korea Institute of Industrial Technology (KITECH)*
- 13:50~14:10 **“POSTECH's effort for the globalization and Max Planck POSTECH/KOREA Research Initiative”**
Dong-Eon Kim*, *Max Planck POSTECH / KOREA Research Institute, Korea*
- 14:10~14:30 **“Recent warming in the western North Pacific in relation to rapid changes in the atmospheric circulation of the Siberian High and Aleutian Low”**
Young-Hyang Park*, Jong-Hwan Yoon, Young-Hoon Youn and Frédéric Vivier, *Muséum National d'Histoire Naturelle, France*
- 14:30~14:50 **“Marine Technology Needs: Environmental Impact and Sustainable Technology”**
Atilla Incecik*, *University of Strathclyde, UK*
- 14:50~15:10 **“From Neoclassicism to the Bauhaus - Science & Technology Advancement on Architectural Development in Germany”**
Eonuh Rhee*, *Indarti Associates, London, UK*
- 15:10~15:30 **“The failure of Sino-Russian Gas Price Negotiations and its Implications”**
Keun-Wook Paik*, *Oxford Institute for Energy Studies, UK*

Conveners' Oral Presentation Sessions

Time 1: Friday, 27 th July	16:00-19:00	6 Sessions (5 Parallel sessions)
Time 2: Saturday, 28 th July	08:30-12:00	3 Sessions (2 Parallel sessions)
Time 3: Saturday, 28 th July	14:00-17:00	1 Session

27th July

16:00~19:00	Session 1: Nature-Inspired Sustainable Technology Convener: Wan Doo Kim (Korea Institute Machinery and Materials, Korea); Kyubock Lee (Max Planck Institute of Colloids and Interfaces, Germany)	Room 2
16:00~18:00	Session 2: Bio-Medical and Pharmacy Technology Convener: Chang-Hoon Nam (KIST-Europe)	Room 3
18:00~19:00	Session 3: Computational Science Convener: Kab Seok Kang (Max-Planck Institute of Plasma Physics, Germany)	Room 3
16:00~19:00	Session 4: Eco-city Conveners: Jaemin Kim (University of Strathclyde, UK); Kiduk Moon (Brandenburg University of Technology Cottbus, Germany)	Room 4
16:00~19:00	Session 5: Food Innovations Conveners: Suk Hoo Yoon (Korea Food Research Institute)	Room Lyon
16:00~19:00	Session 6: Ocean and Climate Researches Conveners: Hyoun-Woo Kang (KIOST-PML Lab., UK); Wonsun Park (Helmholtz Centre for Ocean Research Kiel, Germany)	Wing 3

28th July

08:30~10:00	Session 7: Global Energy Environment and Nuclear Energy Conveners: Myung-Ja Kim (Korea Federation of Women Science and Technology Associations, Korea) Panels: Hyong-Ha Kim (Korea Research Institute of Standards and Science, Korea); Mi Hye Kim (Chung Buk National University, Korea)	Room 2
10:20~12:00	Session 8: Aerospace and its policy Convener: Kevin Kyeong-il Choi (Eutelsat S.A., France;)	Room 2
08:30~12:00	Session 9: Green Car Conveners: In-Hyuk Wi (Bosch GmbH, Germany); Dong-Soo Jeong (Korea Institute Machinery and Materials, Korea)	Room 3
14:00~17:00	Session 10: Science Communication Conveners: EKC 2012 Scientific Committee	Room 2

Session 1: Nature-Inspired Sustainable Technology

27th July, 16:00 ~ 19:00, Room 2

Nature-inspired technology serves good solutions for some problems that are energy, resources of air/water, environmental problems, climatic change, and so on. Those are significant to human sustainability that is the long-term maintenance of well being, which has environmental, economic, and social dimensions, and encompasses the concept of ecological system. Adapting mechanisms and capabilities from nature and using scientific approaches will lead to effective materials, structures, tools, mechanism, processes, algorithms, methods, systems and many other benefits.

- Convener:** Wan Doo Kim (Korea Institute Machinery and Materials, Korea)
Kyubock Lee (Max Planck Institute of Colloids and Interfaces, Germany)
- 16:00~16:30 **“Overview of Biomimetics: Examples - Network and Standardisation”**
Heike Seitz* and Rainer Erb; *BIOKON international, Germany*
- 16:30~16:50 **“Mussel-inspired Sustainable Technologies”**
Haeshin Lee*; *Korea Advanced Institute of Science and Technology, Korea*
- 16:50~17:10 **“Development of sound analyzer mimicking the function of human cochlear”**
Youngdo Jung*, Jun-Hyuk Kwak, Young Hwa Lee, Wan Doo Kim and Shin Hur; *Korea Institute of Machinery and Materials, Korea*
- 17:10~17:30 **“Taking advantage of the pathway of biomineralization in material synthesis”**
Kyubock Lee*; *Max Planck Institute of Colloids and Interfaces, Germany*
- 17:20~17:40 **Break**
- 17:40~18:00 **“Learning and Innovation from Nature: Nature-Inspired Technology for Sustainability”**
Wan Doo Kim*; *Korea Institute of Machinery and Materials, Korea*
- 18:00~18:20 **“Bio-inspired reversible mechanical interlocking of nanofibers for skin-attachable sensors”**
Kahp-Yang Suh*, Changyun Pang, Gil-Yong Lee, Tae-il Kim, Sang Moon Kim, Hong Nam Kim, Sung-Hoon Ahn, Chanseok Lee, Daeshik Kang and Won Gyu Bae; *Seoul National University, Korea*
- 18:20~18:40 **“Hierarchically driven IrO₂ nanowire electrocatalysts for direct sensing of biomolecules”**
Myung Hwa Kim*; *Ewha Womans University, Korea*
- 18:40~19:00 **“Thermoelectric nanostructured materials and their ZT enhancement”**
Sung Jin Kim*; *Ewha Womans University, Korea*
- 18:40~19:00 **Discussion**

Session 2: Bio-Medical and Pharmacy Technology

27th July, 16:00 ~ 18:00, Room 3

Bio-Medical research field and Pharmaceutical industry are closely connected. These research fields are very carefully approached and require steady long-term investments to realise medications ultimately. This Session will present recent research activities in applied Bio-Medical technologies, applied conditions and solutions for new development and technology.

Convener: Chang-Hoon Nam (KIST-Europe, Germany)

- 16:00~16:20 **“Breast Cancer Screening to reduce health burden in the future: Korea vs. Austria”**
Hanna Sheu*; *Krankenhaus der Barmherzigen Schwestern, Austria*
- 16:20~16:40 **“Short Linear Peptides and Cholesterol-Lowering Effect”**
Valeriy Pak*; *Institute Chemistry of Plant Substances, Uzbekistan*
- 16:40~17:00 **“TNF-alpha induced apoptosis of neuroblastoma cell is prevented by genetically engineered phage treatment on pt electrode”**
Young-Hyun Jin, Young Jun Kim*, Chang-Hoon Nam, and Thomas Stieglitz; *Korea Institute of Science and Technology Europe, Germany*
- 17:00~17:20 **“Structure-aided development of biomedically active substances”**
Kyeong Kyu Kim*; *Sungkyunkwan University School of Medicine, Korea*
- 17:20~17:40 **“Biosynthesis of nucleoside antibiotic tunicamycin proceeds via a unique exoglycal intermediate”**
Seung Seo Lee* and Benjamin G. Davis; *University of Southampton, UK*
- 17:40~18:00 **“Kallmann syndrome-associated protein anosmin-1 contributes to brain tumorigenesis”**
Soo-Hyun Kim*; *University of London, UK*

Session 3: Computational Science

27th July, 18:00 ~ 19:00, Room 3

Computational science application programs often model real-world changing conditions, such as weather, air flow around a plane, automobile body distortions in a crash, the motion of stars in a galaxy, an explosive device, etc. Computational science is now commonly considered a third mode of science, complementing and adding to experimentation/observation and theory. The essence of computational science is numerical algorithm and/or computational mathematics. High-Performance Computer (HPC) is a tool of computational science and its architectures are changing rapidly. Under these situations, computational scientists have to collaborate with computational mathematicians and computer scientists to use proper numerical algorithms and to optimize the programs. In this session, we focus on the future of HPC platform and numerical algorithms for the specific areas.

Convener: Kab Seok Kang (Max-Planck Institute of Plasma Physics, Germany)

- 18:00~18:20 **“Fast parallel solvers: multigrid method and domain decomposition methods”**
Kab Seok Kang*; *Max-Planck-Institute of Plasma Physics, Germany*
- 18:20~18:40 **“Application of Morphing Technique to Product Design”**

Ju Young Kang* and Byung Suk Lee; *Norwegian University of Science and Technology, Norway*

18:40~19:00 **“Issues in human body and cloth simulation”**
Hyewon Seo*; *CNRS-University of Strasbourg, France*

Session 4: Eco-city

27th July, 16:00 ~ 19:00, Room 4

Due to the increasing importance of low-carbon green growth as a global issue, it is necessary to exchange reliable information on policies and best practices in this field. There are rising concerns not only for low-carbon strategies for urban redevelopment or new-town projects, but also for tools to consider and integrate planning methods into the energetically remodelling of existing buildings, towns, cities and regions, as well as on techniques for operating urban utilities. This session introduces European best practices of low-carbon strategies in order to provide useful solution for eco-town development in Korea.

Conveners: Jaemin Kim (University of Strathclyde, UK)
Kiduk Moon (Brandenburg University of Technology Cottbus, Germany)

16:00~16:20 **“Industrial Symbiotic Practice in Korea: Integration of Byproducts Exchange and Cleaner Production into Eco-industrial Parks”**
Sangyong Kim*; *Korea Institute of Industrial Technology, Korea*

16:20~16:40 **“Sustainability and urban density in Seoul”**
Suk-Jeong Lee; *Stuttgart Stadtbaumatelier, Germany*

16:40~17:00 **“One less nuclear power plant through energy saving and new & renewable energy generation”**
YoungSoo Choi*; *Seoul Metropolitan Government, Korea*

17:00~17:20 **“Urban regeneration and climate protection: case studies in Germany”**
Mathias Koziol*; *BTU Cottbus, Germany*

17:20~17:40 **Break**

17:40~18:00 **“A Case Study of Micro Energy Grid Village and Development Concept of Smart City Energy Management System”****
Sisam Park* and Sag Min Na; *Energy Grid Group, Technical Division, GS E&C Corp., Korea*
**This research was supported by a grant (11 High-tech Urban G07) from High-tech Urban Development Program funded by Ministry of Land, Transport and Maritime Affairs of Korean government.

18:00~18:20 **“Eco-Efficient Building using Textile Reinforced Concrete”**
Silke Tomoscheit*, Hyun-Young Lee and Thomas Gries; *RTWH Aachen University, Germany*

18:20~18:40 **“EU-Korea Bio-refinery system: how may contribute renewable energy and technology”**
Sung Taek Oh*; *London South Bank University, UK*

18:40~19:00 **Discussion**

Session 5: Food Innovations

27th July, 16:00 ~ 19:00, Room Lyon

Korea Food Research Institute (KFRI) makes ceaseless effort to contribution to targets set by the government and industry for reformulating existing food products into healthier equivalents. KFRI is actively networking with other advanced organizations in worldwide to be a world-class food institute. As a part of this objective, KFRI will organise the session of Food Innovations and exchange valuable scientific findings on food related areas in KFRI and other EU institutes. The rest of the session will also be allocated for discussing future collaborative research works between KFRI and other EU institutes.

Conveners: Suk Hoo Yoon (Korea Food Research Institute)

16:00~16:10 **Introduction**

16:10~16:25 **“The Protective Effects of Enzymatically Modified Citrus Flavonoids on Alcoholic Liver Injury”**

Inwook Choi*; *Korea Food Research Institute, Korea*

16:25~16:40 **“Food process design by innovative techniques”**

Alexander Mathys* and Stefan Toepfl; *German Institute of Food Technologies DIL, Germany*

16:40~16:55 **“Changes of physico-chemical characteristics and microbial community of Makgeolli by hydrostatic high pressure treatment”**

Yun-Ji Kim* and Eun Jung Lee; *Korea Food Research Institute, Korea*

16:55~17:10 **“The composition of Bioactive Organosulfur Compounds of Garlic bulbs from Korea and Its changes during storage and under processing conditions”**

Dongbin Shin*; *Korea Food Research Institute, Korea*

17:10~17:25 **“Structure-property-relationships characterized by Atomic Force Microscopy (AFM)”**

Ute Bindrich*, Dana Lampe and Alexander Mathys; *German Institute of Food Technologies, Germany*

17:25~17:45 **Break**

17:45~18:00 **“Biopolymer-based Nanocomposite Films as a Novel Antimicrobial Food Packaging Material”**

Seok-In Hong* and Jong-Whan Rhim; *Korea Food Research Institute, Korea*

18:00~18:15 **New Opportunities for Healthy and Sustainable food production**

Roland Visschers*; *TNO food & Nutrition, Netherlands*

18:15~19:00 **Discussion**

Session 6: Ocean and Climate Researches

27th July, 16:00 ~ 19:00, Wing 3

Climate change has been an important issue during the last decades and is increasingly affecting the human life. Ocean is an important part in the climate system and involves in controlling the climate change. This session provides Korean scientists working in Korea and Europe in the fields to diagnose the current states of ocean and climate researches and provide strategy for further development. Particular focuses will be given to ocean observation and climate modelling.

- Conveners:** Hyoun-Woo Kang (KIOST-PML Lab., UK)
Wonsun Park (Helmholtz Centre for Ocean Research Kiel, Germany)
- 16:00~16:20 **“Poleward heat flux across choke point deep passages in the Southern Ocean”**
Young-Hyang Park*; *Muséum National d’Histoire Naturelle, France*
- 16:20~16:40 **“Status of Observational Ocean-Climate Research in KIOST”**
Jae Hak Lee*; *Korea Institute of Ocean and Science and Technology, Korea*
- 16:40~17:00 **“Climate models and their future improvement”**
Wonsun Park*; *Helmholtz Centre for Ocean Research Kiel, Germany*
- 17:00~17:20 **“Towards Integrative Prediction for Climate-Environment-Ecosystem Interactions”**
Seon Ki Park* and Yong-Sang Choi; *Ewha Womans University, Korea*
- 17:20~17:40 **Break**
- 17:40~18:00 **“Current situation of research activities on climate changes in the Baltic Sea”**
Byoung-Woon An*; *Finnish Meteorological Institute, Finland*
- 18:00~18:20 **“A Trends and Pending Issues of the Marine Ecosystem Modeling Study in Korea: focusing on the Yellow Sea”**
Jae-Kwi Soh*; *Korea Institute of Ocean and Science and Technology, Korea*
- 18:20~18:40 **“The Western Pacific Ocean Modelling Study in regard with the Climate Change”**
Hyoun-Woo Kang*; *KIOST-PML Science Office, UK*
- 18:40~19:00 **Discussion**

Session 7: Global Energy Environment and Nuclear Energy

28th July, 08:30 ~ 10:00, Room 2

Since its establishment in 2003, the Korean Federation of Women’s Science & Technology Associations (KOFWST) has been proactive in promoting the welfare, rights and interests of women in science and technology in numerous ways. Diverse programs such as annual conferences and ‘Women Leaders Forum’ held by KOFWST have facilitated networking and interaction among women scientists and engineers to become more visible among their academic peers.

Our theme in 2012 is envisioned in the slogan of “Convergence, Communication, and Scientific Diplomacy”, which expands our scope to serve the public in solving social disputes and conflicts related to science, technology and society. In recent years, many societal concerns today have been complicated by scientific, technological, environmental, ethical, cultural and social dimension. We believe that resolution of these issues requires the commitment of people with diverse backgrounds, as well as proper social support through conflict mediation and consensus building.

The KOFWST plans to implement a mechanism to integrate the competencies of prominent women in various specialties, to facilitate their ability to communicate with stakeholders, lay persons, and experts in various fields, and assist them in mediating disputes and/or proposing reasonable and efficient solutions. We are of the view that the KOFWST is well-positioned to mediate such conflicts in that it includes distinguished members in diverse fields, from physics to consumer science, and our ‘Women Leaders Forum’ gives the stakeholders and general public a chance to communicate with people in other fields.

In 2012, the Women Leaders Forum will be expanded to provide valuable opportunities to promote

science diplomacy by supporting joint conferences with groups in the EU, Canada and USA. In this vein, The KOFWST will host the Women Scientists and Engineers Forum on the theme of ‘Science Communication: Global Energy Environment and Nuclear Energy’ at 2012 EKC. We sincerely hope that the forum can contribute to understanding and cooperation in addressing the challenges ahead of us in the controversial issue of nuclear energy.

- Conveners:** Myung-Ja Kim (Korea Federation of Women Science and Technology Associations, Korea)
- 08:30~08:45 **“Global Energy Environment and Nuclear Energy: Where do we stand and what direction should we take?”**
Myung-Ja Kim*; *Korea Federation of Women Science and Technology Associations, Korea*
- 08:45~09:00 **“Constraints and Prospect of Nuclear Power”**
Jeong-Ha You*; *Max-Planck-Institute for Plasma Physics, Germany*
- 09:00~09:15 **“The Future and Globalization of Nuclear Energy”**
Chang Hoon Jun*; *ITER International, France*
- 09:15~09:25 **Panel:** Hyong-Ha Kim, *Korea Research Institute of Standards and Science, Korea*
- 09:25~09:35 **Panel:** Mi Hye Kim, *Chung Buk National University, Korea*
- 09:35~10:00 **Discussion**

Session 8: Aerospace and its policy

28th July, 10:20 ~ 12:00, Room 2

The Aerospace Industry in Europe is the world most advanced industry field, for which Korea is currently putting a lot of efforts to catch up. During its 20 years of aerospace development history, Korea has shown several success stories as well as couple of bitter experiences. However, such stories would not differ in any other aerospace powerhouse country in the world. This session aims to gather together Korean and European Aerospace experts for their exchange of opinions and viewpoints on the Korean/European Aerospace industry, revise new development projects, and their policy-making way-forwards.

- Convener:** Kyeongil Kevin Choi (Eutelsat S.A., France)
- 10:20~10:35 **“Status and Evolution of Galileo Programme”**
Jong-Hoon Won*; *University Federal Armed Forces Munich, Germany*
- 10:35~10:50 **“Space Architecture: In-Situ Resource Utilisation based construction in other planets”**
Sungwoo Lim*; *Loughborough University, UK*
- 10:50~11:05 **“Introduction and impact of the German On-Orbit Verification Program”**
Zizung Yoon*; *Technical University of Berlin, Germany*
- 11:05~11:20 **“Paving the Way Forward in Space for the Nation”**
Soyoung Chung* and Seorim Lee; *Korea Aerospace Research Institute, Korea*
- 11:20~11:35 **“Past, Present Efforts and Future Plan of the Korean Space Vehicle Program”**
Hwanil Huh*; *Chungnam National University, Korea*

11:35~12:00 **Discussion**

Session 9: Green Cars

28th July, 08:30 ~ 12:00, Room 3

Conveners: Dong-Soo Jeong (Korea Institute Machinery and Materials, Korea)
In-Hyuk Wi (Bosch GmbH, Germany)

08:30~08:40 **Introduction**

08:40~08:55 **“Oxygen-water electrocatalysis in electrochemical energy technologies”**
Jaeyoung Lee*; *Gwangju Institute of Science and Technology, Korea*

08:55~09:10 **“Challenges in a Future Ethernet-based In-Vehicle Network”**
Yung-Taek Lim*; *BMW Group Research and Technology, Germany*

09:10~09:25 **“Importance of novel Semiconductors and embedded systems for Green Cars - research activities within European projects”**
Herald Gall*; *ams AG, Austria*

09:25~09:40 **“Battery management solution from ams for new challenges of in e-mobility”**
Manfred Brandl*; *ams AG, Austria*

09:40~09:55 **“Solid-states hydrogen storage in hybrid ultrahigh porosity materials for mobile applications”**
Hyunchul Oh*; *Max Planck Institute for Intelligent Systems, Germany*

09:55~10:10 **Break**

10:10~10:25 **“Lithium ion battery market trend and cost challenges for x-EV”**
Jason Oh*; *POSCO EU office, Germany*

10:25~10:45 **“Green Car Development of Hyundai-Kia”**
David Labrosse*; *Hyundai Motor Europe Technical Center, Germany*

10:45~11:05 **“Future Clean Diesel Technologies”**
Dirk Schiefer*; *IAV Korea, Korea*

11:05~11:25 **“Development of Diesel Hybrid Bus and its Performance”**
Dong-soo Jeong*; *Korea Institute Machinery and Materials, Korea*

11:30~12:00 **Discussion**

Session 10: Science Communication

28th July, 14:00 ~ 17:00, Room 2

EKC has been successfully brought together scientists and engineers from Europe and Korea and is increasingly supporting the communication among different fields of science and industry. This session aims at diagnosing and suggesting the efficiency of scientific communication in EKC and hosts diverse aspects of science communication such as scientific outreach activities to attract general public or students. This session also covers the issue of scientific evaluation that is often done by counting published papers and discusses better evaluation system to improve science quality itself and also life of scientists.

Conveners: EKC 2012 Scientific Committee

Poster Presentation Sessions

Friday, 27th July 10:30-12:30, Foyer 1

Guideline on Poster preparation:

1. Poster presenters are requested to bring the printed poster. Please note that printing service is not available.
2. Poster size: **A0 Portrait** (85 cm width x 120 cm height)
3. Display time: Poster boards will be available from 26th July (Thursday). **Authors are kindly asked to put up their posters on afternoon of 26th July.** Poster display will be continued till 28th (Saturday) morning to promote individual discussion during the whole conference period.
4. **Authors in Attendance Time:** The Authors in Attendance Time is the time when the respective authors of a poster session must be available at their display for presentation (i.e. **10:30-12:30 27th July**).

Best posters will be awarded among the papers presented during the poster session.

List of Posters

Poster session I: Physics

Chairperson Jeong-Ha You

- I.1. Drop and Bubble Micro Manipulator (Dbmm) – A Unique Tool for Mimicking Processes in Foams and Emulsions (J.Y. Won*, J. Krägel, A.V. Makievski, A. Javadi, G. Gochev, G. Loglio, P. Pandolfini, M.E. Leser, C. Gehin-Delval and R. Miller; MPI of Colloids and Interfaces, Germany)
- I.2. Induced 2-D hole gas in quantum well structure with surface acoustic waves (Yousun Chung*; University of Cambridge, UK)
- I.3. Surface-Acoustic-Waves driven single electrons pumping in GaAs/AlGaAs heterostructure without modulation doping (Seok-Kyun Son*; University of Cambridge, UK)
- I.4. Frequency-Shifted Feedback Lasers: Novel Concept of Distance Measurements (Jae-Ihn Kim*, Vladimir Ogurtsov, and Klaas Bergmann; Technical University of Kaiserslautern, Germany)
- I.5. The Characteristics of MOSFET by Charge Pumping Technique (Seung Hee Lee*, and Hyung Soon Shin; Ewha Womans University, Korea)
- I.6. Polarization asymmetry and Biexciton in a single GaAs quantum ring (Hee Dae Kim*; University of Oxford, UK)
- I.7. Search for God's Particle (Geum Bong Yu*; Duke University, USA)
- I.8. Data Acquisition Software for CREAM (SangEun Lee*; University of Maryland, USA)
- I.9. Multiscale Modeling for the Ultrafast Magnetization Dynamics (Changhoon Heo*, Riccardo

Herte; Forschungszentrum Jülich, Germany)

Poster session II: Nano & Material science

Chairperson Youn Joo Hyun

- II.1. Fabrication and growth mechanism investigation of various morphologies of GaN and FeOCl; nanosheet and microsphere (Junghwan Chun* and Dongeon Kim; Max Planck Institute, Germany)
- II.2. Tunable Photonic Crystal Cavities based on Nano Opto Electro Mechanical Systems (NOEMS) (S. N. Yoon*, L. Midolo, F. Pagliano, T. Xia, F.W van Otten, M. Lermer , S. Höfling and A. Fiore; KTH Royal Institute of Technology, Sweden)
- II.3. Zinc Oxide Nanowire Transistor Nonvolatile Memory with a Ferroelectric Polymer Interlayer (Young Tea Chun* and Daping Chu; University of Cambridge, UK)
- II.4. Electric-Field Tunable Magneto-electric properties in Multiferroic Hybrid Structures (Jangyong Kim*; Aalto University School of Science, Finland)
- II.5. PFM observation of domain evolution at PZT (Kwanlae Kim*; University of Oxford, UK)
- II.6. Non-destructive Analysis of Multilayer Thin-Films by High Frequency Eddy Current (Byungguk Hwang*, Marcus Klein, Martin Schulze, Susanne Hillmann and Henning Heuer; SURAGUS GmbH, Germany)
- II.7. Melting point depression of embedded Bi nano particles in Zn synthesized by rapid solidification (Tae Eun Song*, Joachim Bokeloh, Martin Peterlechner, Gerhard Wilde; Institute für Materialphysik, Germany)
- II.8. A highly selective “turn-on” fluorescent chemosensor based on hydroxy pyrene-hydrazone derivative for Zn²⁺ (Dabin Kim, Ji-young Choi and Juyoung Yoon*; Ewha Womans University, Korea)
- II.9. Synthesis of Bismuth Telluride and Lead Telluride Nanoparticles and Its Ligand Exchange (Eunyoung Oh*, Eunkyoo Seong, Mi-kyung Han and Sung-Jin Kim; Ewha Womans University, Korea)
- II.10. Laser interference patterning of bi-phasic nanowires for neurite guidance (Juseok Lee*, Lukas K. Schwarz, Cagri K. Akkan, Marina M. Miró, Karl-Herbert Schäfer, Cenk Aktas and Michael Veith; Leibniz-Institute for New Materials, Germany)
- II.11. A Kinetic Study on Nucleophilic Displacement Reactions of Phenyl Y-Substituted-Phenyl Carbonates with Alkali Metal Ethoxides: Metal Ion Effect and Reaction Mechanism (Ik-Hwan Um, Ji-Yoon Seo*, Ji-Sun Kang, and Jun-Sung An; Ewha Womans University, Korea)
- II.12. Metal-Organic Frameworks: New Porous Materials (Kyosung Park*; University of Liverpool, UK)
- II.13. Characterization of The Mechanical Strength of Nanostructures and Its Application (Tae-Gon Kim*; Imec vzw, Leuven, Belgium)
- II.14. Topography by atomic force microscopy (Hyunjung Kim, Nuri Lee, and William Jo; Ewha Womans University, Korea)
- II.15. A practical approach for transparent & superhydrophobic glass (Hyuneui Lim*, Seungmuk

Ji and Wan-Doo Kim; Korea Institute of Machinery and Materials, Korea)

Poster session III: Bioscience

Chairperson Chang-Hoon Nam

- III.1.** Experimental and theoretical investigations on a cell-seeded soft tissue (Jeong-Hun Yi*, Markus Stoffel, and Dieter Weichert; IAM RWTH-Aachen, Germany)
- III.2.** Asymmetric bifurcation enhances gas mixing between pulmonary acini (Min-Yeong Kang* and Jin-Won Lee; Ecole Polytechnique, CNRS, France)
- III.3.** Drug absorption from the lung - do transporter proteins have a role? (Johanna J. Salomon, Sanghee Park* and Carsten Ehrhardt; Trinity College, Ireland)
- III.4.** Effects of Farrowing Environment on Early Lactation Performance and Oxytocin Level in Pigs (Jinhyeon Yun*, Kirsi Swan, Olli Peltoniemi, Claudio Oliviero, Anna Valros; University of Helsinki, Finland)
- III.5.** Lovtap protein manipulation in mammalian cell- iGEM project 2012 in EPFL (Juneseung Lee1*; Life Science Department, EPFL, Switzerland)
- III.6.** In vivo and in vitro regulation of MT1 melatonin receptor expression by gonadotrophin-releasing hormone (GnRH) and early growth response factor-1 (Egr-1) (Sung-Eun Bae*, Ian Wright1, Cathy Wyse, Serge Laroche, David G Hazlerigg, Jonathan D Johnston; University of Surrey, UK)
- III.7.** Mitochondrial Hsp60 is released by oxidative stress and involved in IKK activation (Eun Kyung Lee*; Ewha Womens University, Korea)
- III.8.** Preparation of Selectively Deuterated Riboflavin (Ryu-Ryun Kim*, Boris Illarionov, Adelbert Bacher, Markus Fischer; University of Hamburg, Germany)
- III.9.** Impact of the C4-dicarboxylate uptake systems for the Bio-Succinic acid and Lysine production with *Corynebacterium glutamicum* (Jung-Won Youn*, Georg A. Sprenger and Volker F. Wendisch; University of Stuttgart, Germany)
- III.10.** Modeling and Visualizing of Transcription Factor Networks (Namshik Han* and Andy Brass; University of Manchester, UK)
- III.11.** Homeobox protein WOX8 and WOX9 control apical-basal axis formation via regulating the stability of PIN7 auxin efflux carrier during Arabidopsis embryogenesis (Chulmin Park*, Shiqiang Wang, Xugang Li, Klaus Palme, and Thomas Laux; Albert-Ludwigs-Universität Freiburg, Germany)
- III.12.** Structure of the Stapled p53 Peptide Bound to Mdm2 (Sohee Baek, Peter S. Kutchukian, Gregory L. Verdine, Robert Huber, Tad A. Holak, Won Lee, and Grzegorz M. Popowicz*; Max Planck Institute for Biochemistry, Germany)
- III.13.** Population densities of cicada species in central Korea (Taeun Kim*, Seungyoon Oh, Yikwon Jang; Ewha Womans University, Korea)
- III.14.** Nutrition Bar to Defeat Worldwide Food Crisis (Chaeyoung Song*; Ewha Womans University, Korea)

Poster session IV: Mechanical Engineering & Mechatronics

Chairperson Young-Hyun Jin

- IV.1. Do mechanical engineering sectors of Korea and EU get closer after bilateral FTA? (Kiho Kwak* and Jaeyoon Kim; Korea Institute of Machinery and Materials, Korea)
- IV.2. Fabrication of lab-on-a-chip devices using microinjection molding (Yunhee Kim*, Hwa Jin Oh and Young Seok Song; l'Organisation de Coopération et de Développement Économiques (OCDE), France)
- IV.3. Fresnel-assisted extreme UV proximity lithography for nanophotonic arrays (Hyun-su Kim*, Serhiy Danylyuk, Sascha Brose, Klaus Bergmann and Larissa Juschkkin; RWTH-Aachen University, Germany)
- IV.4. Development of Safety relevant ECUs up to ASIL D with AUTOSAR 4.0 (Hong-joon Lim*, Pavol Puffler, and Carsten Weich; TTTech Automotive GmbH, Austria)
- IV.5. FEM Analysis of Non Contact Wafer Handling System Using Air Bearing Theory (Byeong Sam Kim* and Kyoungwoo Park; Hoseo University, Korea)
- IV.6. Easy Parallel Parking (Sungwoo Choi*; Renault, France)
- IV.7. R&D activities for ITER blanket first wall in Korea (Byoung-Yoon Kim*; ITER Organization, France)
- IV.8. Behaviour Recognition of Ground Vehicle Using Airborne Monitoring of Unmanned Aerial Vehicles (Hyondong Oh*, Seungkeun Kim, Hyo-Sang Shin, Antonios Tsourdos, and Brian A. White; Cranfield University, UK)
- IV.9. Design optimization of structural-acoustic system using the wave based method (Kunmo Koo*, Bert Pluymers, Wim Desmet and Semyung Wang; KU Leuven, Belgium)
- IV.10. Experimental study of the instability and laminar-turbulent transition behind a roughness element in the boundary layer (Yong Su Shin*, Ulrich Rist and Ewald Krämer; Universität Stuttgart, Germany)
- IV.11. Non-isolated Flyback Converter for 4 channel OLED Lighting System (Bongwoo Kwak and Myungbok Kim; KITECH, Korea)
- IV.12. Developing an intelligent transportation system for an automated container terminal within North West Europe (Ji Young Lee; Liverpool John Moores University, UK)

Poster session V: Information Technology

Chairperson Hyewon Seo

- V.1. Creating panorama application on mobile device (Hoseok Chang*; Nokia, Finland)
- V.2. A Multi-objective Utility-based Dynamic Spectrum Aggregation algorithm in Cognitive Radio Networks (Haeyoung Lee*, Seiamak Vahid and Klaus Moessner; University of Surrey, UK)
- V.3. Compositional Resource Reservation Group Scheduling for Reconfigurable Real-Time

Application (Jagun Kwon* and Stephen Hailes; University College London, UK)

- V.4. Experiment on the Perception of proportion in Korea, Japan and Germany (Joo Young Jung* and Nico Zahn; Delft University of Technology, Netherlands)
- V.5. Exhibiting Simulation with KINECT (Dasom Lee; Ewha Womans University, Korea)
- V.6. 3D Video Acquisition by using Active Depth Sensors (Ji-Ho Cho; Vienna University of Technology, Austria)

Poster session VI: Environment & Energy

Chairperson Wonsun Park and Jaemin Kim

- VI.1. Metabolic engineering with cultivation technology in oleaginous microalgae (Sung T. Oh*; London South Bank University, UK)
- VI.2. Modelling of textile reinforced concrete at the micro-scale level (Bong-Gu Kang*; Germany)
- VI.3. Integration of capillary tubes in textile reinforced concrete components for heat water using (Andreas Koch*, Hyun-Young Lee, Thomas Gries; RWTH Aachen university, Germany)
- VI.4. Weaving Vicissitudes: An Exploration for Bridging Environmental Technology and Design (Hyon K. Rah*; BTU Cottbus, Germany)
- VI.5. The Role of climate in triggering the activities of meristematic tissue of Scots pine (*Pinus sylvestris* L.) in northern Finland (Jeong-Wook Seo*; University of Greifswald, Germany)
- VI.6. Environmental design analysis in schools in the UK (Choulwoong Kwon*; Architectural Association School of Architecture, UK)
- VI.7. Energy Efficiency Regulations for Ships and Their Impact Assessment (Zabi Bazari and Yongwon Lee*; Lloyd's Register, UK)
- VI.8. Fuel and Exhaust Emissions (Peter Catchpole and Yongwon Lee*; Lloyd's Register, UK)
- VI.9. Decision-supporting model for hybrid energy systems installation toward low carbon microgrids (Jaemin Kim*; University of Strathclyde, UK)
- VI.10. Assessment Indices for Energy Saving Performance of Building Energy Management System using AHP Analysis (Ro-Yeul Kwak* and Dong-Soon Yim; Hannam University, Korea)
- VI.11. Research for the shape of molecular crystal which can be applied to building structural module (Naeun Kim*; Ewha Womans University, Korea)
- VI.12. Demand-Side-Management with heat pumps for single family houses (Young Jae Yu*; Fraunhofer Institute for Building Physics, Germany)
- VI.13. Decision-supporting model for hybrid energy systems installation toward low carbon microgrids (Jaemin Kim*; University of Strathclyde, UK)

- VI.14.** Adaptation of agricultural sector through climate forecasting (Hyung Sik Choi*, Uwe Schneider, Erwin Schmid, Hermann Held; International Max Planck Research School on Earth System Modelling, Germany)
- VI.15.** Remote Sensing for Archaeology (Yoon Jung Choi*; Johannes Gutenberg University Mainz, Germany)
- VI.16.** Resource Efficiency and Eco-industrial Development in Europe (Dowon Kim*; School of Environmental Sciences, UK)
- VI.17.** Development of Structural Components of a Dual Cooled Nuclear Fuel (Hyung-Kyu Kim*, Kyung-Ho Yoon, Young-Ho Lee, Jae-Yong Kim, Kang-Hee Lee, Heung-Seok Kang; Korea Atomic Energy Research Institute, Korea)
- VI.18.** ECC Building in Ewha University (Nami Lee; Ewha Womans University, Korea)
- VI.19.** Freshwater resource management regarding relations between water and climate change (Hye Ri Cho; Ewha Womans University, Korea)
- VI.20.** Green Library (Heeji Kang; Ewha Womans University, Korea)
- VI.21.** lollo, Roll Your Dream (Youngmin Kang*, Dong hee Shin, and Ji ae Hwang; Ewha Womans University, Korea)

Poster session VII: Photovoltaic

Chairperson Jong-Mun Park

- VII.1.** New Ruthenium Sensitizers for Dye-sensitized Solar Cells in Co Electrolyte (Il Jung*; Ecole polytechnique fédérale de Lausanne (EPFL), Switzerland)
- VII.2.** Future Critical Materials and Land Use Requirement for Photovoltaic (PV) and Wind Energy System in EU 27 (Junbeum Kim* and Bertrand Guillaume; University of Technology of Troyes, France)
- VII.3.** Business Feasibility of Building Applied PV in South Korea from an Entrepreneur's Perspective (Byungguk Hwang*; Technical University of Berlin, Germany)
- VII.4.** Novel Tailor-made Hole-Conducting Coadsorbents for Highly Efficient Dye-Sensitized Solar Cells (In Taek Choi, Sang Hyun Song, Myung Jong Ju and Hwan Kyu Kim*; Korea University, Korea)
- VII.5.** Electroformed Low Thermal Expansion Alloy Foil for Flexible Solar Cell Substrate (Minsu Lee, Yunho Han, Hokyung Um and Tai Hong Yim; Korea Institute of Industrial Technology, Korea)
- VII.6.** Largecells - Large-area Organic and Hybrid Solar Cells (Mukundan Thelakkat; University of Bayreuth)

Institute Posters

- Deeper Expertise for a Safer World (Sangil Kim*, Ross Wigg and Steve Gilkes; Lloyd's Register, UK)
- Scientific Research Activities at Max Plank Center for Attosecond Science (MPC-AS) (Dong Eon Kim; Max Planck POSTECH / KOREA Research Institute, Korea)
- Max Plank POSTECH/Korea Research Institute (MPK) (Dong Eon Kim* and Jae Hoon Park; Max Planck POSTECH / KOREA Research Institute, Korea)