

Technical Program of the International Workshop on Modern Science and Technology 2010

September 4-5, 2010
Kitami Institute of Technology
Kitami, Japan

Organized and Hosted by: Kitami Institute of Technology (KIT), Japan
In Cooperation with: Harbin Engineering University (HEU), China
The University of Electro-Communications (UEC), Japan
Wuhan University of Science and Technology (WUST), China

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General Information:

The International Workshop on Modern Science and Technology 2010 will be hosted by Kitami Institute of Technology (KIT). Since the first IWMST held at HEU in 2000, this conference has provided forum for researches to present recent research and its results on advanced science and technology, to exchange up-to-date technical knowledge and experiences, and to share their views on research and development. The IWMST 2010, which coincide the 50th anniversary of KIT, aims to continue this successful partnership.

Topics:

Topics of interest are not limited, but the followings are especially welcome.

1. *Energy and Environment*
2. *Information Science*
3. *Materials and Bio-science*
4. *Infrastructure Engineering*

Language:

The official language is English. All papers should be written in English and all presentation should be carried out in English.

Registration:

Only on-site registration is available on Sept. 4 and 5, 2010. All conference attendees including speakers must register and pay the registration fee (3,000 JPY for students and 10,000 JPY for others), which covers the proceedings and the banquet at the registration desk in the main entrance of KIT.

9:00	Registration (Main Entrance)
9:30	Opening Ceremony (Atrium)
10:00	Plenary Session (Room A107) (PS) Development of Nb-TiNi based hydrogen permeation alloys for separation and purification of hydrogen <i>*Kiyoshi Aoki, Weiliang Wang, Kazuhiro Ishikawa (KIT)</i>
10:40	Photo Taking (Atrium)
11:00	Coffee Break (Atrium)
11:10	Session 1 A106: Infrastructure Engineering Chair: Jise Mao (52) Development of Ground Monitoring System for GPS Guided Aerial Photography System <i>*Kazutoyo Yoneyama, Michihiro Sasaki, Hiroyuki Haniu (KIT)</i> (19) Estimate of Uniaxial Compressive Strength of Hydrothermally Altered Rocks from Northeastern Hokkaido, Japan, based on Axial Point Load Strength Test Result <i>*Masanori Kohno, Hiroyuki Maeda (KIT)</i> (62) Research on Chloride Ion Diffusion in Concrete under Freeze-thaw Action <i>*Jize Mao, Zhiyuan Zhang, Zongmin Liu, Lei Huo (HEU)</i> (63) Durability Enhancement of Seaside Concrete Structures with Silane-organoclay Nanocomposite Coating <i>Yan Geng, *Jize Mao, Zhiyuan Zhang (HEU)</i> A107: Information Science I Chair: Yasuhiro Harada (29) Hologram recording in glass plates <i>Ryohei Minoguchi, Takanobu Yamaguchi, *Kenji Harada (KIT)</i> (67) Automatic Haiku Generation Using Web Search and Japanese Weblogs as Input <i>*Takuya Emori, Rafal Rzepka, Kenji Araki (Hokkaido University, Japan)</i> (33) Single-shot phase-shifting digital holography based on the spatial carrier interferometry <i>*Yasuhiro Harada, Wan Aizuddin, Hiroyasu Sone (KIT)</i> (69) A Multi-Input Approach for a System for Semantically Relevant Art Creation <i>*Tyson Roberts, Rafal Rzepka, Kenji Araki (Hokkaido University, Japan), Fumito Masui (KIT)</i>
12:10	Lunch Time
13:10	Poster Session (Atrium) Chair: Tatsuya Kashiwa (5) FDTD Simulation of Electromagnetic Wave Propagation in 700 MHz Band at Intersection for Inter-Vehicle Communications <i>*Kenji Taguchi, Suguru Imai, Tatsuya Kashiwa (KIT), Kohzoh Ohshima (Asahikawa National College of Technology, Japan), Takeshi Kawamura (KIT)</i> (6) Speech Enhancement by Spectral Subtraction Using the Multirate Signal Processing for Speech Recognition <i>*Suguru Imai, Atsushi Nakagaki, Koji Shibata, Kenji Taguchi, Tatsuya Kashiwa (KIT)</i> (7) Optimal Design of Microwave Circuits Using Adjoint Variable Method <i>*Yuki Nakajima, Kenji Taguchi, Suguru Imai, Tatsuya Kashiwa (KIT)</i> (8) On the Direction of Arrival Estimation Method Using Genetic Algorithm <i>*Shuhei Miyai, Kohzoh Ohshima (Asahikawa National College of Technology, Japan), Mitsuru Muramoto (Tomakomai National College of Technology, Japan), Suguru Imai, Kenji Taguchi, Tatsuya Kashiwa (KIT)</i> (37) Phase-space analysis of the BEC based interferometer : Relation between contrast and vortices <i>*Shinnosuke Aizawa, Shinichi Watanabe (UEC)</i>
14:30	Coffee Break (Atrium)
14:40	Session 2 A106: Materials and Bio-science I Chair: Takashi Yoshida (44) Hydrogen permeability, hydrogen solution coefficient and hydrogen diffusion coefficient of eutectic Nb-TiNi alloys with lamellar and duplex phase microstructures <i>*Wei Liang Wang, Kazuhiro Ishikawa, Kiyoshi Aoki (KIT)</i>

	<p>(79) The study of TiNx films for Self-Cleaning curtain wall in highrise building <i>*Weimin Feng, Qingnan Zhao (WUST)</i></p> <p>(65) Effects of Calcium on the Microstructures and Tensile Properties of Magnesium-Lithium Alloys <i>*Ruizhi Wu, Tao Wang, Milin Zhang, Li Li, Jinghui Zhang, Jiqing Li (HEU)</i></p> <p>(81) Prospect and state of application of zeolite membranes <i>*Zhihui Zhou, Hong Liu (WUST), Jinqu Wang, Jianhua Yang (Dalian University of Technology, China)</i></p> <p>(16) Comparison of DNA Sequences of Japanese Lacquer Plants <i>*Surina Badarh, Takashi Yoshida (KIT)</i></p> <p>A107: Information Science II Chair: Toshiyuki Imamura</p> <p>(10) Analysis of high-order harmonic spectra of argon atoms by intense ω-2ω laser pulses <i>*Toshihito Umegaki, Toru Morishita, Shinichi Watanabe (UEC), Hiromichi Niikura (Waseda University, Japan)</i></p> <p>(14) Acceleration of two dimensional FMM using GPU <i>*Shinzo Yoshida, Toshiyuki Imamura (UEC)</i></p> <p>(15) A CAM-based Low-power Highly Associative Cache for High-performance Embedded Processors <i>*Sho Okabe, Koki Abe (UEC)</i></p> <p>(24) Stack-based Garbage Collection and Its Evaluation in Lua Scripting Language <i>*Sunao Komuro, Koki Abe (UEC)</i></p> <p>(38) Towards Effective Use of Requirements Description in Self-adaptive System Development <i>*Hiroyuki Nakagawa, Akihiko Ohsuga (UEC), Shinichi Honiden (National Institute of Informatics, Japan)</i></p>
16:00	Coffee Break (Atrium)
16:10	<p>Session 3</p> <p>A106: Materials and Bio-science II Chair: Toru Kanno</p> <p>(11) Specific anti-virus activity of a new sulfated oligosaccharide with polylysine-dendritic core structure <i>Shuqin Han (Inner Mongolia University, China), Taisei Kanamoto, Hideki Nakashima (St. Marianna University School of Medicine, Japan), *Takashi Yoshida (KIT)</i></p> <p>(13) Synthesis of environment-friendly hybrid lacquer using partially epoxidized linseed oils as reactive diluents <i>*Takahisa Ishimura (KIT), Rong Lu (Meiji University, Japan), Takashi Yoshida (KIT), Tetsuo Miyakoshi (Meiji University)</i></p> <p>(17) Preparation of curdlan sulfate-coated filter paper with patent influenza A virus capturing functionality <i>*Tegshi Muschi, Takashi Yoshida (KIT)</i></p> <p>(21) Protein Release Properties on Zinc-containing Apatite <i>*Toru Kanno, Morito Inaba, Kiyoshi Tada, Jun-ichi Horiuchi (KIT)</i></p> <p>(36) Ethanol fermentation of cello-oligosaccharides <i>*Xianxiang Liang, Takashi Yoshida (KIT), Toshiyuki Uryu (Kochi University of Technology, Japan)</i></p> <p>A107: Information Science III Chair: Yoshihiko Hayakawa</p> <p>(23) Ship Motion Prediction Based on Wavelet Neural Network <i>*Huixuan Fu, Sheng Liu, Feng Sun (HEU)</i></p> <p>(32) Memory Recall Support System Using RFID Technology <i>*Syunji Yazaki (UEC), Nobuhuro Tukie (Nippon Engineering College of Hachioji, Japan), Toshio Matsunaga (Tokyo University of Technology, Japan)</i></p> <p>(35) ML-EM reconstruction algorithm applied to streak artifact reduction in X-ray CT image <i>*Jian Dong, Atsushi Kondo, Wen-Jun Tang, Kosuke Abe, Yoshihiko Hayakawa (KIT)</i></p> <p>(93) Implementation of Electrical Control System of Smart House <i>Jiehu Luo, *Xiaolong Zhang (WUST), Haishan Liu (Smartsys Electronics Inc, Wuhan, China)</i></p> <p>(70) Improvement of a Checkered Pattern used as a Decode Key for Cryptography <i>Shin-ya Kitayama (RICOH Software Hokkaido, Kitami, Japan), *Shun-ichi Kamemaru, Keiichi Suzawa (KIT)</i></p>
17:30	Reception (Atrium)

9:00	<p>Session 1</p> <p>A106: Energy and Environment Chair: Takeshi Kawamura</p> <p>(54) Acquisition of Japanese Word Descriptions from World Wide Web <i>*Fumito Masui (KIT), Rafal Rzepka (Hokkaido University, Japan), Yasutomo Kimura (Otaru University of Commerce, Japan), Junichi Fukumoto (Ritsumeikan University, Japan), Kenji Araki (Hokkaido University, Japan)</i></p> <p>(41) Driving control of Ball Wheeled Vehicle <i>*Takanori Fukui, Takeshi Kawamura (KIT)</i></p> <p>(66) Method for Social Behavior Acquisition by Robots Using Feedback from the Environment and Users <i>*Keisuke Takagi, Rafal Rzepka, Kenji Araki (Hokkaido University, Japan)</i></p> <p>(30) Visual cryptography using interference color of birefringent material <i>Takumi Aki, *Kenji Harada (KIT)</i></p> <p>(53) Portfolio Management in Japanese Equity Market Under Regime-switching Macroeconomic Risk <i>*Atsushi Yamamoto, Koichi Miyazaki (UEC)</i></p> <p>A107: Information Science I Chair: Rafal Rzepka</p> <p>(45) Answer candidate merging method of Question Answering system <i>*Junichi Fukumoto (Ritsumeikan University, Japan), Fumito MASUI (KIT)</i></p> <p>(64) Improvements in an Experimental Annotated Linguistic Pre-processing System of Casual English <i>*Eleanor Clark, Kenji ARAKI (Hokkaido University, Japan)</i></p> <p>(68) Ubiquitous User Interfaces Framework Using Augmented Reality as a Platform <i>*Svetoslav Lubomirov Dankov, Rafal Rzepka, Kenji Araki (Hokkaido University, Japan)</i></p> <p>(71) Developing a Large-Scale Corpus for Natural Language Processing and Emotion Processing Research in Japanese <i>*Jasec Maciejewski (Independent Researcher, Poland), Michal Ptaszynski, Pawel Dybala (Hokkaido University, Japan)</i></p> <p>(72) Co-Mix Project: Towards Artificial Tutors Using Code Mixing as Foreign Language Teaching Method <i>*Michel M. Mazur (Otaru University of Commerce, Japan), Rafal Rzepka, Kenji Araki (Hokkaido University, Japan)</i></p>
10:20	Coffee Break (Atrium)
10:30	<p>Poster Session Chair: Masakazu Aoyama</p> <p>(12) Preparation of a Fermentable Substrate for Xylitol Production from Bamboo Grasses <i>*Masahiro Miura, Yasutaka Shimotori, Masakazu Aoyama (KIT)</i></p> <p>(18) Synthesis of Optically Active Lactones with Lipase Catalyst <i>*Yasutaka Shimotori (KIT), Tetsuo Miyakoshi (Meiji University, Japan), Masakazu Aoyama (KIT)</i></p> <p>(22) Protein Adsorption Properties on Ceramic-coated Titanium <i>*Ueta Junpei, Naofumi Ohtsu, Kanno Toru, Kiyoshi Tada, Jun-ichi Horiuchi (KIT)</i></p> <p>(34) Computer assisted evaluation of surgical maxillary expansion based on pre- and post-operative CT <i>*Sven Kannenberg, B. Frank, A. Parvin, G. Al-Hakim (Hamburg University of Applied Sciences, Germany), A. Preiss (University of Bristol, Bristol, UK), C. Landes, R. Sader (University of Frankfurt, Germany), Cornelia Kober (Hamburg University of Applied Sciences, Germany)</i></p>
12:00	Lunch Time
13:00	<p>Session 2</p> <p>A106: Materials and Bio-science I Chair: Shouhei Kidera</p> <p>(28) ICA Algorithm with Likelihood Criterion to Separate Mixtures of Complex Sinusoidal Signals <i>*Tetsuhiro Okano, Shohei Kidera, Tetsuo Kirimoto (UEC)</i></p> <p>(49) A Novel Retrieval Approach for Medical Image Based on Multi-instance Learning <i>*Hong Liang, Jin Li, (HEU), Lianzhi Tang (Heilongjiang Hospital, China), Guangda Yang, Meichao Lv, Yaoyu Feng, Yanwei Wang (HEU)</i></p>

- (31) Acceleration for Shadow Region Imaging Algorithm with Multiple Scattered Waves for UWB Radars
**Ken Akune, Shouhei Kidera, Tetsuo Kirimoto (UEC)*
- (59) Study on Data Fusion Technology Applied in Spatial Spectrum Estimation DOA Program
**Xianghong Wang (HEU)*
- (3) Super-Resolution UWB Radar Imaging Algorithm Based on Frequency Domain Interferometer
**Shouhei Kidera, Tetsuo Kirimoto (UEC)*
- (57) Segmentation Based On GVF Snake
*Junhong Xu, Wang Cong, Jin Li, Lei Wang, Lijie Li, *Hong Liang (HEU)*
- (27) Accurate UWB Radar Imaging Algorithm Using Curvilinear Scanning of Antenna
**Yoriaki Abe, Shouhei Kidera, Tetsuo Kirimoto (UEC)*
- (55) Image Mosaic Based on feature matching
*Jin Li, *Yanwei Wang, Peihua Bao, Lei Wang (HEU)*
- A107: Information Science II** Chair: Takeo Fujii
- (4) Transient Stability Enhancement of Power System Including Wind Farm by Using SMES
**Md. Rafiqul Islam Sheikh (KIT), S.M. Muyeen (The Petroleum Institute, Abu Dhabi, UAE)
 Rion Takahashi, Junji Tamura (KIT)*
- (40) Optimal waveform for the entrainment of a weakly forced oscillator
**Naotaka Sagayama, Hisa-Aki Tanaka (UEC), István Z. Kiss (Saint Louis University, USA)*
- (9) Flow Rate Control Considering TCP Behavior for Heterogeneous Cellular System
**Takamasa Kimura, Takeo Fujii (UEC)*
- (74) Stress of High Voltage Steel Tower Wireless Remote Monitoring System
**Fengxing Zhou, Yang Jing, Lan Jianwu, Guo Hangyu (WUST)*
- (26) A Machine-learning Approach to Improve TCP Congestion Control
**Akihiro Shiozu, Koki Abe (UEC)*
- (39) Efficient Broadcasting method with Collision Avoiding Mechanism for Ubiquitous Computing Environments
**Keisuke Higashimine, Kazu-aki Akashi, Hisa-aki Tanaka (UEC)*

**Speaker*

Oral presentation instruction

1. Time slots for the oral presentation are 15 minutes each. The first 10 minutes are for presentation and the last 5 minutes are for questions and answers.
2. A video projector and computer will be provided for the oral sessions. A Japanese-language version of Windows Vista/XP with Office 2007 will be provided for presentation use. PowerPoint is the required data format. As a rule, we would like to ask the presenters to use the computer provided by the host institution.
3. Please make sure to arrive at the presentation room 30 minutes prior to the start of your session and give your electric file on a USB drive (memory stick) to the staff. Timely transfer of your file to the presentation computer is essential to verify that there are no problems with your presentation, and to avoid delays between presentations.
4. If you are not able to present your data in this format or for some reason must use your own computer, a separate RGB cable will be provided at the podium.

Note: The chair of each oral session is responsible to strictly follow the timetable.

Poster session instruction

1. The size of a panel is 90cm by 150cm. Please prepare your poster within the size.
2. On the top of the first sheet of your paper, write the following information:
 - The paper ID
 - The title of the paper
 - The name(s) of the author(s) and the affiliation

3. Presentation time

- Paper ID 5, 6, 7, 8, 37: September 4 (Sat) 13:10 - 14:30
- Paper ID 12, 18, 22, 34: September 5 (Sun) 10:30 - 12:00

Please make sure to be there to give your presentation during that time. The paper ID is shown on each panel.

4. Put up your poster at 11:00, Sep. 4 or 9:00, Sep. 5 and remove it at 16:00, Sep. 4 or 15:00, Sep. 5.

The posters remaining after that will be discarded.

Conference cite

