

Monday 10

16:00~ Registration

17:30~ Welcome Party (SEIUN 1)

Tuesday 11

9:00~ Registration

PLENARY SESSION (SEIUN 2)

10:00 Opening Remarks Tomoyuki Kakeshita

10:20 PL-101 (Plenary lecture) “The Science and Technology Basic Plan, and the Strategy for Development of Materials Research in Japan”

Yukichi Umakoshi

National Institute for Materials Science

11:10 PL-102 (Plenary lecture) “Strategic Research in Material Sciences in Cambridge and the European Perspective”

Ekhard Salje

University of Cambridge, United Kingdom

12:00~13:30 Lunch (SEIUN 1)

Advanced Materials for Combined Structural and Functional Applications 1 (GEKKO 1)

13:30 IN-103 (Invited lecture) “New Multifunctional Lightweight Materials Based on Cellular Metals - Manufacturing, Properties and Applications”

Günter Stephani

Fraunhofer Institute for Materials Research, Germany

- 14:00 IN-104 (Invited lecture) “Design and Synthesis of Thin Palladium Membranes on Porous Metal Substrate for Hydrogen Separation”
Zhongliang Shi¹, Jerzy A. Szpunar¹, Shanqiang Wu²
¹*McGill University, Canada;* ²*AH2T Inc., Canada*
- 14:30 OR-105 “Fabrication of Lotus-Type Porous Aluminum through Thermal Decomposition Method”
Hideo Nakajima, S. Y. Kim, J. S. Park
The Institute of Scientific and Industrial Research, Osaka University
- 14:50 OR-106 “Grain Refinement of Magnesium Alloy Sheets by ARB Using High-Speed Rolling Mill”
Hiroshi Utsunomiya¹, Ken-ichi Izumi¹, Tetsuo Sakai¹, Toshiji Mukai²
¹*Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University;* ²*Structural Metals Center, National Institute for Materials Science*

15:10~15:30 Break

Advanced Materials for Structural Applications 1 (GEKKO 1)

- 15:30 IN-107 (Invited lecture) “Novel Applications of Ionic Liquids in Materials Processing”
Ramana G. Reddy
The University of Alabama, United States of America
- 16:00 OR-108 “Reactive Wetting in Liquid Cu and Silicon Carbide System”
Kiyoshi Nogi
Joining and Welding Research Institute, Osaka University
- 16:20 OR-109 “Tailoring Morphology of Anodic Oxide Layers”
Hiroaki Tsuchiya¹, Patrik Schmuki², Shinji Fujimoto¹
¹*Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University;* ²*Department of Materials Science, Institute for Surface Science and Corrosion (LKO), University of Erlangen-Nuremberg, Germany*

Advanced Materials for Combined Structural and Functional Applications 2 (GEKKO 2)

13:30 IN-110 (Invited lecture) “Identification of Crystal Chirality and Polarity by Electron Diffraction”

Haruyuki Inui, Katsushi Tanaka, Satoshi Fujio, Hiroki Sakamoto, Akihiro Fujii
Department of Materials Science and Engineering, Graduate School of Engineering, Kyoto University

14:00 IN-111 (Invited lecture) “Why Don’t Glasses Flow?”

Feng Ye¹, Wolfgang Sprengel², Hans-Eckhardt Schaefer³
¹*State Key Laboratory for Advanced Metals and Materials, University of Science and Technology, China;* ²*Institut für Materialphysik, Technische Universität Graz, Austria;* ³*Institut für Theoretische und Angewandte Physik, Universität Stuttgart, Germany*

14:30 OR-112 “Coalescence between Nanometer-Sized Dislocation Loops”

Hirotao Mori, Kazuto Arakawa
Research Center for Ultra-High Voltage Electron Microscopy, Osaka University

14:50 OR-113 “Investigation of Lattice Defects in Hydrogen Storage Materials by Positron Annihilation Spectroscopy and First-Principles Calculations”

Masataka Mizuno¹, Hideki Araki¹, Yasuharu Shirai²
¹*Center for Atomic and Molecular Technologies, Graduate School of Engineering, Osaka University;* ²*Department of Materials Science and Engineering, Graduate School of Engineering, Kyoto University*

15:10~15:30 Break

Advanced Materials for Functional Applications 1 (GEKKO 2)

15:30 IN-114 (Invited lecture) “Magnetocaloric and Shape-Memory Properties in Ferromagnetic Heusler Alloys”

Antoni Planes¹, Lluís Mañosa¹, Mehmet Acet²
¹*Departament d’Estructura i Constituents de la Matèria, Facultat de Física, Universitat de Barcelona, Spain;* ²*Fachbereich Physik, Experimentalphysik, Universität Duisburg-Essen, Germany*

16:00 OR-115 “Effects of Magnetic Field on Phase Transformation in Solids”

Tomoyuki Kakeshita, Takashi Fukuda

*Division of Materials and Manufacturing Science, Graduate School of Engineering,
Osaka University*

16:20 OR-116 “Rearrangement of Crystallographic Domains Driven by Magnetic Field
in Ferromagnetic Ni₂MnGa and Antiferromagnetic CoO”

Tomoyuki Terai, Motoyoshi Yasui, Masataka Yamamoto, Tomoyuki Kakeshita

*Division of Materials and Manufacturing Science, Graduate School of Engineering,
Osaka University*

17:00~18:30 Poster Session (SEIUN 2)

18:30~20:30 Banquet (SEIUN 1)

Wednesday 12

9:00~ Registration

Advanced Materials for Structural Applications 2 (GEKKO 1)

- 9:20 IN-201 (Invited lecture) “Recent Research Progress in Micro- and Nano-Joining”
Yunhong Norman Zhou
Microjoining Laboratory, Centre for Advanced Materials Joining, University of Waterloo, Canada
- 9:50 OR-202 “A Novel Metal-to-Metal Bonding Process through In-Situ Formation of Ag Nanoparticles Using Ag₂O Microparticles”
Akio Hirose¹, Hiroaki Tatsumi¹, Naoya Takeda¹, Yusuke Akada¹, Tomo Ogura¹, Eiichi Ide², Toshiaki Morita²
¹*Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University;* ²*Materials Research Laboratory, Hitachi, Ltd.*
- 10:10 OR-203 “Computational Simulation of Weld Microstructure and Distortion by Considering Process Mechanics”
Masahito Mochizuki, Yoshiki Mikami, Shigetaka Okano, Shinsuke Itoh
Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University

10:30~10:50 Break

Advanced Materials for Structural Applications 3 (GEKKO 1)

- 10:50 IN-204 (Invited lecture) “R-Value of Shear Deformed and Annealed Al Alloy Sheets”
Saidmurod Akramov, Insoo Kim
School of Advanced Materials and Systems Engineering, Kumoh National Institute of Technology, Korea

11:20 OR-205 “Unusual Pseudoelastic Behaviour of Fe₃Ga Shape Memory Alloys”
Hiroyuki Y. Yasuda¹, Mitsuhiro Aoki¹, Yasuhiro Oda¹, Kouki Fukushima¹, Yukichi Umakoshi²
¹*Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University;* ²*National Institute for Materials Science*

11:40 OR-206 “Simultaneous Occurrence of Amorphization and Crystallization in Zr_{66.7}Ni_{33.3} Alloy under MeV Electron Irradiation”
Takeshi Nagase¹, Kazuya Takizawa², Mitsuo Nakamura², Hirotarō Mori¹, Yukichi Umakoshi³
¹*Research Center for Ultra-High Voltage Electron Microscopy, Osaka University;* ²*Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University;* ³*National Institute for Materials Science*

12:00~13:30 Lunch (SEIUN 1)

Advanced Materials for Combined Structural and Functional Applications 3 (GEKKO 2)

9:20 IN-207 (Invited lecture) “Nano-Hydroxyapatite/Poly ε-Caprolactone Composite 3D Scaffolds for Mastoid Obliteration”
Seung Eon Kim¹, Hui Suk Yun¹, Yong Taek Hyun¹, Jung Woog Shin², Jae Jun Song³
¹*Center for Future Technology, Korea Institute of Materials Science, Korea;* ²*Department of Biomedical Engineering, Inje University, Korea;* ³*Department of Otorhinolaryngology, Dongguk University Hospital, Korea*

9:50 OR-208 “Adaptation of BAp Crystal Orientation to Stress Distribution in Rat Mandible During Bone Growth”
Takayoshi Nakano, Wataru Fujitani, Yukichi Umakoshi
Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University

10:10 OR-209 “Low-Damage Processes for Hybrid Flexible Device Fabrications with Reactive High-Density Plasmas Driven by Multiple Low-Inductance Antenna Modules”

Yuichi Setsuhara¹, Kosuke Takenaka¹, Ken Cho², Jeon G. Han³

¹*Joining and Welding Research Institute, Osaka University, CREST, JST;* ²*Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University;* ³*Center for Advanced Plasma Surface Technology, Sungkyunkwan University, Korea*

10:30~10:50 Break

Advanced Materials for Functional Applications 2 (GEKKO 2)

10:50 IN-210 (Invited lecture) “Synthesis of Nano-Structured Hybrid Thin Films by Advanced Plasma Processing”

Jeon G. Han, Nikolay Britun, Sung I. Kim

Center for Advanced Plasma Surface Technology, Sungkyunkwan University, Korea

11:20 IN-211 (Invited lecture) “Space Separated Multiexciton Generation in Si Nanocrystals”

Dolf Timmerman, Wieteke de Boer, Tom Gregorkiewicz

Van der Waals - Zeeman Institute, University of Amsterdam, The Netherlands

11:50 OR-212 “Development of New-Type 1.5 μm Light-Emitting Devices Based on Er, O-Codoped GaAs”

Yasufumi Fujiwara, Yoshikazu Terai, Atsushi Nishikawa

Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University

12:10~13:30 Lunch (SEIUN 1)

Advanced Materials for Combined Structural and Functional Applications 4 (GEKKO 1)

13:30 IN-213 (Invited lecture) “Metal Oxide Nanorod-Based Structures and Devices”

Lionel Vayssieres

World Premier International Center for Materials Nanoarchitectonics, National Institute for Materials Science

14:00 IN-214 (Invited lecture) “Magnetic Ostwald Ripening: High Static Field Effect on the Growth of Ferromagnetic Particles by Solid State Diffusion”

Eric Beaunon

CNRS/CRETA, France

14:30 OR-215 “Three-Dimensional Alignment of FeSi₂ with Orthorhombic Symmetry by an Anisotropic Magnetic Field”

Noriaki Nakatsuka, Hideyuki Yasuda, Tomoya Nagira, Masato Yoshiya

Department of Adaptive Machine Systems, Graduate School of Engineering, Osaka University

14:50 OR-216 “Martensitic Transformation from Ultrafine Grained Metastable Austenite”

Nobuhiro Tsuji¹, Taro Maekawa¹, Daisuke Terada¹, Hiromoto Kitahara²

¹*Department of Adaptive Machine Systems, Graduate School of Engineering, Osaka University;* ²*Department of Materials Science and Engineering, Kumamoto University*

15:10~15:30 Break

Advanced Materials for Structural Applications 4 (GEKKO 1)

15:30 IN-217 (Invited lecture) “SiC and AlN as Semiconductor Materials for Power- and Optoelectronics”

Albrecht Winnacker

Department for Materials Science, Electronic Materials, University of Erlangen-Nuernberg, Germany

- 16:00 OR-218 “Surface Modification of β -Type Titanium Alloy by Electrochemical Potential Pulse Polarization”
Shinji Fujimoto, Vedarajan Raman, Hiroaki Tsuchiya
Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University
- 16:20 OR-219 “Surface Modification of Cast Irons by Friction Stir Processing”
Hidetoshi Fujii¹, Yasufumi Yamaguchi², Toshifumi Kikuchi¹, Koichi Imagawa¹, Shoji Kiguchi², Kiyoshi Nogi¹
¹*Joining and welding Research Institute, Osaka University;* ²*Faculty of Science and Engineering, Kinki University*

Advanced Materials for Functional Applications 3 (GEKKO 2)

- 13:30 IN-220 (Invited lecture) “Magnetic Behaviour of Single Nanostructured Magnet”
Osamu Kitakami¹, S. Okamoto¹, N. Kikuchi¹, T. Shimatsu², K. Mitsuzuka², H. Aoi²
¹*Institute of Multidisciplinary Research for Advanced Materials, Tohoku University;* ²*Research Institute of Electrical Communication, Tohoku University*
- 14:00 IN-221 (Invited lecture) “Development of Heusler Alloys for the Magneto Resistive Devices”
Ammanabrolu Rajanikanth¹, Y. K. Takahashi², K. Hono¹
¹*International Center for Young Scientists-Interdisciplinary Material Research, National Institute for Materials Science;* ²*National Institute for Materials Science*
- 14:30 OR-222 “Magnetic Logic Devices Composed of Permalloy Dots”
Ryoichi Nakatani¹, Hikaru Nomura¹, Yasushi Endo²
¹*Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University;* ²*Department of Electrical and Communication Engineering, Graduate School of Engineering, Tohoku University*
- 14:50 OR-223 “Superparamagnetism of Ultrathin Co Film on Antiferromagnetic Cr₂O₃ Layer”
Yu Shiratsuchi, Toshihiro Nakatani, Ryoichi Nakatani, Masahiko Yamamoto
Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University

15:10~15:30 Break

Advanced Materials for Combined Structural and Functional Applications 5 (GEKKO 2)

15:30 IN-224 (Invited lecture) “Nanocomposites Synthesized Using Green Solvents and Their Applications”

Zhimin Liu

Institute of Chemistry, The Chinese Academy of Sciences, China

16:00 OR-225 “Terahertz Wave Behaviours in Dielectric Micro Patterns with Polygon Tablets Fabricated by Spatial Joining of Stereolithography”

Soshu Kirihara¹, Masaru Kaneko², Toshiki Niki²

¹Smart Processing Research Center, Joining and Welding Research Institute, Osaka University; ²Division of Sustainable Energy and Environmental Engineering, Graduate School of Engineering, Osaka University

16:20 OR-226 “Hydrothermal Metallurgy for Recycling of Slag & Glass”

Toshihiro Tanaka, Takeshi Yoshikawa, Nobumitsu Hirai, Shigeru Katsuyama

Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University

16:40 Closing Remarks (GEKKO 1)