

Opening Ceremony

Fri. December 1, 14:00 – 14:10, Noyori Conference Hall

Master of Ceremony: Shunsuke MUTO (Executive Committee Chair)

Opening Address

Ichiro NARUSE (Organizing Committee Chair)

Welcome Address

Akihiro SASOH (Vice President, Nagoya Univ.)

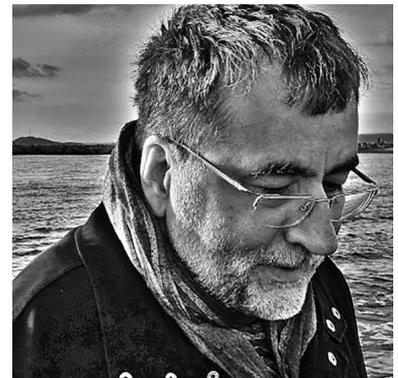
Plenary Lectures

Fri. December 1, 14:10 – 17:10, Noyori Conference Hall

Speaker 1 (14:10 – 15:00):

Ferdinando VILLA, Ph.D. (IKERBASQUE, Basque Centre for Climate Change)

“From open science to integrated science: a vision for artificial intelligence in support of a sustainable future.”



Born in Italy, Dr. Villa is a theoretical ecologist and computer scientist whose work is rewarded with adoption at the highest levels.

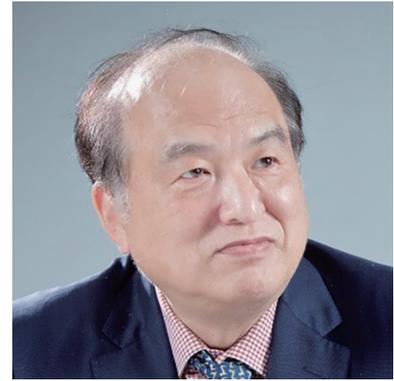
The ARIES project (aries.integratedmodelling.org), is now a gold standard in ecosystem services and sustainability assessment, serving thousands of users worldwide. The k.LAB technology (docs.integratedmodelling.org/technote) creates a *semantic web* for science, assembling *ad-hoc* computations based on a user query expressed conceptually. In 2021, the Statistical Office of the United Nations has launched the ARIES for SEEA platform (seea.un.org/content/aries-for-seea), enabling governments worldwide to easily develop natural capital accounts, developed by Dr. Villa and his team in Bilbao. Dr. Villa is regularly interviewed as a thought leader and AI innovator whose contributions to the interface of science and policy are increasingly seen as transformational.

Speaker 2 (15:15 – 16:05):

Edward YI CHANG (Federal Institute for Materials Research and Testing (BAM))

“New Breed of GaN and InGaAs Devices through Dielectrics / Semiconductor Interface Engineering”

Dr. Edward Yi Chang received the Ph.D. degree from University of Minnesota, Minneapolis, in 1985. He is a Chief Director of Microelectronics and Information Research Center (MIRC) and Director of TSMC Center, National Yang Ming Chiao Tung University, Taiwan and honorary doctorate, National University of Malaysia, Malaysia. He is an IEEE Life Fellow and Japan Society of Applied Physics Fellow International, TMRS Fellow and Distinguished Lecturer of the IEEE Electron Devices Society.



Speaker 3 (16:20 – 17:10):**Yuichi TSUDA (Japan Aerospace Exploration Agency)****“New Technologies to Unveil New World: Achievements of Asteroid Sample Return Mission Hayabusa2”**

Yuichi Tsuda received his Ph.D. degree in aeronautics and astronautics from University of Tokyo in 2003, and joined Institute of Space and Astronautical Science (ISAS), Japan Aerospace Exploration Agency (JAXA) in 2003 as a research associate. He became an associate professor in 2014, and a professor in 2020 of ISAS/JAXA. He was a visiting scholar of Dept. of Aerospace Engineering, University of Michigan and Dept. of Aerospace Engineering Sciences, University of Colorado Boulder in 2008-2009. He was the deputy lead of the IKAROS, the world's first interplanetary solar sail mission in 2009-2013. He played a leadership role in the Hayabusa2 mission, an asteroid sample-return mission. As chief engineer from 2007 to 2015 and project manager from 2015 to 2022, he led the development and operation of the Hayabusa2 mission, which successfully brought a significant amount of material from a carbon-rich asteroid for the first time in human history. He is currently the team leader of the Hayabusa2 Extended Mission. His research interest includes astrodynamics, spacecraft system and deep space exploration.

Closing Ceremony

Sun. December 3, 12:00 – 12:30, ES Hall

Master of Ceremony: Shunsuke MUTO (Executive Committee Chair)

Outstanding Presentation Awards Ceremony

Closing Remarks

Toshiyuki YAMAMOTO (Organizing Committee Vice-Chair)

Oral Presentations

Saturday, December 2

A1-I: Nuclear Emulsion Workshop I (9:00-12:00, ES021)

**Chair: Osamu SATO (Nagoya Univ.)
Hiroki ROKUJO (Nagoya Univ.)**

A1-I-1 Nagoya University Nuclear Emulsion Facility:
(0123) Recent Activities and Prospects of Film
Production

Hiroki Rokujo, Ikuya Usuda, Saya Yamamoto, Osamu
Sato, Masahiro Komatsu, Katsuhisa Ozeki, Tsutomu
Fukuda, Tomohiro Hayakawa, Kenichi Kuwabara, Kou
Sugimura, Go Iwamoto and Tomokazu Matsuo

*Department of Science/Institute of Materials and Systems
for Sustainability, Nagoya University*

A1-I-2 Nagoya University Nuclear Emulsion Facility:
(0143) Recent Activities and Prospects of Emulsion
Scanning

Toshiyuki Nakano^{1,2,3}, Hideyuki Minami¹, R. Komatani³,
H. Rokujo³, M. Yoshimoto⁴, K. Kodama⁵, O. Sato³, T.
Fukuda⁶, T. Matsuo³ and K. Morishima^{1,3}

¹Graduate school of Science, Nagoya University
²Kobayashi Maskawa Institute
³Institute of Materials and Systems for Sustainability
⁴RIKEN
⁵Aichi University of Education
⁶Nagoya University Institute for Advanced Research

A1-I-3 GRAINE Project: Balloon-borne Gamma-ray
(0028) Telescope with Nuclear Emulsion

Invite Shigeki Aoki¹ for Graine Collaboration^{1,2,3,4,5,6}

¹Kobe University
²Nagoya University
³Okayama University of Science
⁴Gifu University
⁵Aichi University of Education
⁶ISAS/JAXA

A1-I-4 Gamma-Ray Astro Imager with Nuclear
(0033) Emulsion project: Results in Operation for
Time Stamper Emulsion Film and Status of
Analysis on Balloon Experiment in 2023,
Australia

Shogo Nagahara¹ for GRAINE collaboration^{1,2,3,4,5,6}

¹Kobe University
²Nagoya University
³Okayama University of Science
⁴Gifu University
⁵Aichi University of Education
⁶ISAS/JAXA

A1-I-5 Study of chemical composition of cosmic ray
(0126) nuclei with GRAINE experiments

Atsushi Iyono¹ for the GRAINE collaboration^{1,2,3,4,5,6}

¹Department of Fundamental Science, Okayama
University of Science
²Kobe University
³Nagoya University
⁴Gifu University
⁵Aichi University of Education
⁶ISAS/JAXA

A1-I-6 The NINJA experiment and its future
(0130) prospects

Tsutomu Fukuda¹
and NINJA Collaboration^{2,3,4,5,6,7,8,9,10,11,12,13,14}

¹Institute for Advanced Research, Nagoya University
²Nagoya University
³Kyoto University
⁴Yokohama National University
⁵Nihon University
⁶Toho University
⁷Kobe University
⁸Tohoku University
⁹Kanagawa University
¹⁰ICRR, University of Tokyo
¹¹Kavli-IPMU, University of Tokyo
¹²RIKEN
¹³Ruder Bošković Institute
¹⁴King's College London

A1-I-7 Proton interaction and its charm production
(0124) study

Osamu Sato for the DsTau Collaboration

*Institute of Material and Systems for Sustainability,
Nagoya University*

Oral Presentations

- A1-I-8 Measuring three-flavor neutrinos with FASER
(0132) at the LHC
- Tomoko Ariga on behalf of the FASER Collaboration
- Kyushu University*
- A1-II: Nuclear Emulsion Workshop II**
(14:00-16:40, ES021)
- Chair: Osamu SATO (Nagoya Univ.)**
Naotaka NAGANAWA (Nagoya Univ.)
- A1-II-1 Particle and Applied physics with nuclear
Invite emulsion in Europe
- Giovanni De Lellis^{1,2}
- ¹*Department of Physics "E. Pancini", University "Federico II" of Naples*
²*Istituto Nazionale di Fisica Nucleare*
- A1-II-2 Research and development for the exploration
(0245) of unknown cosmic ray events using billion-year-scale mineral track detectors
- Yuki Ido¹, Tatsuhiro Naka², Kaito Takamatu³, Tohma Ori³, Takenori Kato⁴, Shigenobu Hirose⁵, Kohta Murase^{6,7}, Takuya Shiraishi⁸, Yoshitaka Itow⁹, Shingo Kazama⁹ and Youhei Igami¹⁰
- ¹*Graduate School of Environmental Studies Nagoya University*
²*Graduate School of Science Toho University*
³*National Institute of Technology Suzuka College*
⁴*ISEE Nagoya University*
⁵*Japan Agency for Marine-Earth Science and Technology*
⁶*The Pennsylvania State University*
⁷*Yukawa Institute for Theoretical Physics Kyoto University*
⁸*Graduate School of Science Kanagawa University*
⁹*KMI Nagoya University*
¹⁰*Graduate School of Science Kyoto University*
- A1-II-3 Measurement of low energy recoiled proton
(0240) tracks in the Super Fine Grained Nuclear emulsion for searching low mass dark matter
- Yurika Dowdy¹, Tatsuhiro Naka¹, Takuya Shiraishi², Ryuta Kobayashi³, Yasushi Hoshino², Saya Akamatsu¹, Kana Saeki¹, Natuski Chin³, Kihiro Tanaka¹, Osamu Sato⁴ and NEWSdm collaboration
- ¹*Graduate School of Science Toho University*
²*Graduate School of Science Kanagawa University*
³*Graduate School of Science Nagoya University*
⁴*IMASS Nagoya University*
- A1-II-4 High-spatial-resolution nuclear emulsion for
(0167) ultracold neutrons
- Naotaka Naganawa
- Institute of Materials and Systems for Sustainability, Nagoya University*
- A1-II-5 Investigate the mechanism of proton boron
(0059) capture therapy (PBCT)
- Mitsuhiro Kimura¹, Ko'ichiro Nakajima¹, Kento Nomura¹, Takahiro Matsumoto², Naotaka Naganawa³ and Osamu Sato³
- ¹*Nagoya proton therapy center, Nagoya City University*
²*Graduate School of Design and Architecture, Nagoya City University*
³*IMaSS, Nagoya University*
- A1-II-6 Precise measurement of binding energies of
(0070) hypernuclei on nuclear emulsion with machine learning
- Manami Nakagawa¹, Ayumi Kasagi^{1,2}, Yan He^{1,3}, Shohei Sugimoto^{1,4}, Wenbo Dou¹, Vasyli Drozd⁵, Hiroyuki Ekawa¹, Samuel Escrig⁶, Yiming Gao^{1,7,8}, Enqiang Liu^{7,8}, Abdul Muneem⁹, Kazuma Nakazawa^{1,10}, Christophe Rappold⁶, Nami Saito¹, Takehiko R. Saito^{1,11}, Masato Taki², Yoshiki K. Tanaka¹, He Wang¹, Ayari Yanai^{1,4}, Junya Yoshida¹² and Masahiro Yoshimoto¹³
- ¹*High Energy Nuclear Physics Laboratory, Cluster for Pioneering Research, RIKEN*
²*Graduate School of Artificial Intelligence and Science, Rikkyo University*
³*School of Nuclear Science and Technology, Lanzhou University*
⁴*Department of Physics, Saitama University*
⁵*Energy and Sustainability Research Institute Groningen, University of Groningen*
⁶*Instituto de Estructura de la Materia - CSIC*
⁷*Institute of Modern Physics, Chinese Academy of Sciences*
⁸*School of Nuclear Science and Technology, University of Chinese Academy of Sciences*
⁹*Faculty of Engineering Sciences, Ghulam Ishaq Khan Institute of Engineering Sciences and Technology*
¹⁰*Graduate School of Engineering, Gifu University*
¹¹*GSI Helmholtz Centre for Heavy Ion Research*
¹²*Department of physics, Tohoku University*
¹³*RIKEN Nishina Center for Accelerator-Based Science, RIKEN*

A2-I: Graphene and Two-Dimensional Materials I

(9:00-12:00, ES022)

Chair: Minoru OSADA (Nagoya Univ.)

A2-I-1 Interface- and Defect-Engineered Inorganic Nanosheets and Their Nanohybrids (0012)

Keynote Seong-Ju Hwang

Department of Materials Science and Engineering, Yonsei University

A2-I-2 An iron-containing layered clay mineral for photocatalytic H₂ evolution from water (0009)

Invite Makoto Ogawa¹, Alisa Phuekphong¹ and Takayuki Hayakawa²

¹*School of Energy Science and Engineering, Vidyasirimedhi Institute of Science and Technology (VISTEC)*
²*Laboratory of Applied Clay Technology, Hojun Co., Ltd.*

A2-I-3 Tailored synthesis of amorphous 2D oxide/oxyhydroxide nanosheets (0194)

Eisuke Yamamoto¹, Daiki Kurimoto¹, Kentaro Ito¹, Makoto Kobayashi¹ and Minoru Osada^{1,2}

¹*Department of Materials Chemistry & Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*
²*Research Center for Crystalline Materials Engineering, Nagoya University*

A2-II: Graphene and Two-Dimensional Materials II

(10:40-12:00, ES022)

Chair: Seong-Ju HWANG (Yonsei Univ.)

A2-II-1 Manipulating 2D materials/liquid electrolyte interfaces for energy conversions (0185)

Keynote Chun Wei Chen

Department of Materials Science and Engineering, National Taiwan University

A2-II-2 Controlling Two-dimensional Structures of Chemically Exfoliated Inorganic Nanosheets (0014)

Invite Takaaki Taniguchi

Research Center for Materials Nanoarchitectonics, National Institute for Materials Science

A2-II-3 Synthesis and Characterization of Titanium Oxynitride Nanosheets (0207)

Makoto Kobayashi¹, Naoki Hagishima¹, Hikaru Sugimoto¹, Eisuke Yamamoto¹ and Minoru Osada^{1,2}

¹*Institute of Materials and Systems for Sustainability & Department of Materials Chemistry, Nagoya University*
²*Research Center for Crystalline Materials Engineering, Nagoya University*

A2-III: Graphene and Two-Dimensional Materials III

(14:00-17:00, ES022)

Chair: Chun Wei CHEN (National Taiwan Univ.)
Makoto OGAWA (VISTEC)

A2-III-1 2D semiconductors for future computing (0190)

Xinran Wang^{1,3}, Taotao Li¹, Weisheng Li¹, Dongxu Fan¹ and Zhihao Yu²

Keynote

¹*Nanjing University*
²*Nanjing University of Posts and Telecommunications*
³*Suzhou Laboratory*

A2-III-2 Shift current photovoltaics in ferroelectric SnS (0200)

Kosuke Nagashio

Invite

Department of Materials Engineering, The University of Tokyo

A2-III-3 Atomic and electronic structures of monolayer Kondo lattice CePt₂/Pt(111) (0195)

Fumio Komori^{1,2,3,4}, Koichiro Ienaga^{2,5}, Toshio Miyamachi^{2,3} and Koichi Kato¹

¹*Institute of Industrial Science, The University of Tokyo*
²*Institute for Solid State Physics, The University of Tokyo*
³*School of Materials and Chemical Technology, Tokyo Institute of Technology*
⁴*Institute of Materials and Systems for Sustainability, Nagoya University*
⁵*Department of Physics, Tokyo Institute of Technology*

A2-III-4 Electromechanical Switching of a C₆₀ nanochain (0199)

Invite

Kazuhito Tsukagoshi

Research Center for Materials Nanoarchitectonics (MANA), National Institute for Materials Science (NIMS)

Oral Presentations

A2-III-5 2D Organic Crystals: from Fabrications to
(0201) Neuromorphic Computing

Invite Yun Li

School of Electronic Science and Engineering, Nanjing University

A2-III-6 Photoinduced charge transfer process in
(0202) graphene functionalized with porphyrin-boron azadipyrromethene dyads.

Ruben Canton Vitoria^{1,2}, M. B. Thomas³, A. Z. Alsaleh³, G. Rotas^{1,4}, Y. Nakanishi^{5,6}, H. Shinohara⁶, F. D Souza³ and N. Tagmatarchis¹

¹*National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

³*Department of Chemistry, University of North Texas*

⁴*Department of Chemistry, University of Ioannina*

⁵*Department of Physics, Tokyo Metropolitan University*

⁶*Department of Chemistry, Nagoya University*

A2-III-7 Emerging 2D Oxides: From Tailored Synthesis
(0008) to Device Integration

Minoru Osada

Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University

A3-I: Advanced Materials for Energy and Environmental Applications I (9:30-10:30, ES024)

**Chair: Shunta HARADA (Nagoya Univ.)
Yasuaki TOKUDOME (Osaka Metropolitan Univ.)**

A3-I-1 Analysis of the Effect of Solvent Composition
(0170) on Suppression of Inclusion in SiC Solution Growth

Huiqin Zhou¹, Yuma Fukami¹, Kentaro Kutsukake², Shunta Harada^{1,2}, Miho Tagawa^{1,2} and Toru Ujihara^{1,2}

¹*Department of Graduate School of Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability*

A3-I-2 Birefringence image simulation of tilted
(0137) dislocations in a SiC crystal considering three-dimensional stress fields.

Y. Matsubara¹, K. Murayama² and S. Harada¹

¹*Nagoya University*

²*Mipox corporation*

A3-I-3 N-polar III-Nitride Epitaxy for Power Devices
(0192) on Sapphire

Markus Pristovsek¹, Itsuki Furuhashi¹ and Pietro Pampili^{1,2}

¹*CIRFE, IMASS, Nagoya University*

²*Tyndall National Institute, University College Cork*

A3-I-4 Nano Hybridization of Fluorapatite (FAP)
(0239) on Dicalcium Phosphate (DCPD) for Environmental Applications

Masamoto Tafu¹, Isamu Sunahara¹, Yuya Hata^{1,2} and Natsuki Okajima^{1,3}

¹*Department of Applied Chemistry and Chemical Engineering, National Institute of Technology (KOSEN), Toyama College*

²*Fudo Tetra Corporation*

³*Nitta Gelatin Inc*

A3-II: Advanced Materials for Energy and Environmental Applications II (11:00-12:00, ES024)

**Chair: Kazuyoshi KANAMORI (Kyoto Univ.)
Tim P. FELLINGER (Federal Institute for Materials Research and Testing)**

A3-II-1 Structure-Performance Relations of PGM-free
Invite Electrocatalysts for PEM Fuel Cells

Tim-Patrick Fellinger, Jonas Pampel and Asad Mehmood

Division 3.6 Electrochemical Energy Materials, Bundesanstalt für Materialforschung und -prüfung (BAM)

A3-II-2 Fabrication of porous silicon for lithium-ion
(0031) battery anodes in helium plasma

Kiho Tabata¹, Shin Kajita², Shoya Yamada³, Kodai Masumoto³, Giichiro Uchida³, Hirohiko Tanaka¹ and Noriyasu Ohno¹

¹*Graduate School of Engineering, Nagoya University*

²*Graduate School of Frontier Sciences, the University of Tokyo*

³*Graduate School of Science and Technology, Meijo University*

A3-II-3 Synthesis of Nanometric Metal Hydroxides and Their Applications as Solid Base Catalysts (0235)

Yasuaki Tokudome^{1,2} and Masanori Takemoto²

¹Department of Materials Science, Graduate School of Engineering, Osaka Metropolitan University

²Department of Materials Science, Graduate School of Engineering, Osaka Prefecture University

A3-III-4 Effects of Sodium Chloride and Deuterium Oxide on Crystal Growth of DNA-Functionalized Nanoparticles (0060)

Lidong Zhang¹, Maasa Yokomori², Hayato Sumi¹, HsinYi Chou¹, Shoko Kojima¹, Noboru Ohta³, Hiroshi Sekiguchi³, Shunta Harada^{1,2}, Toru Ujihara^{1,2}, Katsuo Tsukamoto² and Miho Tagawa^{1,2}

¹Grad. School of Eng. Nagoya Univ.

²Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University

³Japan Synchrotron Radiation Research Institute

A3-III: Advanced Materials for Energy and Environmental Applications III

(14:00-16:30, ES024)

Chair: Masamoto TAFU (National Institute of Technology (KOSEN) Toyama College)

Kazuyoshi KANAMORI (Kyoto Univ.)

Jun SHEN (Tongji Univ.)

Markus PRISTOVSEK (Nagoya Univ.)

A3-III-5 Polyethylene Glycol Additive controlled crystallization of DNA-Functionalized Nanoparticles (0162)

Shoko Kojima¹, L.D. Zhang¹, H. Sumi¹, N. Ohta², H. Sekiguchi², S. Harada^{1,3}, T. Ujihara^{1,3}, K. Tsukamoto⁴ and M. Tagawa^{1,3}

¹Graduate School of Engineering Nagoya University

²Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University

³Japan Synchrotron Radiation Research Institute

⁴Tohoku University

A3-III-1 Monochromated Electron Energy Loss Spectroscopy: A High-Spatial and Energy Resolution Approach to Analyzing CN-Based Materials (0057)

Jae Hyuck Jang, Sang-Chul Lee and Hee-Suk Jung

Center for Electron Microscopy Research, Korea Basic Science Institute

A3-III-2 Recent Progress of Aerogels with Unique Mechanical Properties (0236)

Kazuyoshi Kanamori, Ryota Ueoka and Masaki Negoro

Department of Chemistry, Graduate School of Science, Kyoto University

A3-III-3 Recent Chinese Noteworthy Progress in the Application of Aerogels **Invite**

Jun Shen^{1,2}, Xiaodong Wang^{1,2}, Xiaoxue Zhang^{1,2} and Ai Du^{1,2}

¹School of Physics Science & Engineering, Tongji University

²Shanghai Key Laboratory of Special Artificial Microstructure Materials and Technology

A3-III-6 Exploring Phonon Localization in Titanium-Chromium Oxides with Modulated Crystallographic Shear Structures (0003)

S. Harada, T. Hattori, M. Inden, S. Sugimoto, M. Itoh, M. Tagawa and T. Ujihara

Nagoya University

A3-III-7 Molecular Beam Epitaxy (MBE) and Metal Organic Vapor Phase Epitaxy (MOVPE) Surface Stability of Reconstructions on BAs (001) Surface: First-principles calculation (0125)

PeiYang Cai¹, Toru Akiyama², Shunta Harada^{1,3}, Miho Tagawa^{1,3} and Toru Ujihara^{1,3}

¹Graduate School of Engineering, Nagoya University

²Graduate School of Engineering, Mie University

³Institute of Materials and Systems for Sustainability (IMaSS)

Oral Presentations

A4-I: Energy Conversion Systems I

(9:15-10:15, IB013)

Chair: Yasuaki UEKI (Nagoya Univ.)

A4-I-1 **Invite** *In-Situ Operando and Ex-Situ Study on Light Hydrocarbon-Like-Diesel and Catalyst Deactivation Kinetic and Mechanism Study During Deoxygenation of Sludge Oil*

G. Abdulkareem-Alsultan^{1,2,3} and Yun Hin Taufiq-Yap^{2,3}

¹*Faculty of Science and Natural Resources, Universiti Malaysia Sabah*

²*Catalysis Science and Technology Research Centre (PutraCAT), Faculty of Science, Universiti Putra Malaysia*

³*Institute for Plantation Studies, Universiti Putra Malaysia*

A4-I-2 (0042) *Tar emission behaviors from pyrolysis and steam gasification of woody biomass*

Ryo Yoshiie¹, Haruki Yoshida¹, Yasuaki Ueki² and Ichiro Naruse²

¹*Department of Mechanical Systems Engineering, Nagoya University, THERS*

²*Institute of Materials and Systems for Sustainability, Nagoya University, THERS*

A4-I-3 (0055) *Assessment on Energy System Consisting of Solar Collector, Biogas Dry Reforming Membrane Reactor and SOFC*

Akira Nishimura, Ryotaro Sato, Souta Yamada, Shogo Ito and Mizuki Ichikawa

Division of Mechanical Engineering, Graduate School of Engineering, Mie University

A4-II: Energy Conversion Systems II

(10:30-11:45, IB013)

Chair: Noboru ITOUYAMA (Nagoya Univ.)

A4-II-1 **Invite** *Cost and Environmental Evaluation of Novel Hybrid Smart Human Cremator*

Somrat Kerdsuwan¹, Thanaphon Wiangthong² and Krongkaew Laohalidanond¹

¹*The Waste Incineration Research Center, Department of Mechanical and Aerospace Engineering, Faculty of Engineering, Science and Technology Research Institute, King Mongkut's University of Technology North Bangkok*

²*Department of Mechanical Engineering, Faculty of engineering, Rajamangala University of Technology Phra Nakhon*

A4-II-2 (0013) *Two-stage thermal process for plastic waste valorization: Effects of further thermolysis of pyrolysis oil on product characteristics*

Yuxin Wang^{1,2}, Andrei Veksha², Grzegorz Lisak^{2,3}, Ryo Yoshiie¹, Yasuaki Ueki⁴ and Ichiro Naruse⁴

¹*Department of Mechanical Systems Engineering, Nagoya University*

²*Residues and Resource Reclamation Centre (R3C), Nanyang Environment and Water Research Institute, Nanyang Technological University*

³*School of Civil and Environmental Engineering, Nanyang Technological University*

⁴*Institute of Materials and Systems for Sustainability, Nagoya University*

A4-II-3 (0178) *Study on partial load characteristics of Cross-flow turbine*

Hiroto Tatsumi¹, Toru Sakai¹, Yuki Kuroda² and Shouchiro Iio³

¹*Graduate School of Science and Technology, Shinshu University*

²*Faculty of Engineering, Shinshu University*

³*Department of Science and Technology, Shinshu University*

A4-II-4 (0193) *Study on the optimization in generating of microwave-induced non-equilibrium plasma*

Akira Suami, Nobusuke Kobayashi and Yoshinori Itaya

Department of Mechanical Engineering, Gifu University

A5-I: Electric Power Energy Systems I

(9:15-11:30, IB015)

Chair: Chiyori T. URABE (Nagoya Univ.)

A5-I-1 (0214) *Estimation of Silicone Vapor Concentration in Arc Generated during DC Interruption using Silica-Sand with Silicone Polymer*

Waku Takenaka¹, Naoto Kodama¹, Yasunobu Yokomizu¹ and Mikimasa Iwata²

¹*Department of Electrical Engineering, Nagoya University*

²*IMass Institute of Materials and Systems for Sustainability, Nagoya University*

A5-I-2 (0169) *A Study on the Amount of Renewable Energy Generation Applied in a Microgrid*

Aoi Tanaka, Takuya Goto, Tsuyoshi Nishitani, Kazuto Yukita, Toshiya Nanahara and Yasuyuki Goto

Aichi Institute of Technology

A5-I-3 (0141) Design and Packaging Method of SiC Power Module to Attenuate Common-Mode Noise

Sihoon Choi, Jiyeon Choi, Jong-Won Shin, Yu Yonezawa, Jun Imaoka and Masayoshi Yamamoto

Nagoya University

A5-I-4 (0168) Analysis of Switching and Reverse Recovery Losses for Wide Bandgap Devices in a Totem-pole Bridgeless PFC Rectifier

Thiyu Sansika Warnakulasooriya¹, Sihoon Choi¹, Yu Yonezawa², Daisuke Arai², Masayoshi Yamamoto², Yasuhisa Ushida^{2,3} and Tohru Oka^{2,3}

¹*Department of Electrical Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

³*Toyoda Gosei Co., Ltd.*

A5-I-5 (0208) Robust Tuning of Virtual Parameters in a Microgrid Control System

Sharara Rehim¹, Hassan Bevrani², Chiyori T. Urabe¹ and Takeyoshi Kato¹

¹*Electrical Engineering Dep. Institute of Materials and Systems for Sustainability of Nagoya University*

²*Smart/Micro Grids Research Center, University of Kurdistan*

A5-I-6 (0094) Effects of Introducing Charging Promotion Time Zone According to Surplus Power to Increase EV Charging with Renewable Energy

Masatoshi Watanabe¹, Chiyori T. Urabe¹ and Takeyoshi Kato²

¹*Department of Electrical Engineering, Nagoya University*

²*Institutes of Materials and Systems for Sustainability, Nagoya University*

A5-I-7 (0106) PV allocation in each distribution area based on mesh data

Masaki Shimura¹, Chiyori T. Urabe¹ and Takeyoshi Kato²

¹*Department of Electrical Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

A5-I-8 (0149) Multi-objective optimization of land aquaculture in different load demand cases

Soichiro Ueda¹, Masahiro Furukakoi², Hiroshi Takahashi³ and Tomonobu Senjyu¹

¹*Department of Electrical Engineering, University of the Ryukyus*

²*National Institute of Technology, Sasebo College*

³*Fuji Electric Co., Ltd*

A6-I: Communication Systems I (9:00-10:15, IB014)

Chair: Chedlia BEN NAILA (Nagoya Univ.)

A6-I-1 (0079) Spectral Analysis of Array Factor using Reactance Sequence in a Two-Element ESPAR Antenna

Anand Mohan Gupta¹ and Masato Saito²

¹*Graduate School of Engineering and Science, University of the Ryukyus*

²*Faculty of Engineering, University of the Ryukyus*

A6-I-2 (0080) Received Power Enhancement of LC Booster Wireless Power Transfer Systems

Yuehsheng Ting¹ and Masato Saito²

¹*Graduate School of Engineering and Science, University of the Ryukyus*

²*Faculty of Engineering, University of the Ryukyus*

A6-I-3 (0036) Verification of the Effects of MIMO on Air-to-Air Wireless LAN Communications between Drones

Shion Kawabe¹, Hiraku Okada², Chedlia Ben Naila² and Masaaki Katayama²

¹*Department of Information and Communication Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

A6-I-4 (0154) Accuracy comparison of indoor drone position estimation using 2.4GHz/5GHz Wi-Fi RTT

Yuichiro Sugiyama, Kentaro Kobayashi and Wataru Chujo

Division of Electrical and Electronic Engineering, Meijo University

A6-I-5 (0133) A study on indoor positioning of a drone base station using Wi-Fi RTT

Tomoki Okaya, Kentaro Kobayashi and Wataru Chujo

Division of Electrical and Electronic Engineering, Meijo University

A6-II: Communication Systems II

(10:30-11:45, IB014)

Chair: Hiraku OKADA (Nagoya Univ.)

A6-II-1 Tracking Control for Multi-UAV System
(0176) with Packet Loss and Communication Range
Limitation

Kaito Tachi¹, Chedlia Ben Naila², Hiraku Okada² and
Masaaki Katayama²

¹*Department of Information and Communication
Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability,
Nagoya University*

A6-II-2 A study on predictive information transfer for
(0134) CSMA/CA-based consensus control

Ryota Kimura, Kentaro Kobayashi and Wataru Chujo

*Division of Electrical and Electronic Engineering, Meijo
University*

A6-II-3 Operability Improvement by interpolation of
(0115) Missing Data in Industrial Robot Wireless
Operation

Yosuke Takagi¹, Chedlia Ben Naila², Hiraku Okada² and
Masaaki Katayama²

¹*Department of Information and Communication
Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability,
Nagoya University*

A6-II-4 Video transmission for robot teleoperation
(0067) with automatic image quality control
considering packet loss and communication
bandwidth limitation

Fumiharu Sasaki¹, Chedlia Ben Naila², Hiraku Okada² and
Masaaki Katayama²

¹*Department of Information and Communication
Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability,
Nagoya University*

A6-II-5 Performance Analysis of Intelligent Reflecting
(0061) Surface Assisted Dual Hop UOWC - FSO
System

Takumi Ishida¹, Chedlia Ben Naila², Hiraku Okada² and
Masaaki Katayama²

¹*Department of Information and Communication
Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability,
Nagoya University*

A6-III: Communication Systems III

(14:00-15:15, IB014)

Chair: Masato SAITO (Nagoya Univ.)

A6-III-1 Investigation for LDPC Codes for Outdoor
(0163) Long-Distance High-Speed Imaging MIMO
System

Daiki Ishikawa¹, Chedlia Ben Naila², Hiraku Okada² and
Masaaki Katayama²

¹*Department of Information and Communication
Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability,
Nagoya University*

A6-III-2 A study on data signal superimposition using
(0177) segmentation in digital signage and image
sensor-based visible light communication

Nagisa Oyabu, Kentaro Kobayashi and Wataru Chujo

*Division of Electrical and Electronic Engineering, Meijo
University*

A6-III-3 Performance of signal detection and
(0161) demodulation based on object detection
DNN for image sensor-based visible light
communication

Yuya Miki, Kentaro Kobayashi and Wataru Chujo

*Division of Electrical and Electronic Engineering, Meijo
University*

A6-III-4 A study on robustness against symbol
(0066) misalignment and inter-symbol interference on
a CNN-based demodulation method for image
sensor-based visible light communication

Yuki Iyoda¹, Kentaro Kobayashi², Hiraku Okada³, Chedlia
Ben Naila³ and Masaaki Katayama³

¹*Department of Information and Communication
Engineering, Nagoya University*

²*Department of Electrical and Electronic Engineering,
Meijo University*

³*Institute of Materials and Systems for Sustainability,
Nagoya University*

A6-III-5
(0068) Evaluation of Hidden Screen-Camera Visible Light Communications Using Adversarial Examples on Depth Estimation Model with Channel Noise

Chang Seok Lee¹, Hiraku Okada², Tadahiro Wada³,
Chedlia Ben Naila² and Masaaki Katayama²

¹Department of Information and Communication Engineering, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

³Graduate School of Integrated Science and Technology, Shizuoka University

A7-5
(0206) Integrating Personal Rapid Transit into Existing Traffic Systems: Feasibility, Simulation and Optimization

Lanhang Ye¹, Toshiyuki Yamamoto¹, Takayuki Anamoto²,
Umiguchi Kazuyuki² and Takayuki Morikawa³

¹Institute of Materials and Systems for Sustainability, Nagoya University

²Technical Research & Development Center, Yamaha Motor Co., Ltd.

³Institutes of Innovation for Future Society, Nagoya University

A7-6
(0117) Development of A route allocation model with reducing traffic congestion at an intersection

Shintaro Katagiri¹, Tomio Miwa² and Takayuki Morikawa²

¹Graduate school of Engineering, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

A7: Transportation Systems (9:15-11:30, ES025)

Chair: Tomio MIWA (Nagoya Univ.)

A7-1
(0156) Incorporating Vehicle Crash Risk into Navigation Route Guidance Problem for Elderly Drivers Using a Stated Preference Survey Data
Invite

Jia Yang¹, Tomio Miwa² and Motohiro Yamazaki¹

¹Research Department, Toyota Transportation Research Institute

²Institute of Materials and Systems for Sustainability, Nagoya University

A7-2
(0005) Activity Time Allocation Patterns in a Telecommuting Era

J. Liang¹ and T. Miwa²

¹Department of Civil and Environmental Engineering, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

A7-3
(0213) State of Play of Public Attitudes Towards Hydrogen Infrastructure in Japan and Europe

Ning Huan¹, T. Yamamoto¹, H. Sato² and H. Yin³

¹Institute of Materials and Systems for Sustainability, Nagoya University

²Institutes of Innovation for Future Society, Nagoya University

³Graduate School of Environmental Studies, Nagoya University

A7-4
Invite Enabling sustainable transportation through the Mobility as a Service framework

Chinh Q. Ho¹ and Toshiyuki Yamamoto²

¹Institute of Transport and Logistics Studies, The University of Sydney

²Institute of Materials and Systems for Sustainability, Nagoya University

A8-I: Low Carbon/Environmental Conservation Technology and Systems I (9:00-10:15, IB011)

Chair: Ferdinando VILLA (IKERBASQUE, Basque Centre for Climate Change)

A8-I-1
Invite Model of Integrated Impact and Vulnerability Assessment for Climate Change (MOTIVE)

Young-Il Song and Song-Mi Park

Korea Environment Institute (KEI)

A8-I-2
(0045) An Automated Initial Vegetation Generator Using a Satellite Derived DSM for Forest Biomass Growth Simulation at a Landscape Scale

Takashi Machimura¹, Roshni Sahu^{1,2} and Kiichiro Hayashi³

¹Graduate School of Engineering, Osaka University

²The University of California

³Institute of Materials and Systems for Sustainability, Nagoya University

A8-I-3
(0223) Study on Zoning Decision of Small Hydropower Model in K.lab

Yuri Yamazaki¹, Kiichiro Hayashi², Hiromu Okazawa³,
Ferdinando Villa⁴, Stefano Balbi⁴ and Takumi Nagashima³

¹Tottori University

²Nagoya University

³Tokyo University of Agriculture

⁴Basque Centre for Climate Change

Oral Presentations

A8-I-4 K.LAB Japan Models on Energy and
(0173) Environmental Assessment

Kiichiro Hayashi¹, Hiromu Okazawa², Yuri Yamazaki³,
Takashi Machimura⁴, Ferdinando Villa⁵, Stefano Balbi⁵,
Satoru Sugita⁶ and Takumi Nagashima¹

¹Nagoya University

²Tokyo University of Agriculture

³Tottori University

⁴Osaka University

⁵Basque Centre for Climate Change

⁶Chubu University

**A8-II: Low Carbon/Environmental
Conservation Technology and
Systems II**
(10:30-11:30, IB011)

**Chair: Young-II SONG (Korea Environment
Institute)**

A8-II-1 Regional decarbonization and final energy
Invite consumption reduction scenario in typical area
of Japan

Manabu Utagawa

*Sustainability and System Analysis Research Group,
Research Institute of Science for Safety and Sustainability,
National Institute of Advanced Industrial Science and
Technology (AIST)*

A8-II-2 Exploring the determinants of rooftop
(0034) photovoltaic spatial distribution on a regional
scale with customized dataset: A case study in
Nagoya, Japan

Linwei Tao¹, Kiichiro Hayashi² and Hiroto Shiraki³

¹Graduate School of Engineering, Nagoya University

²Institute of Materials and Systems for Sustainability
(IMaSS), Nagoya University

³Graduate School of Environmental Studies, Nagoya
University

**A8-III: Low Carbon/Environmental
Conservation Technology and
Systems III**
(14:00-15:15, IB011)

**Chair: Manabu UTAGAWA (National
Institute of Advanced Industrial
Science and Technology)**

A8-III-1 Building a Digital Earth Platform to support
Invite the creation of Carbon Neutral Roadmaps for
local governments in Japan

Hiromichi Fukui¹ and Anh Phan²

¹Chubu Institute for Advanced Studies, Chubu University,

²Graduated School of Engineering, Chubu University

A8-III-2 Effect of red bands and red-edge bands on
(0218) the normalised vegetation index in plots with
multiple land uses

Hiromu Okazawa^{1,2}, Ayako Sekiyama¹, Sarvesh Maskey¹,
Kiseki Kurashina¹ and Kiichiro Hayashi²

¹Department of Regional Environment Science, Tokyo
University of Agriculture

²Institute of Materials and systems for Sustainability,
Nagoya University

A8-III-3 Impact of Methodological Variation
(0035) on Indicator-based Ecosystem Service
Sustainability Assessment

Phub Dem¹, Hayashi Kiichiro¹ and Fujii Minoru²

¹Nagoya University

²National Institute for Environmental Studies

A8-III-4 Study on future energy supply and demand
(0171) in the region and economic effects using
the k.LAB renewable energy supply model
~Case Study on Sado Island, Japan~

Takumi Nagashima¹, Manabu Utagawa² and Kiichiro
Hayashi¹

¹Institute of Materials and System for Sustainability,
Nagoya University

²National Institute of Advanced Industrial Science and
Technology

**A9: Workshop of Division of Systems
Research: Resilient Society and System
Technology**
(15:45-17:00, IB015)

Chair: Jiro KASAHARA (Nagoya Univ.)

- A9
(0174) This workshop will discuss resilient society and systems technology. First, a short presentation will be given about for each topic. A panel discussion will follow this short presentation. The topics include (1) mapping tools for disaster prevention, (2) wireless communication systems supporting a sustainable society, (3) distributed energy system useful in emergency situation, (4) emergency water supply logistics in times of disaster, (5) effective utilization of unused coal material volume in the steelmaking process, and (6) space transportation using bioethanol rockets.

Jiro Kasahara, Kiichiro Hayashi, Hiraku Okada, Chedlia Ben Naila, Masaaki Katayama, Takeyoshi Kato, Chiyori T. Urabe, Kenta Okiyama, Toshiyuki Yamamoto, Hideyuki Itoh, Yasuaki Ueki, Ryo Yoshiie, Ichiro Naruse and Noboru Itouyama

Nagoya University

Sunday, December 3

A1-III: Nuclear Emulsion Workshop III (9:00-11:40, ES021)

**Chair: Kunihiro MORISHIMA (Nagoya Univ.)
Toshiyuki NAKANO (Nagoya Univ.)**

A1-III-1 Silver grain size control of nuclear emulsion
(0234) with 300nm silver bromide crystal size and performance evaluation using HTS

Kai Shimizu¹, Nobuko Kitagawa², Kunihiro Morishima¹, Taketo Nishigaki¹ and Kazuki Kishimoto¹

¹Graduate school of Science, Nagoya University
²Division of Systems Research, Institute of Materials and Systems for Sustainability, Nagoya University

A1-III-2 Development of Automated Grain Density
(0227) Measurement Method for Evaluation of Nuclear Emulsions Using CNN

Kento Nakano¹, Nobuko Kitagawa² and Kunihiro Morishima¹

¹Graduate School of Science, Nagoya University
²Division of Systems Research, Institute of Materials and Systems for Sustainability, Nagoya University

A1-III-3 3D reconstruction of cavities by cosmic ray
(0226) imaging

Hiroto Kodama¹, Kento Nakano¹, Kunihiro Morishima¹ and Nobuko Kitagawa²

¹School of Science, Nagoya University
²Division of Systems Research, Institute of Materials and Systems for Sustainability, Nagoya University

A1-III-4 ScanPyramids ~Exploration of unknown
(0231) structures of Khafre's Pyramid by Cosmic Ray Imaging using nuclear emulsions~

Kazuki Kishimoto¹, Kunihiro Morishima¹, Nobuko Kitagawa², Hiroto Kodama¹, Kai Shimizu¹, Kento Morii¹, Yuuki Kanbe¹, Kento Nakano¹, Taketo Nishigaki¹, Atsuki Yoshihara¹, Nana Horie³ and Masaru Yazaki³

¹Graduate school of Science, Nagoya University
²Division of Systems Research, Institute of Materials and Systems for Sustainability, Nagoya University
³School of Science, Nagoya University

A1-III-5 Archeological imaging study using cosmic ray
(0238)

Katsumi Ishiguro^{1,2} and Kiyohide Saito¹

¹Kashihara archeological institute of Nara
²Nagoya university F laboratory

A1-III-6 Application of cosmic ray imaging using
(0232) nuclear emulsions to detecting cavities in trees

Kento Morii¹, Kunihiro Morishima¹, Nobuko Kitagawa², Riko Tsurumi³, Luu Khanh Linh⁴, Tomoya Imanishi¹, Fuyu Miyata¹, Kazuki Kishimoto¹, Hiroto Kodama¹, Kai Shimizu¹, Kento Nakano¹ and Taketo Nishigaki¹

¹Graduate School of Science, Nagoya University
²Division of Systems Research, Institute of Materials and Systems for Sustainability, Nagoya University
³TAKI Senior High School
⁴Nanzan Girls' Senior High School

A1-III-7 Digital Archives for Nuclear Emulsion Data
(0131) - Data in past experiments in Cosmic-ray and Accelerator physics -

Koichi Kodama¹, Masakatsu Ichimura² and Mitsuhiro Nakamura³

¹Aichi University of Education
²Hirosaki University
³Nagoya University

A4-III: Energy Conversion Systems III (9:30-10:45, IB013)

Chair: Jiro KASAHARA (Nagoya Univ.)

A4-III-1 Experimental and Numerical Studies of a Lab-
Invite Scale Direct-Connect Scramjet at PNU

Jeong-Yeol Choi, Min-Su Kim, Jae Hyuk Lee, Eun-Sung Lee, Hyung-Seok Han, Bu-Kyeng Sung and Seung-Min Jeong

Department of Aerospace Engineering, Pusan National University

A4-III-2 Lime Coating Coke (LCC) for Reduction of
(0007) Nitrogen Oxides in Iron Ore Sintering Plants

K. Katayama^{1,2}, Y. Ueki³, R. Yoshiie², I. Naruse³, J. Nagata¹ and K. Higuchi¹

¹Nippon Steel Corporation
²Department of Mechanical Systems Engineering, Nagoya University, THERS
³Institute of Materials and Systems for Sustainability, Nagoya University, THERS

A4-III-3 (0135) Degradation and ash behavior in same reaction ratio during CO₂ and H₂O gasification reaction of coke

Zheng Zhenjie¹, Yasuaki Ueki², Ryo Yoshiie¹ and Ichiro Naruse²

¹Department of Mechanical Systems Engineering, Nagoya University, THERS

²Institute of Materials and Systems for Sustainability, Nagoya University, THERS

A5-II-5 (0065) Mitigation of Short-term Fluctuations in Wind Power Output Utilizing Control Functions Equipped in Wind Power Turbines

Chiyori T. Urabe

Department of Electric Engineering, Graduate School of Engineering, Nagoya University

A4-III-4 (0215) Experimental Study of Heat Transfer Measurement Using Locally Water-Cooled Cylindrical Rotating Detonation Engine

Masahiro Inada¹, Rinpei Sakata¹, Noboru Itouyama¹, Ken Matsuoka¹, Jiro Kasahara¹, Akira Kawasaki², Akiko Matsuo³ and Ikkoh Funaki⁴

¹Department of Aerospace Engineering, Nagoya University

²Department of Mechanical Engineering, Shizuoka University

³Department of Mechanical Engineering, Keio University

⁴JAXA Institute of Space and Astronautical Science

A5-II: Electric Power Energy Systems II (9:30-10:45, IB015)

Chair: Takeyoshi KATO (Nagoya Univ.)

A5-II-1 (0158) Analysis of Characteristics of Short-Term Fluctuations in Solar Irradiance Given Forecasted Solar Irradiance Estimate Required Secondary Reserves

Shinya Atsumi¹, Chiyori T. Urabe^{1,2} and Takeyoshi Kato^{1,2}

¹Department of Electric Engineering, Graduate School of Engineering, Nagoya University

²Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University

A5-II-3 (0095) Generation Mix Impact Evaluation on Optimality of Supply-demand Schedules Considering Japanese Spot Market

Tsuyoshi Okada and Taisuke Masuta

Department of Science Engineering, Meijo University

A5-II-4 (0096) Difference of Frequency Deviation and Change in SOC of Grid Battery Energy Storage System (BESS) by its Use in LFC and/or GF

Takahiro Ise¹, Chiyori T. Urabe¹, Takeyoshi Kato¹, Ryo Yamaguchi² and Shingo Sakaeda²

¹Department of Science Engineering, Meijo University

²Chubu Electric Power Co., Inc.

Poster Presentations

Saturday, December 2, 13:00-14:00

A1-P

- A1-P-1 (0040) Development of a method for detecting photons from high energy laser plasma and test experiments
- Ryota Iwasaki¹, Atsushi Tamii¹, Nobu Kobayashi¹, Shinsuke Ota¹, Azusa Inoue¹, Rei Niina¹, Hiroki Rokujo², Kazuma Nakazawa^{3,4}, Mamiko Nishiuchi⁵, Hironao Sakaki^{5,6}, Kotaro Kondo⁵, Akira Kon⁵, Chang Liu⁵, Takahiro Kawabata⁷, Tatsuya Furuno⁷, Seiya Tsuji⁷, Yuya Honda⁷, Megumi Niikura^{4,8}, Tatsuhiko Miyatake⁶, Ibuki Takemoto⁶ and Oliver Wieland⁹
- ¹RCNP, Osaka University
²Institute of Materials and Systems for Sustainability, Nagoya University
³Faculty of Education, Gifu University
⁴High Energy Nuclear Physics Lab, RIKEN
⁵Kansai Institute for Photon Science, National Institutes for Quantum Science and Technology
⁶Interdisciplinary Graduate School of Engineering Sciences, Kyushu University
⁷Department of Physics, School of Science, Osaka University
⁸Nishina Center, RIKEN
⁹INFN
- A1-P-2 (0127) Detecting cosmic ray nuclei in nuclear emulsion films on GRAINE experiments
- Shoto Akita¹, Atsushi Iyono¹, Yuuki Sugi¹ and GRAINE collaboration^{1,2,3,4,5,6}
- ¹Okayama University of Science
²Nagoya University
³Kobe University
⁴Gifu University
⁵Aichi University of Education
⁶ISAS/JAXA
- A1-P-3 (0128) Multifocal imaging approach in the analysis of nuclear emulsion grains in the GRAINE experiments
- Yuki Sugi¹, Atsushi Iyono¹, Shoto Akita¹, Saya Yamamoto³, Yudai Isayama³ for the GRAINE collaboration^{1,2,3,4,5,6}
- ¹Okayama University of Science
²Kobe University
³Nagoya University
⁴Gifu University
⁵Aichi University of Education
⁶ISAS/JAXA
- A1-P-4 (0145) Development of a new fastest readout system "HTS2".
- Hideyuki Minami, Toshiyuki Nakano, H. Rokujo, K. Kodama, K. Morishima, M. Yoshimoto, O. Sato, R. Komatani, T. Fukuda and T. Matsuo
- Nagoya University
- A1-P-5 (0155) GRAINE project: Analysis Status of Nuclear Emulsion Converter for the 2023 balloon experiment.
- Ikuya Usuda¹, Yudai Isayama¹, Toshiyuki Nakano¹, Yuya Nakamura¹, Hideyuki Minami¹, Saya Yamamoto¹, Hiroki Rokujo¹ and GRAINE collaboration^{1,2,3,4,5,6}
- ¹Nagoya University
²Kobe University
³Okayama University of Science
⁴Gifu University
⁵Aichi University of Education
⁶ISAS/JAXA
- A1-P-6 (0225) Cosmic-ray imaging with nuclear emulsion plates for safety assessments of levees
- Nobuko Kitagawa¹, Kunihiro Morishima^{1,2,3}, Yutaka Fukumoto⁴, Hiroyasu Yasuda⁵, Kazuki Kishimoto², Hiroto Kodama², Kento Morii², Kento Nakano², Taketo Nishigaki² and Kai Shimizu²
- ¹Institute of materials and systems for Sustainability, Nagoya University
²Department of physics, Nagoya University
³Institute for Advanced Research, Nagoya University
⁴Department of Civil and Environmental Engineering, Nagaoka University of Technology
⁵Research Institute for Natural Hazards & Disaster Recovery, Niigata University
- A1-P-8 (0228) Crystal size measurement of silver bromide crystals and evaluation of nuclear emulsions of various crystal sizes
- Taketo Nishigaki¹, Nobuko Kitagawa² and Kunihiro Morishima¹
- ¹School of Science, Nagoya University
²Division of Systems Research, Institute of Materials and Systems for Sustainability, Nagoya University

A1-P-9 Exploration of effective compounds for Nuclear Emulsions (0229)

Atsuki Yoshihara¹, Kunihiro Morishima¹ and Nobuko Kitagawa²

¹Graduate School of Science, Nagoya University
²Division of Systems Research, Institute of Materials and Systems for Sustainability, Nagoya University

A1-P-10 Cosmic Ray Imaging Opens New Horizons in Archaeological Research (0230)

Kunihiro Morishima^{1,2} and Nobuko Kitagawa²

¹School of Science, Nagoya University
²Institute of Materials and Systems for Sustainability, Nagoya University

A1-P-11 Cosmic ray imaging from outside the pyramid (0233)

Yuki Kambe¹, Kunihiro Morishima¹, Nobuko Kitagawa², Hiroto Kodama¹, Kazuki Kishimoto¹, Kai Shimizu¹, Kento Morii¹, Kento Nakano¹, Taketo Nishigaki¹, Atsuki Yoshihara¹, Nana Horie³ and Masaru Yazaki³

¹Graduate school of Science, Nagoya University
²Division of Systems Research, Institute of Materials and Systems for Sustainability, Nagoya University
³School of Science, Nagoya University

A1-P-12 Momentum measurement for the LHC-FASER experiment (0241)

Haruhi Fujimori for the FASER Collaboration

Chiba University

A1-P-13 Status and prospects of NINJA experiment (0243)

Hiiragi Inamoto¹, Tsutomu Fukuda¹, Ayaka Kasumi¹, Tomokazu Matsuo¹ and NINJA collaboration^{1,2,3,4,5,6,7,8,9,10,11,12,13}

¹Nagoya Univ
²Kyoto Univ
³Yokohama N Univ
⁴Kanagawa Univ
⁵Nihon Univ
⁶Toho Univ
⁷Kobe Univ
⁸Tohoku Univ
⁹ICRR
¹⁰IPMU
¹¹Ruđer Bošković Institut
¹²Kung's College London
¹³RIKEN

A1-P-14 Development of charm analysis in the NA65/ DsTau experiment (0244)

Manato Miura for the DsTau Collaboration

Chiba University

A1-P-15 Development of a compact emulsion spectrometer for the identification of tau neutrinos and anti-tau neutrinos (0246)

Motoya Sano and Satoru Ogawa

Department of Physics, Toho University

A2-P

A2-P-1 SPM-based characterization of individual perovskite nanosheets (0075)

Yan Li¹, Eisuke Yamamoto², Makoto Kobayashi² and Minoru Osada^{2,3}

¹Department of Materials Chemistry, Nagoya University
²Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University
³Research Center for Crystalline Materials Engineering, Nagoya University

A2-P-2 Ultrafast assembly for 2D nanosheets using modified drop casting (0077)

Hong Li¹, Yue Shi¹, Eisuke Yamamoto², Makoto Kobayashi² and Minoru Osada^{2,3}

¹Department of Materials Chemistry, Nagoya University
²Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University
³Research Center for Crystalline Materials Engineering, Nagoya University

A2-P-3 Facile Synthesis of Pd Nanosheets and Mechanism of Boosted Catalytic Activity (0091)

Sumiya Ando¹, Eisuke Yamamoto¹, Makoto Kobayashi¹, Akichika Kumatani^{2,3,4} and Minoru Osada¹

¹Nagoya University
²The University of Tokyo
³Tohoku University
⁴PRESTO, JST

A2-P-4 Atomic-resolution electron microscopy of sputter deposited MoS₂ on substrates (0098)

Takashi Takeda¹, Ryo Ono², Yuta Kusama¹, Emi Kano¹, Iriya Muneta², Hitoshi Wakabayashi² and Nobuyuki Ikarashi¹

¹Nagoya University
²Tokyo Institute of Technology

Poster Presentations

A2-P-5 (0105) Atomic-scale interface structures of FeCo alloy thin films on Cu(001) grown by nitrogen surfactant epitaxy

Toshio Miyamachi^{1,2}, Yoshitaka Umeda², Hiroki Ono², Kaishu Kawaguchi³, Thomas Gozkinski^{3,4}, Takushi Imori³, Kohei Yamamoto⁵, Wulf Wulfhekel⁴, Toshiohiko Yokoyama⁵, Fumio Komori³ and Masaki Mizuguchi^{1,2}

¹*Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*

²*Graduate school of Engineering, Nagoya University*

³*Institute for Solid State Physics (ISSP), The University of Tokyo*

⁴*Physikalisches Institut, Karlsruhe Institute of Technology*

⁵*Department of Materials Molecular Science, Institute for Molecular Science*

A2-P-6 (0113) Study of monolayer and multilayer films using copper hydroxide nanosheets

Asami Funatsu and Mami Miyoshi

Department of Materials Science and Bioengineering, Nagaoka University of Technology

A2-P-7 (0122) Controlled Synthesis of 2D Conducting Nanosheets toward Thermal Shielding Applications

Hirofumi Tsunematsu^{1,2}, Yue Shi¹, Eisuke Yamamoto¹, Makoto Kobayashi¹, Tomohiro Yoshida² and Minoru Osada¹

¹*Department of Materials Chemistry and IMaSS, Nagoya University*

²*Sumitomo Metal Mining Co., Ltd.*

A2-P-8 (0196) Controlled ferroelectric properties in RbBi₂-_xLa_xTi₂NbO₁₀ and their exfoliated 2D nanosheets

Keita Nishibashi¹, Eisuke Yamamoto¹, Makoto Kobayashi¹ and Minoru Osada^{1,2}

¹*Department of Materials Chemistry & Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*

²*Research Center for Crystalline Materials Engineering, Nagoya University*

A2-P-9 (0197) Controlled gadolinium doping for ceria nanosheets utilizing solid surfactant crystals

Kentaro Ito¹, Eisuke Yamamoto¹, Makoto Kobayashi¹ and Minoru Osada^{1,2}

¹*Department of Materials Chemistry & Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*

²*Research Center for Crystalline Materials Engineering, Nagoya University*

A2-P-10 (0216) Luminescence Properties of Tb-Doped Layered Double Hydroxide with Various Anion Species

Ryo Sasai^{1,2}, Kaoru Oota², Kohei Makishima³, Takuya Fujimura², Chikako Moriyoshi³ and Jun Kumagai⁴

¹*Faculty of Materials for Energy, Shimane University*

²*Graduate School of Natural Science and Technology, Shimane University*

³*Graduate School of Advanced Science and Engineering, Hiroshima University*

⁴*IMaSS, Nagoya University*

A3-P

A3-P-1 (0017) Effect of macrostep height and solution flow on formation of solvent inclusion in SiC solution growth

Yuma Fukami¹, Huiqin Zhou¹, Kentaro Kutsukake^{2,3}, Shunta Harada^{1,3}, Miho Tagawa^{1,3} and Toru Ujihara^{1,3}

¹*Graduate School of Engineering, Nagoya University*

²*RIKEN Center for Advanced Intelligence Project (AIP)*

³*Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*

A3-P-2 (0021) First-principles analysis of the mechanism of formation of large macrosteps by additive elements in solution growth of SiC

Shota Seki¹, Takahiro Kawamura², Shunta Harada^{1,3}, Miho Tagawa^{1,3} and Toru Ujihara^{1,3}

¹*Graduate School of Engineering, Nagoya University*

²*Graduate School of Engineering, Mie University*

³*Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*

A3-P-3 (0041) Space Charge Characteristics of 3D Printed Acrylic Elastomer Under DC Voltage Application

Kazuma Tagawa¹, Michiko Inuzuka², Shinichi Mitsumoto², Masayuki Fujii³, Masumi Fukuma⁴ and Muneaki Kurimoto¹

¹*Nagoya University*

²*National Institute of Technology, Toyota college*

³*National Institute of Technology, Oshima College*

⁴*National Institute of Technology, Matsue College*

- A3-P-4 (0043) Understanding Partial Discharge Degradation Mechanisms in Epoxy Resin Insulating Materials Used in Power Semiconductor Modules and Generator Stators
Ryota Ozaki¹, Muneaki Kurimoto¹, Hirotaka Muto¹, Fumitaka Komori² and Suzuoki Yasuo³
¹Nagoya University
²National Institute of Technology, Toba College
³Aichi Institute of Technology
- A3-P-5 (0044) Exploring Enhancement Mechanisms of Breakdown Strength in TiO₂/Epoxy Nanocomposites
Motoshi Hirai¹, Muneaki Kurimoto¹, Kazuyuki Tohyama², Tomohiro Kawashima³ and Hirotaka Muto¹
¹Department of Electrical Engineering, Nagoya University
²National Institute of Technology, Numazu College
³Department of Electrical and Electronic Information Engineering, Toyohashi University of Technology
- A3-P-6 (0063) Effect of Solvent Properties on Growth Process in SiC Solution Growth
Li Juanheng¹, Huiqin Zhou¹, Xin Liu^{1,2}, Kentaro Kutsukake^{2,3}, Shunta Harada^{1,2}, Miho Tagawa^{1,2} and Toru Ujihara^{1,2}
¹Graduate School of Engineering, Nagoya University
²Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University
³RIKEN Center for Advanced Intelligence Project (AIP)
- A3-P-7 (0074) Learning Organo-Transition Metal Catalyzed Reactions by Graph Neural Networks
Motoji Sakai¹, Su Dehong¹ and Koji Yasuda^{1,2}
¹Department of Informatics, Nagoya University
²Institute of Materials and Systems for Sustainability, Nagoya University
- A3-P-8 (0090) Numerical Analysis of Macrostep Instability focusing on Carbon Diffusion Field in SiC Solution Growth
Yuki Nakanishi¹, Kentaro Kutsukake^{2,3}, Shunta Harada^{1,3}, Miho Tagawa^{1,3} and Toru Ujihara^{1,3}
¹Graduate School of Engineering, Nagoya University
²RIKEN Center for Advanced Intelligence Project (AIP)
³Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University
- A3-P-9 (0093) Optimization of experimental conditions using machine learning for large-diameter crystal growth in solution growth of SiC
Daiki Shimoda¹, Kentaro Kutsukake^{2,3}, Shunta Harada^{1,3}, Miho Tagawa^{1,3} and Toru Ujihara^{1,3}
¹Graduate School of Engineering, Nagoya University
²Center for Advanced intelligence Project (AIP), RIKEN
³Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University
- A3-P-10 (0102) Fabrication of Porous Polyurethane Gels with Co-continuous Morphologies
Meng Wang¹, Kazuki Nakanishi^{1,2} and George Hasegawa^{1,2}
¹Department of Applied Materials Chemistry, Nagoya University
²Institute of Materials and Systems for Sustainability, Nagoya University
- A3-P-11 (0103) Synthesis of Porous Polysilsesquioxane Monoliths with Flexibility
Mio Kawase¹, Kazuki Nakanishi² and George Hasegawa²
¹Graduate School of Engineering, Nagoya University
²Institute of Materials and Systems for Sustainability, Nagoya University
- A3-P-12 (0104) Characterization of the molecular structure of linear polymers on porous resins
Chika Hiei¹, Atsushi Takano², Kazuki Nakanishi¹ and George Hasegawa¹
¹Department of Materials Chemistry, Graduate School of Engineering, Nagoya University
²Department of Organic and Polymeric Chemistry, Graduate School of Engineering, Nagoya University
- A3-P-13 (0107) Control of Crystalline Phase and Surface Morphology of Hf-Oxide Layer on Si Substrate by Inserting SiO₂ Interfacial Layer
Yunosuke Sano¹, Wataru Yasuda¹, Noriyuki Taoka², Akio Ohta³, Katsunori Makihara¹ and Seiichi Miyazaki¹
¹Graduate school of Engineering, Nagoya University
²Aichi Institute of Technology
³Fukuoka University
- A3-P-14 (0108) Nanoscale Temperature Sensing Using Praseodymium Ions Implanted in Gallium Nitride Semiconductors
Shin-ichiro Sato¹, Manato Deki², Hirotaka Watanabe³, Shugo Nitta³, Yoshio Honda^{2,3} and Hiroshi Amano^{2,3}
¹National Institutes for Quantum Science and Technology (QST)
²Deep Tech Serial Innovation Center, Nagoya University
³Institute of Materials and Systems for Sustainability, Nagoya University

Poster Presentations

- A3-P-15 (0157)** Anomalous and Topological Nernst effect of skyrmions in the Filled β -Mn-type Chiral Magnet $\text{Fe}_{2-x}\text{Pd}_x\text{Mo}_3\text{N}$
- Bowen Qiang, Kanchi Yamamoto, Toshio Miyamachi and Masaki Mizuguchi
- Nagoya University*
- A3-P-16 (0165)** Impacts of magnetic ion in Pc molecules on the magnetic coupling with iron nitride substrate
- Hiroki Ono¹, Yoshitaka Umeda¹, Kaito Yoshida¹, Kenzaburo Tsutsui¹, Kohei Yamamoto³, Osamu Ishiyama³, Toshihiko Yokoyama³, Masaki Mizuguchi^{1,2} and Toshio Miyamachi^{1,2}
- ¹*Department of Materials Process Engineering, Graduate School of Engineering, Nagoya University*
²*Institute of Materials and Systems for Sustainability, Nagoya University*
³*Institute for Molecular Science*
- A3-P-17 (0187)** Intermediate radicals for photocatalytic reactions of carboxylic acids with Pt/TiO₂
- Gunik Lee¹, Hisao Yoshida² and Jun Kumagai³
- ¹*Graduate School of Material Chemistry, Nagoya University*
²*Graduate School of Human and Environmental Studies, Kyoto University*
³*Institute of Materials and Systems for Sustainability, Nagoya University*
- A3-P-18 (0188)** Reduction of Spin-Orbit Torque Switching Current in Co/Pd-based CPP-GMR by application of Spin-Transfer Torque
- Da Pan¹, Zhe Cao¹, Daiki Oshima¹ and Takeshi Kato^{1,2}
- ¹*Department of Electronics, Nagoya University*
²*Institute of Materials and Systems for Sustainability, Nagoya University*
- A3-P-19 (0189)** Ion implantation into magnetic thin films through the microstructured resist masks
- Daiki Oshima¹ and Takeshi Kato^{1,2}
- ¹*Department of Electronics, Graduate School of Engineering, Nagoya University*
²*Institute of Materials and Systems for Sustainability, Nagoya University*
- A3-P-20 (0211)** X-ray spectroscopic study of binary nanoparticle materials for energy sustainability
- Satoshi Ogawa¹, Takumi Kawaguchi¹, Akira Yasui², Hiroyasu Kato³, Kohei Suda⁴ and Eiji Ikenaga^{1,5}
- ¹*Department of Energy Engineering, Graduate School of Engineering, Nagoya University*
²*Japan Synchrotron Radiation Research Institute*
³*SPring-8 Service Co., Ltd.*
⁴*Synchrotron Radiation Research Center, Nagoya University*
⁵*Institute of Materials and Systems for Sustainability, Nagoya University*
- A3-P-21 (0212)** Perpendicular magnetic anisotropy of (001) oriented W-Cr/Fe/MgO trilayers deposited on MgO substrates
- Yusei Yoshida¹, Daiki Oshima¹, Hiroki Yoshikawa², Arata Tsukamoto² and Takeshi Kato^{1,3}
- ¹*Department of Electronics, Graduate School of Engineering, Nagoya University*
²*Department of Electronic Engineering, Nihon University*
³*Institute of Materials and Systems for Sustainability, Nagoya University*
- A3-P-22 (0224)** Thin-film preparation of boron carbon oxynitride phosphor by chemical vapor deposition
- Hirokazu Katsui¹, Katsuyoshi Harada², Jun Kumagai², Zheng Liu¹ and Mikinori Hotta¹
- ¹*National Institute of Advanced Industrial Science and Technology (AIST)*
²*Institute of Materials and System for Sustainability, Nagoya University*
- A3-P-23 (0242)** Electron Stain-less Chemical Imaging of Polymer Alloy Morphologies using High-Voltage STEM-EELS Hyperspectral Imaging and Low-Loss Spectra
- Hiroki Umemoto^{1,2}, Shigeo Arai² and Shunsuke Muto^{2,3}
- ¹*Platform Laboratory for Science and Technology, Asahi Kasei Corporation*
²*Graduate School of Engineering, Nagoya University*
³*Advanced Measurement Technology Center, IMaSS, Nagoya University*

A4-P

- A4-P-1 (0022)** Fluidity deterioration in the fluidized roasting furnace during the zinc smelting process
- Riku Ito¹, Yasuaki Ueki², Ryo Yoshiie¹, Ichiro Naruse², Satoru Nakagawahara³, Kosuke Inoguchi³ and Dai Matuura³
- ¹Department of Mechanical Systems Engineering, Nagoya University, THERS
²Institute of Materials and Systems for Sustainability, Nagoya University, THERS
³DOWA METALS & MINING
- A4-P-2 (0047)** Experimental Study of the Effect of Grid Bar Configuration on the Decay Characteristics of Grid Turbulence
- Wakana Ueda, Yutaka Hasegawa and Tatsuo Ushijima
- Nagoya Institute of Technology
- A4-P-3 (0048)** Co-combustion of digested sludge and ammonia in fluidized bed
- Daichi Tanaka¹, Ryo Yoshiie¹, Ichiro Naruse², Yasuaki Ueki², Masato Endo³, Takuya Kawai³ and Yoshinori Sugie³
- ¹Department of Mechanical Systems Engineering, Nagoya University, THERS
²Institute of Materials and Systems for Sustainability, Nagoya University, THERS
³R&D Center, Business Strategy Division, Center, Business Strategy Division, METAWATER Co., Ltd
- A4-P-4 (0050)** Experimental Study on Enhancement of Water Mist Cooling in Duct Air Flow
- Yumi Asano¹, Yutaka Hasegawa¹, Yoshihiro Kojima² and Tatsuo Ushijima¹
- ¹Graduate School of Engineering, Nagoya Institute of Technology
²Institute of Materials and Systems for Sustainability, Nagoya University
- A4-P-5 (0062)** Formation behaviors of tar and soot in CO₂ gasification of woody biomass
- Takumi Okada¹, Ryo Yoshiie¹, Yasuaki Ueki² and Ichiro Naruse²
- ¹Department of Mechanical Systems Engineering, Nagoya University, THERS
²Institute of Materials and Systems for Sustainability, Nagoya University, THERS
- A4-P-6 (0111)** Control of ash adhesion in municipal waste treatment furnaces
- Yosuke Awata¹, Yasuaki Ueki², Ryo Yoshiie¹ and Ichiro Naruse²
- ¹Department of Mechanical Systems Engineering, Nagoya University, THERS
²Institute of Materials and Systems for Sustainability, Nagoya University, THERS
- A4-P-7 (0114)** Melting and deposition behavior of corrosive components on biomass combustion
- Takumi Hara¹, Ryo Yoshiie¹, Yasuaki Ueki², Ichiro Naruse², Chikako Wada³, Hirohito Okuhara³ and Shunichiro Ueno³
- ¹Department of Mechanical Systems Engineering, Nagoya University, THERS
²Institute of Materials and Systems for Sustainability, Nagoya University, THERS
³IHI Corporation
- A4-P-8 (0121)** Formation behavior of silica particles from biomass in the combustion field
- Ryo Suezawa¹, Ryo Yoshiie¹, Ichiro Naruse², Yasuaki Ueki² and Takanori Oka³
- ¹Department of Mechanical Systems Engineering Nagoya University, THERS
²Institute of material and Systems for Sustainability, Nagoya University, THERS
³KOBE STEEL, LTD
- A4-P-9 (0179)** Effect of char particle size on gasification behavior of biomass char
- Seinosuke Shigeyoshi¹, Yasuaki Ueki¹, Ichiro Naruse¹, Ryo Yoshiie¹, Mitsuyuki Nakajima², Yoshihiro Endo² and Tetsu Yanagawa²
- ¹Department of Mechanical Systems Engineering, Nagoya University, THERS
²Institute of Materials and Systems for Sustainability, Nagoya University, THERS
³Shinwa Kankyo Co., Ltd.
- A4-P-10 (0181)** Reduction characteristics of iron oxide by waste plastic and woody biomass
- Yasuaki Ueki¹, Kohei Kada², Ryo Yoshiie² and Ichiro Naruse¹
- ¹Institute of Materials and Systems for Sustainability, Nagoya University, THERS
²Department of Mechanical Systems Engineering, Nagoya University, THERS

Poster Presentations

- A4-P-11** (0247) Understanding of combustion behavior of various types of biomass particles by thermogravimetric analysis
- Shohei Matsunari^{1,2}, Yasuaki Ueki¹, Ryo Yoshiie¹ and Ichiro Naruse¹
- ¹Graduate School of Engineering, Nagoya University
²IHI Corporation
- A5-P-5** (0069) Loss Analysis Using a Heric Inverter for Photovoltaic Power Generation
- Shunki Hashimoto¹, Sihoon Choi¹, Haruki Hirasawa¹, Yu Yonezawa² and Masayoshi Yamamoto²
- ¹Department of Electrical Engineering, Nagoya University
²Institute of Materials and Systems for Sustainability, Nagoya University
- A5-P-1** (0011) A Study on Development of Arc Detector Using Current Sensor
- Sora Hasegawa¹, Akihiro Tsusaka¹, Kazuto Yukita¹, Toshiya Nanahara¹, Yasuyuki Goto¹ and Akinori Kato²
- ¹Aichi Institute of Technology
²Kawamura electric Inc.
- A5-P-2** (0018) A Study on Voltage Profile along a Transmission/Distribution Line for a Single-Machine Infinite-Bus System with High Penetration of Inverter-Interfaced Power Generations
- Yasuaki Yamada, Akihiro Tsusaka, Toshiya Nanahara and Kazuto Yukita
- Aichi Institute of Technology
- A5-P-3** (0054) A Study on Decision Support for Replacement of Concrete Utility Poles Using Decision Tree Learning with Accuracy Improvement Strategy
- Natsumi Nakayama¹, Hirotaka Takano², Hiroshi Asano¹, Ryuto Shigenobu², Masakazu Ito², Uki Kanenari³ and Yusuke Nishihiro³
- ¹Gifu University
²University of Fukui
³Kansai Transmission and Distribution, Inc.
- A5-P-4** (0058) Investigate AC Resistance Reduction Methods Under Higher Frequencies Operation Conditions
- Kota Okada¹, Jun Imaoka², Atsushi Hasenuma¹, Yuta Imaeda¹ and Masayoshi Yamamoto²
- ¹Department of Electrical Engineering, Nagoya University
²Institute of Materials and Systems for Sustainability, Nagoya University
- A5-P-6** (0073) Minimization of Bridgeless Power Factor Correction Flyback Rectifier with Integrated Transformer
- Haruki Hirasawa¹, Sihoon Choi¹, Yu Yonezawa², Jun Imaoka^{1,2} and Masayoshi Yamamoto^{1,2}
- ¹Department of Electrical Engineering, Nagoya University
²Institute of Materials and Systems for Sustainability, Nagoya University
- A5-P-7** (0076) Relationship between Reduction of Switching Loss and Switching Timing of Active Gate Driver Based on Various Drain Currents
- Kiyotaka Ono¹, Haruki Hirasawa¹, Sihoon Choi¹, Yu Yonezawa², Jun Imaoka^{1,2} and Masayoshi Yamamoto^{1,2}
- ¹Nagoya University Graduate School of Engineering, Department of Electrical Engineering, Yamamoto Laboratory
²Institute of Materials and Systems for Sustainability, Nagoya University
- A5-P-8** (0084) Activities of the Eco-Electric Power Research Center Aichi Institute of Technology
- Kazuto Yukita, Toshiya Nanahara, Masayuki Minowa, Tomoya Kawaji, Akihiro Torii, Katsunori Mizuno, Mie Takeda, Tokimasa Goto and Akihiro Tsusaka
- Eco-electric power research center, Aichi Institute of Technology
- A5-P-9** (0085) A Study of Renewable Energy and EV Utilization in Urban Areas
- Kazuto Yukita¹, Tomoya Kawaji², Mie Takeda², Tokimasa Goto³, Kazuhisa Fukuzawa³ and Yutaka Hada³
- ¹Department of Electrical and Electronics Engineering, Aichi Institute of Technology
²Department of Architecture, Aichi Institute of Technology
³Department of Business Administration
- A5-P-10** (0092) A Study of Voltage Drop Suppression in Braking Resistance
- Sena Yamashita¹, Kazuto Yukita¹ and Sinji Mukoyama²
- ¹Aichi Institute of Technology
²Toshiba Energy Systems & Solutions Corporation

- A5-P-11 (0100) Analysis on a VOC inverter interconnected to a power system with impedance including resistance component
Akito Yoshikawa, Yugo Isaka and Toshiya Nanahara
Aichi Institute of Technology
- A5-P-12 (0110) Impact of Aliasing on the Hunting Observed in Economic Load Dispatching Control
Reo Yamaguchi, Sho Aoki, Toshiya Nanahara and Kazuto Yukita
Department of Electrical and Electronic Engineering, Aichi Institute of Technology
- A5-P-13 (0116) Development of an Equivalent Model to Improve the Accuracy of Harmonic Current Calculations for LED Lighting
Tokio Iwase¹, Mutsumi Aoki¹, Yu Fujita², Hiroshi Kobayashi² and Masaya Nakagawa²
¹*Nagoya Institute of Technology*
²*Toenec Corporation*
- A5-P-14 (0129) Noise Analysis of Two-Phase Boost Converters with Integrated Winding Coupled Inductor using Balanced technique
Yuta Imaeda¹, Mamoru Sakaki¹, Jun Imaoka^{1,2} and Masayoshi Yamamoto^{1,2}
¹*Department of Electrical Engineering, Nagoya University*
²*Institute of Materials and Systems for Sustainability, Nagoya University*
- A5-P-15 (0144) Unit Commitment considering EV charging for park-and-ride
Yuya Tanigawa¹, Masahiro Furukakoi², Hiroshi Takahashi³ and Tomonobu Senjyu¹
¹*Electrical and Electronics Engineering, University of the Ryukyus*
²*National Institute of Technology, Sasebo College*
³*Fuji Electric CO., LTD*
- A5-P-16 (0146) MPC-based operational optimization of smart city and investigation of predictive parameters
Takuma Ishibashi¹, Masahiro Furukakoi², Hiroshi Takahashi³ and Tomonobu Senjyu¹
¹*Department of Electrical and Electronics Engineering, University of the Ryukyus*
²*National Institute of Technology, Sasebo College*
³*Fuji Electric Co., Ltd.*
- A5-P-17 (0147) Optimal Components Capacity Based Multi Objective Optimization in Smart House Considering Power Generation Status
Shinya Yamamoto¹, Masahiro Furukakoi², Hiroshi Takahashi³ and Tomonobu Senjyu¹
¹*Electrical and Electronics Engineering, University of the Ryukyus*
²*National Institute of Technology, Sasebo College*
³*Fuji Electric Co., Ltd.*
- A5-P-18 (0148) Optimized Controller Parameters for Virtual Synchronous Generators
Hiroyuki Mizoguchi, Akito Nakadomari and Tomonobu Senju
Electrical and Electronics Engineering, University of the Ryukyus
- A5-P-19 (0150) A Study on Campus Security Using Electric Vehicles in an Off-Grid System
Tadashi Hosoe¹, Kei Kaneko¹, Kazuto Yukita¹ and Wakana Shibano²
¹*Aichi Institute of Technology*
²*Toyota City Hall*
- A5-P-20 (0151) Educational Activities on Wind Power Generation for Elementary and Junior High School Students
Tadashi Hosoe, Tsuyoshi Nishitani, Akihiro Tsusaka and Kazuto Yukita
Aichi Institute of Technology
- A5-P-21 (0153) Proposal of PV-hydrogen Production Cooperative Control Method to Utilize PV Surplus Power
Hiryu Sudo¹, Chiyori T. Urabe¹ and Takeyoshi Kato²
¹*Department of Electrical Engineering, Nagoya University*
²*Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*
- A5-P-22 (0160) MPC-Based Three-Phase Coordinated Voltage Control for Unbalanced Distribution Systems
Akito Nakadomari¹, Masahiro Furukakoi² and Tomonobu Senjyu¹
¹*Department of Engineering, University of the Ryukyus*
²*National Institute of Technology, Sasebo College*

Poster Presentations

A5-P-23 Study of Power Consumption Analysis
(0172) Method of Air-Conditioning Equipment for Demand Response

Tsuyoshi Nishitani¹, Aoi Tanaka¹, Kazuto Yukita¹, Tokimasa Goto², Katsunori Mizuno³ and Yasuyuki Goto¹

¹Department of Electrical and Electrical Engineering, Aichi Institute of Technology

²Department of Business Adminstrating, Aichi Institute of Technology

³Department of Faculty of Information Science, Aichi Institute of Technology

A5-P-24 Foreseeing of next-day Large Forecast Error
(0184) of Solar Irradiance by Parameter Ensemble Forecasting using WRF

Kotaro Takahashi¹, Chiyori T. Urabe¹, Takeyoshi Kato² and Fumichika Uno³

¹Department of Electrical Engineering, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

³Department of Earth and Environmental Sciences, Nihon University

A7-P

A7-P-1 Timetable Optimization for A Single Bus
(0019) Line Considering Potential Passengers' Heterogeneous and Uncertain Bus Usage Time Window

Jianbiao Wang¹, Tomio Miwa² and Takayuki Morikawa³

¹Graduate School of Civil and Environmental Engineering, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

³Institutes of Innovation for Future Society, Nagoya University

A8-P

A8-P-1 Visualized measurement of the wake of a
(0006) sphere having a uniaxial through-hole

Daisuke Kobayashi¹, Kotaro Takamura² and Tomomi Uchiyama²

¹Graduate School of Informatics, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

A8-P-2 Measurement of particle collection efficiency
(0016) of flat plate electrode type electrostatic precipitator

Taketo Haruki¹, Shogo Ando¹, Tetsuya Yagi², Hiroshi Amano³, Yasumasa Iwatani⁴, Kotaro Takamura³ and Uchiyama Tomomi³

¹Graduate School of Informatics, Nagoya University

²Department of Infectious Diseases, Nagoya University Hospital

³Institute of Materials and Systems for Sustainability, Nagoya University

⁴Clinical Research Center, National Hospital Organization Nagoya Medical Center

A8-P-3 Experimental Investigation of Jet
(0020) Characteristics with Cut NACA0036 Airfoil

Chunqi Wang¹, Kotaro Takamura² and Tomomi Uchiyama²

¹Graduate School of Informatics, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

A8-P-4 Sputtering characteristics of helium-tungsten
(0032) co-deposition layer

Masanori Yamamoto¹, Kiho Tabata¹, Hirohiko Tanaka², Shin Kajita³, Quan Shi³ and Noriyasu Ohno¹

¹Department of Electrical Engineering, Graduate School of Engineering, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

³Department of Advanced Energy Engineering, Graduate School of Frontier Sciences, The University of Tokyo

A8-P-5 Landslide Susceptibility Mapping Integrating
(0038) Geospatial Technology and Machine Learning: Bridging Gaps in Disaster Risk Reduction

Sangay Gyeltshen^{1,2}, Indra Bdr Chhetri¹ and Kelzang Dema¹

¹Department of Civil Engineering and Surveying, Jigme Namgyel Engineering College, Royal University of Bhutan

²Nagoya University

A8-P-6 Numerical Study on Wake Velocity of
(0046) Horizontal Axis Wind Turbine using Vortex Method

Yumeto Soejima, Yutaka Hasegawa and Tatsuo Ushijima

Nagoya Institute of Technology

A8-P-7
(0164) Synthesis of porous photocatalysts for wastewater treatment by ultrasonic spray pyrolysis method with polymeric particulate templates

Kei Sato¹, Hironaga Yamashita¹ and Yoshihiro Kojima²

¹*Department of Chemical Systems Engineering, Graduate School of Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

A8-P-8
(0186) Temperature dependence on molecular hydrogen yields by radiolysis of cement constituent inorganic hydrates

Jun Kumagai¹, Keisuke Hosomi², Miho Ogiso², Geoge Hasegawa¹, Shinya Hasegawa³, Kumi Nagishi² and Masaya Ida¹

¹*Institute of Materials and Systems for Sustainability, Nagoya University*

²*Department of Chemistry and Biotechnology, School of Engineering, Nagoya University*

³*Taiheiyo Consultant Co. LTD (THC)*

A8-P-9
(0203) Oil mist collection characteristics by using corrugated sheet type oil mist trap

Hiroshi Nakayama¹, Tomoki Hisai², Kotaro Takamura² and Tomomi Uchiyama²

¹*Advanced Research and Innovation Center, Chubu Electric Power*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

A8-P-10
(0205) Meteorological influences in seasonal reference evapotranspiration in cold region watershed of Fukushima, Japan.

Sarvesh Maskey¹, Hiromu Okazawa¹, Makoto Ooba², Shogo Nakamura³, Seiji Hayashi³ and Kiichiro Hayashi⁴

¹*Department of Bioproduction and Environment Engineering, Tokyo University of Agriculture*

²*Department of Design for Social System and Living Environment, Tohoku Institute of Technology*

³*Fukushima Regional Collaborative Research Center, National Institute of Environmental Studies*

⁴*Institute of Materials and Systems for Sustainability Division of Systems Research, Nagoya University*

Joint Symposia

Joint Symposium 1

Recent advancement of high-voltage electron microscopy -In Commemoration of the 50th Anniversary of the HVEM Laboratory at Nagoya University-

Oral Presentations (S1-I)

Saturday, December 2, 9:00-12:00 (FUJI Hall)

Chair: Koh SAITO (Nagoya Univ.)
Yasukazu MURAKAMI (Kyushu Univ.)

Opning Address

Shunsuke MUTO (Nagoya Univ.)

S1-I-1: (0175)

50 years perspective of the High-Voltage Electron Microscope Laboratory in Nagoya Univ.

Shunsuke Muto

Advanced Measurement Technology Center, Institute of Materials & Systems for Sustainability, Nagoya Univ.

S1-I-2: (0064)

Research and Development for HVEM Hardware

Shigemasa Ohta

EM Research and Development Department, EM Business Unit, JEOL Ltd.

S1-I-3: (0248) Invite

Analysis of structural evolution and magnetisation of thin films of energy materials using in-situ HVTEM and intermediate-voltage TEM

Klaus Leifer¹, Shigeo Arai³, Jan Rusz², Hasan Ali², Björgvin Hjorvarsson¹, Edgardo Saucedo⁴, Sharath Kumar¹ and Shunsuke Muto³

¹*Department of Materials Science, Uppsala University*

²*Department of Physics, Uppsala University*

³*Institute of Materials and Systems for Sustainability, Nagoya University*

⁴*Photovoltaic Group, Electronic Engineering Department, Polytechnic University of Catalonia (UPC)*

S1-I-4: (0039)

Application of RS-HVEM to Micro-scale Analyses of Hydrogen-induced Damage Evolution in Palladium

Yoshimasa Takahashi^{1,2}, Kei Takehara¹, Koyo Nagai¹, Shintaro Fujii¹, Shigeo Arai² and Shunsuke Muto²

¹*Department of Mechanical Engineering, Kansai University*

²*Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*

S1-I-5: (0118)

Burgers vector analysis of dislocation network of cell boundary developed in [-111] copper single crystals during cyclic deformation with virtual scanning transmission electron microscopy

Tomotaka Miyazawa¹, Bohan Wang¹, Yuuki Umeda¹, Masahiro Ohtsuka², Shunsuke Muto², Shigeo Arai² and Toshiyuki Fujii¹

¹*School of Materials and Chemical Technology, Tokyo Institute of Technology*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

S1-I-6: (0159) Invite

Investigation of the ability to observe micron-thick materials in High Voltage Electron Microscope

Jun Yamasaki^{1,2}, Kazuhisa Sato¹ and Kaoru Mitsuoka¹

¹*Research Center for Ultra-High Voltage Electron Microscopy, Osaka University*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

S1-I-7: (0166) Invite

Ultrafast Dynamics and Technologies with Relativistic Electron Beams

Yoshie Murooka and N.D. Browning

School of Engineering, University of Liverpool

Oral Presentations (S1-II)

Saturday, December 2, 14:00-17:00 (FUJI Hall)

Chair: Jun YAMAZAKI (Osaka Univ.)
Klaus LEIFER (Uppsala Univ.)

S1-II-1: (0001) Invite

Organization of chromatin fibers in chromosomes

Misa Hayashida¹, Rinyaporn Phengchat¹, Marek Malac^{1,2}, Ken Harada³ and Tetsuya Akashi⁴

¹*Nanotechnology Research Centre, National Research Council*

²*Department of Physics, University of Alberta*

³*Center for Emergent Matter Science (CEMS), RIKEN*

⁴*Research & Development Group, Hitachi, Ltd.*

S1-II-2: (0002)

Measuring dielectric constant of surface layers in a TEM

M. Hayashida¹, M. Malac^{1,2}, M. Schreiber², H. Muller³, Y. Taniguchi⁴ and R.F. Egerton²

¹*NRC-NANO*

²*Department of Physics, University of Alberta*

³*CEOS GmbH, Englerstr*

⁴*Hitachi High-Tech Corp*

S1-II-3: (0049) Invite

Unique Features of Bio-HVEM in KBSI and its Application in Biomedical Research by High Voltage-based 3D Electron Tomography

Yang Hoon Huh, Eunyong Moon and Seung Jo Yoo

Center for Electron Microscopy Research, Korea Basic Science Institute

S1-II-4: (0015) Invite

High-voltage Transmission Electron Microscopy with Omega-type Energy Filter: Recent Studies on Materials Science

Yasukazu Murakami^{1,2}

¹*The Ultramicroscopy Research Center, Kyushu University*

²*Department of Applied Quantum Physics and Nuclear Engineering, Kyushu University*

S1-II-5: (0030) Invite

Advancements and Applications of Electromagnetic Field Analysis by High-Voltage Electron Microscope

Toshiaki Tanigaki

Research & Development Group, Hitachi, Ltd.

S1-II-6: (0139) Invite

Recent Activities of Multi-Quantum HVEM Activity and Future Prospective in Hokkaido University

Tamaki Shibayama^{1,2}, Norihito Sakaguchi^{1,2}, Yuki Nakagawa^{1,2} and Seiichi Watanabe^{1,2}

¹*Faculty of Engineering, Hokkaido University*

²*Multi Quantum High Voltage Electron Microscope Laboratory, Center for Advanced Research of Energy and Materials, Faculty of Engineering, Hokkaido University*

Oral Presentations (S1-III)

Sunday, December 3, 9:30-10:30 (FUJI Hall)

Chair: Shunsuke MUTO (Nagoya Univ.)

S1-III-1: (0119)

Characterization of dislocation behavior using machine-learning analysis of TEM images

Ken Takata¹, Yosuke Nakashima¹ and Shigeo Arai²

¹*Department of Mechanical Engineering, Daido University*

²*Nagoya University*

S1-III-2: (0152)

Phase Retrieval of Electron Rocking Curves with Total Variation and Total Squared Variation Regularizations

Koh Saitoh¹ and Akihiro Shichi²

¹*Institute of Materials and Systems for Sustainability, Nagoya University*

²*Department of Applied Physics, Graduate School of Engineering, Nagoya University*

Joint Symposia

S1-III-3: (0010)

Probing dislocations in a micrometer-thick semiconductor crystals by high-voltage transmission electron microscopy

Kazuhisa Sato

Research Center for Ultra-High Voltage Electron Microscopy, Osaka University

S1-III-4: (0029)

The configuration and evolution of nanoindentation-induced dislocations in single crystal ZnO

Yan Li¹, Shihao Zhang¹, Eita Tochigi², Kimitaka Higuchi³, Yin Zhang⁴, Shigeo Arai³, Ting Zhu⁴, Shigenobu Ogata¹ and Atsutomo Nakamura¹

¹*Department of Mechanical Engineering and Bioengineering, Osaka University*

²*Institute of Engineering Innovation, The University of Tokyo*

³*Institute of Materials and Systems for Sustainability, Nagoya University*

⁴*Woodruff School of Mechanical Engineering, Georgia Institute of Technology*

Closing Remarks

Poster Presentations (S1-P)

Saturday, December 2, 13:00-14:00 (FUJI Hall)

S1-P-1: (0004)

Elucidation of Annealing Effect on a Laser-Irradiated ZnO Substrate Surface by Transmission Electron Microscope

Koyo Nagami¹, Xi Yu², Takafumi Ishida^{1,3}, Koh Saitoh^{1,3} and Makoto Kuwahara^{1,3}

¹*Graduate School of Engineering, Nagoya University*

²*Department of Applied Physics, Tokyo University of Science*

³*Institute of Materials and Systems for Sustainability, Nagoya University*

S1-P-2: (0023)

Regulation of synaptic vesicle pools and synaptic architecture by Nervous wreck at *Drosophila*

Sang-Hee Lee¹, Joon Haeng Hur², A-Young Kim² and Young Ho Koh²

¹*Korea Basic Science Institute*

²*ILSONG Institute of Life Science, Hallym University*

S1-P-3: (0024)

Brightness measurement of electron sources based on reconstruction of Wigner function

Shuhei Hatanaka^{1,2} and Jun Yamasaki^{1,3}

¹Research Center for Ultra-High Voltage Electron Microscopy, Osaka University

²Department of Quantum Information Electronics, Graduate School of Engineering, Osaka University

³Institute of Materials and Systems for Sustainability, Nagoya University

S1-P-4: (0025)

Advantages of HVEM for selective passband imaging for studying of nano-complex crystal

Seung Jo Yoo, Sang-Gil Lee and Jin-Gyu Kim

Center for Research Equipment, Korea Basic Science Institute(KBSI)

S1-P-5: (0027)

Synthesis of iron silicide at α -Fe/amorphous SiO_x interface by electron irradiation

Yuta Fujii¹ and Kazuhisa Sato²

¹Graduate School of Engineering, Osaka Univ.

²Research Center for UHVEM, Osaka Univ.

S1-P-6: (0037)

Combination Technique of HVEM and PED for Electron Nano-crystallography

Sang-gil Lee, Seung Jo Yoo and Jin-Gyu Kim

Center for Research Equipment, Korea Basic Science Institute(KBSI)

S1-P-7: (0051)

Development of a data acquisition system for a silicon-on-insulator detector with analog memories for high-speed electron imaging

Kosei Sugie¹, Takafumi Ishida^{1,2}, Makoto Kuwahara^{1,2}, Yasuo Arai³ and Koh Saitoh^{1,2}

¹Graduate of School of Engineering, Nagoya University

²IMaSS., Nagoya University

³High Energy Accelerator Research Organization (KEK)

Joint Symposia

S1-P-8: (0052)

Analysis of hydrogen-induced microscopic damage in Palladium polycrystals

Kei Takehara¹, Yoshimasa Takahashi^{1,2}, Shunsuke Muto², Shigeo Arai², Masanori Takuma¹, Ken-ichi Saitoh¹ and Tomohiro Sato¹

¹*Department of Mechanical Engineering, Kansai University*

²*Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*

S1-P-9: (0053)

Time-dependent crack growth mechanism in a Ni-based superalloy under high/low temperatures

Shintaro Fujii¹, Yoshimasa Takahashi^{1,3}, Daisuke Kobayashi² and Shigeo Arai³

¹*Department of Mechanical Engineering, Kansai University*

²*Chubu Electric Power Co., Inc.*

³*Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*

S1-P-10: (0072)

Three-dimensional observation of microphase-separated structures from block copolymers by TEM tomography and FIB-SEM tomography

Kimitaka Higuchi¹, Kyoka Kusano², Ayane Kitahara² and Atsushi Takano²

¹*Institute of Materials and Systems for Sustainability, Nagoya University*

²*Department of Molecular and Macromolecular Chemistry, Nagoya University*

S1-P-11: (0078)

Acquisition of precise STEM images for Lattice Strain Analysis

Tomoya Yoshida¹, Jun Yamasaki^{2,3} and Hirokazu Sasaki⁴

¹*Department of Quantum Information Electronics, Graduate School of Engineering, Osaka University*

²*Research Center for Ultra-High Voltage Electron Microscopy, Osaka University*

³*Institute of Materials and Systems for Sustainability, Nagoya University*

⁴*Furukawa Electric Co. Ltd*

S1-P-12: (0081)

In-situ observation of electric potential in time-resolved transmission electron microscopy

Shotaro Makimoto¹, Kazuko Uchida², Koh Saitoh^{1,2}, Takafumi Ishida^{1,2} and Makoto Kuwahara^{1,2}

¹*Nagoya University*

²*Imass, Nagoya University*

Saturday, December 2, 16:00-17:00 (FUJI Hall)

S1-P-13: (0082)

Reducing Exposure Time Based on Regularization Algorithm in Electron Diffractive Imaging

Kota Shimizu¹ and Jun Yamasaki^{2,3}

¹*Department of Quantum Information Electronics, Osaka University*

²*Research Center for Ultra-High Voltage Electron Microscopy, Osaka University*

³*Institute of Materials and Systems for Sustainability, Nagoya University*

S1-P-14: (0083)

Development of a Measurement Method for Critical Current Density of Poly-crystalline Superconductors Using Electron Backscatter Diffraction

R. Hikosaka¹, K. Shimada¹, T. Hatano¹, T. Ishida^{1,2}, S. Tokuda³, Y. Hasegawa³, A. Yamamoto^{3,5}, K. Iida^{4,5}, K. Saitoh^{1,2}, M. Kuwahara^{1,2} and H. Ikuta¹

¹*Graduate school of Eng., Nagoya Univ.*

²*IMaSS, Nagoya Univ.*

³*Graduate school of Eng., Tokyo Univ. of Agriculture and Tech.*

⁴*Graduate school of Industrial Tech., Nihon Univ.*

⁵*JST-CREST*

S1-P-15: (0086)

Development of a transmission photocathode using thin film lanthanum hexaboride

Takafumi Ishida, Makoto Kuwahara and Koh Saitoh

Institute of Materials and Systems for Sustainability, Nagoya University

S1-P-16: (0087)

Introduction of Spin-Polarization Effects into Multislice Methods

Sota Nakane¹, Takahumi Ishida^{1,2}, Koh Saito^{1,2} and Makoto Kuwahara^{1,2}

¹*Graduate School of Engineering, Nagoya University*

²*IMaSS, Nagoya University*

S1-P-17: (0088)

Electron microscopy investigation of domain wall dynamics in two-dimensional sliding ferroelectrics

Daigo Shimizu¹ and Nagao Masahiro^{1,2}

¹*Department of Electronics, Nagoya University*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

Joint Symposia

S1-P-18: (0089)

Atomic resolution secondary electron imaging of twisted bilayers of transition metal dichalcogenide MoS₂

Tepei Oyobe¹, Koh Saitoh², Rei Usami¹, Taishi Takenobu¹, Keisuke Igarashi³, Takeshi Sato³, Hiroaki Matsumoto³ and Hiromi Inada³

¹*Graduated of School Engineering, Nagoya University*

²*IMaSS, Nagoya University*

³*Hitachi High-Tech Co.*

S1-P-19: (0097)

Robust Principal Component Analysis Applied to Dynamic Observation in Time-Resolved Transmission Electron Microscope

Hiroki Yamaguchi¹, Shotaro Makimoto¹, Ryosuke Mori¹, Koh Saitoh^{1,2}, Takafumi Ishida^{1,2} and Makoto Kuwahara^{1,2}

¹*Department of Applied Physics, Graduate School of Engineering, Nagoya University*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

S1-P-20: (0109)

TEM observation of one-dimensional chain of polythiophenes synthesized in carbon nanotubes

Koo Ikeda¹, Koh Saitoh^{1,2}, Akira Fujisaki¹, Hideo Kishida¹ and Takeshi Koyama¹

¹*Graduate School of Engineering, Nagoya University*

²*IMaSS, Nagoya University*

S1-P-21: (0112)

Using 3D Electron Tomography, Ultrastructure Analysis on Alteration of Synaptic Plasticity in Organotypic Hippocampal Slice Tissues Treated with Umbelliferone

Eunyoung Moon, Ga-Young Choi, A Reum Je and Hee-Seok Kweon

Center for Research Equipment, Korea Basic Science Institute

S1-P-22: (0136)

Observation of semiconductor device failure point by Ultra-high voltage electron microscopy

Satona Takada¹, Masaki Shirai¹, Tomonori Hiki¹, Masao Yoshikawa¹, Tetsuya Yasuda² and Satoshi Ichikawa²

¹*ROHM Co., Ltd.*

²*Research Center for Ultra-High Voltage Electron Microscopy, Osaka University*

S1-P-23: (0138)

Electron phase measurement using wavefield reconstruction with structured electron beams

Hirokazu Tamaki^{1,2} and Koh Saitoh³

¹Graduate School of Engineering, Nagoya University

²Research & Development group, Hitachi Ltd.

³Institute of Materials and Systems for Sustainability, Nagoya University

S1-P-24: (0142)

Resolution improvement and noise reduction of electron microscope images using Bayesian super-resolution

Yuki Kanemitsu¹ and Koh Saitoh^{1,2}

¹Graduate School of Engineering, Nagoya University

²IMaSS, Nagoya University

S1-P-25: (0220)

Precipitation behavior in an Al-Mg-Si alloy during low temperature aging by STEM and DSC analysis

Genki Saito¹, Kaito Watanabe¹, Masahiro Ohtsuka¹, Shunsuke Muto¹, Kazuya Mizuno², Yamato Sano², Ken Takata², Fabio Iesari³ and Toshihiro Okajima³

¹Nagoya University

²Daido University

³Aichi Synchrotron Radiation Center

Joint Symposium 2

Interface between insulators and compound semiconductors

Oral Presentations (S2-I)

Saturday, December 2, 9:00-10:15 (ES Hall)

Chair: Hiroshi AMANO (Nagoya Univ.)

S2-I-1: Invite

Establishment of reliability and high performance for an AlSiO/GaN MOSFET formed by ALD and post-deposition annealing

Tetsuo Narita¹, Kenji Ito¹, Keita Kataoka¹, Kazuyoshi Tomita², Hiroko Iguchi¹, Shiro Iwasaki¹, Emi Kano², Nobuyuki Ikarashi², Masahiro Horita² and Daigo Kikuta¹

¹Toyota Central R&D Labs., Inc.

²Institute of Materials and Systems for Sustainability, Nagoya University

S2-I-2: (0221)

First Principles Molecular Dynamics Studies of GaN/SiON Interfaces

Jumpei Ogi¹, Shuto Hattori¹ and Kenji Shiraishi^{1,2}

¹Graduate School of Engineering, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

S2-I-3: (0210)

MOS-structure-based study of defects in Mg-ion-implanted GaN

Yuki Hatakeyama, Yuliu Luo, Genta Shindo and Masamichi Akazawa

Research Center for Integrated Quantum Electronics, Hokkaido University

S2-I-4: (0071)

Characterization of Chemical Bonding Features and Electronic States of Mg-doped GaN(0001) Surface after O₂ Annealing

Zijun Zhou¹, Akio Ohta², Noriyuki Taoka³, Katsunori Makihara¹ and Seiichi Miyazaki¹

¹Graduate School of Engineering, Nagoya University

²Department of Applied Physics, Fukuoka University

³Department of Electrical and Electronics Engineering, Aichi Institute of Technology

Oral Presentations (S2-II)

Saturday, December 2, 10:45-12:00 (ES Hall)

Chair: Hiroshi AMANO (Nagoya Univ.)

S2-II-1: Invite

GaN Devices for Future Electronic Systems - Innovations in Device Design and Modelling

Biplab Sarkar

Department of Electronics and Communication Engineering, Indian Institute of Technology

S2-II-2: (0198)

Electrical characteristics of Al₂O₃/LT-AlN/GaN MIS capacitors fabricated by *in situ* growth

Ren Obata¹, Takeru Kumabe¹, Hiroataka Watanabe², Manato Deki³, Yoshio Honda^{2,3,4} and Hiroshi Amano^{2,3,4}

¹Department of Electronics, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

³Deep Tech Serial Innovation Center, Nagoya University

⁴Institute for Advanced Research, Nagoya University

S2-II-3: (0056)

Theoretical Loss Analysis of Vertical GaN MOSFETs in a Totem-pole Bridgeless PFC Considering Parameter Variation

Karl Raymond dela Cruz Roque¹, Thiyu Warnakulasooriya¹, Sihoon Choi¹, Yu Yonezawa², Daisuke Arai², Masayoshi Yamamoto², Yasuhisa Ushida^{2,3} and Tohru Oka^{2,3}

¹Department of Electrical Engineering, Nagoya University

²Institute of Materials and Systems for Sustainability, Nagoya University

³Toyoda Gosei Co., Ltd.

Joint Symposia

S2-II-4: (0180)

Development of B GaN diodes with high radiation tolerance for nuclear instrumentation system

Ryohei Kudo¹, Tatsuhiko Sakurai¹, Seiya Kawasaki², Tetsuichi Kishishita³, Yoshinori Sakurai⁴, Hiroshi Yashima⁴, Takahiro Makino⁵, Takeshi Ohshima⁵, Yoshio Honda², Hiroshi Amano², Yoku Inoue¹, Toru Aoki¹ and Takayuki Nakano¹

¹Shizuoka University

²Nagoya University

³High Energy Accelerator Research Organization (KEK)

⁴KURNS, Kyoto University

⁵National Institutes for Quantum Science and Technology (QST)

Oral Presentations (S2-III)

Saturday, December 2, 14:00-17:00 (ES Hall)

Chair: Hiroshi AMANO (Nagoya Univ.)

S2-III-2: (0222)

Investigation of electric and magnetic field responses of GaN using a single-mode microwave annealing

Heajeong Cheong^{1,3,4}, Takashi Nakamura², Atsushi Tanaka³ and Hiroshi Amano^{3,4,5}

¹Graduate School of Engineering, Nagoya University

²National Institute of Advanced Industrial Science and Technology (AIST)

³CIRFE, Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University

⁴Venture Business Laboratory, Deep Tech Serial Innovation Center, Nagoya University

⁵Institute for Advanced Research, Nagoya University (IAR)

S2-III-3: (0209)

Study of Carbon Behavior in Highly Carbon-doped GaN Crystal

Anna Honda¹, Hiroataka Watanabe¹, Wakana Takeuchi², Yoshio Honda¹, Hiroshi Amano¹ and Takeshi Kato¹

¹Institute of Materials and Systems for Sustainability, Nagoya University

²Aichi Institute of Technology

S2-III-4: (0182) Invite

Current Non-linearity of GaN-based MIS HEMTs in Forward Bias Region

Taketomo Sato and Ryota Ochi

Research Center for Integrated Quantum Electronics, Hokkaido University

S2-III-5: (0191) Invite

Growth of N-polar AlN on sapphire substrate by metal-organic vapor phase epitaxy

Narihito Okada, Minagi Miyamoto, Koki Hanasaku, Taketo Kowaki, Daisuke Inahara, Aina Hiyama, Kai Fujii, Satoshi Kurai and Yoichi Yamada

Department of Electrical and Electronic Engineering, Yamaguchi University

S2-III-6: (0140)

Nanosecond-Response Operando Analysis of Inverse Piezoelectric-Induced Lattice Deformation in AlGaIn/GaN HEMT

Masaya Yamaguchi¹, Akihiro Shimada¹, Yasuhiko Imai², Tetsuya Tohei¹, Yusuke Hayashi¹, Tamotsu Hashizume³, Kazushi Sumitani², Shigeru Kimura² and Akira Sakai¹

¹*Graduate School of Engineering Science, Osaka University*

²*Japan Synchrotron Radiation Research Institute*

³*Institute of Materials and Systems for Sustainability (IMaSS), Nagoya University*

S2-III-7: (0204)

Improvement of electrical properties of N-polar GaN/AlN high electron mobility transistor

Aina Hiyama Zazuli¹, Daisuke Inahara¹, Ryosuke Ninoki¹, Koki Hanasaku¹, Taketo Kowaki¹, Minagi Miyamoto¹, Kai Fujii¹, Taisei Kimoto¹, Satoshi Kurai¹, Narihito Okada¹, Atsushi Tanaka², Shugo Nitta², Yoshio Honda², Hiroshi Amano² and Yoichi Yamada¹

¹*Grad. School of Sci. & Tech. for Innovation, Yamaguchi University*

²*Advanced Measurement Technology Center, Nagoya University*

S2-III-8: (0183)

Fabrication of GaN Polarization Super Junction (PSJ) FET with built-in freewheeling diode

Eito Kokubo¹, Hirotaka Watanabe², Manato Deki⁴, Atsushi Tanaka², Shugo Nitta², Yoshio Honda^{2,3,4} and Hiroshi Amano^{2,3,4}

¹*Department of Electronics, Nagoya University*

²*Institute of Materials and Systems for Sustainability, Nagoya University*

³*Institute for Advanced Research, Nagoya University*

⁴*Deep Tech Serial Innovation Center, Nagoya University*

Joint Symposium 3

Technology Trends in Electric Power Networks Toward Carbon Neutrality by 2050

Oral Presentations (S3)

Saturday, December 2, 14:00-17:00 (IB013)

Chair: Mikimasa IWATA (Nagoya Univ.)

S3-1: Invite

Required power system inertia for power system security towards CN network

Ryuto Shigenobu, Masakazu Ito and Akiko Takahashi

Faculty of Engineering, Electrical and Electronics Engineering, University of Fukui

S3-2: Invite

Trends on IoT-based Demand Response with Battery Electric Vehicles for Decarbonized Society

Masaki Imanaka

Institute of Industrial Science, The University of Tokyo

S3-3: Invite

Study on Improvement of Power Quality in Distribution System with Expanded Distributed Energy Sources

Mutsumi Aoki¹, Tokio Iwase¹, Yasuyuki Kunii² and Fukashi Ueda²

¹*Nagoya Institute of Technology*

²*Chubu Electric Power Co., Ltd.*

S3-4: Invite

Status and Outlook on SF₆ Gas Regulation in Electric Power Systems and Developments of Alternative Technologies

Toshiyuki Uchii

Energy Systems R&D Center, Toshiba Energy Systems & Solutions Corporation

ClearView, elevates your everyday microscopy

OneViewの後継機として、再設計された最新のCMOSセンサーを搭載したClearViewが最高のフレームレート（1600fps）と感度を実現し、ボトムマウントカメラ性能を再定義します。

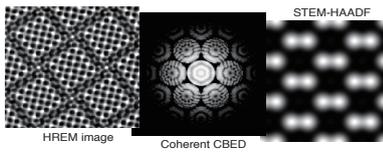
これまで困難だった観察や測定に対しても、ClearViewはインパクトのあるその場観察や4D STEMデータの取得を実現し、日々の観察をより高いレベルへと押し上げます。



アメテック株式会社
エダックス事業部・ガタン事業部

〒105-0012 東京都港区芝大門1-13-30 芝NBFタワー3階
Tel: 03-4520-6980 Fax: 03-4400-2301

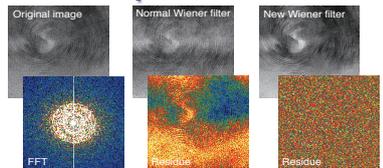
xHREM™ New: GPU-based STEM WinHREM™/MacHREM™ FFT-Multislice Simulation Suite



xHREM (Mac/WinHREM) is a versatile simulation suite that generates HREM images, dynamical diffractions, coherent CBED patterns and STEM-HAADF images.
xHREM is based on FFT-multislice dynamical calculation and wave-optics developed by Kazuo Ishizuka (Director of HREM Research).

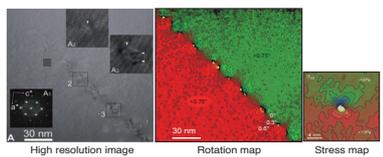
New: Real-Time Module

HREM-Filters DigitalMicrograph Plug-in Optimal Noise Filters for HREM



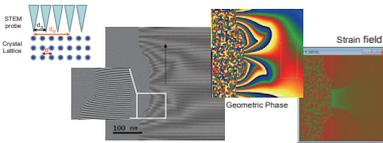
HREM-Filters are sophisticated Wiener and Difference filters that works even for non-ideal crystals, such as a nano-crystal or cylindrical crystal.
New Wiener filter (right) based on local backgrounds extracts all the structure information, while normal Wiener filter (middle) based on radial background does not work for non-ideal crystal.

GPA DigitalMicrograph Plug-in Geometrical Phase Analysis



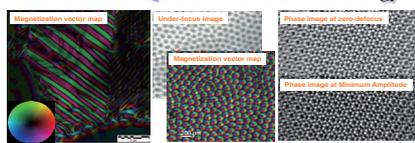
GPA generates fully quantitative deformation/rotation and strain maps from a single standard HREM image using geometric phase images.
GPA is based on geometric phase algorithms originally developed by M. Hÿtch (CNRS).

sMoiré DigitalMicrograph Plug-in STEM Moiré Analysis for Strain Mapping



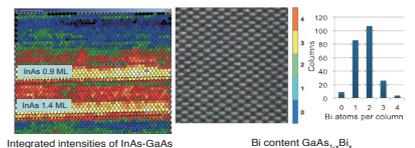
sMoiré provides strain map from *single* STEM Moiré image using geometric phases analysis (see GPA plug-in).
sMoiré generates fully two-dimensional strain maps from *two* STEM Moiré images using the procedure similar to Dark-Field Holography (see HoloDark plug-in).

QP_t DigitalMicrograph Plug-in Quantitative Phase Technology



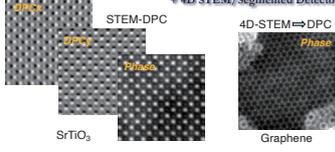
QP_t generates a quantitative *in-focus* phase image over a wide range of magnifications only from *three* ordinary bright-field images.
QP_t is based on Quantitative Phase Imaging (QPI) technology developed by Keith Nugent et al. (University of Melbourne).

qHAADF DigitalMicrograph Plug-in Quantitative HAADF Analysis



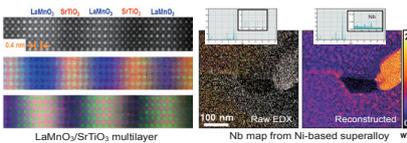
qHAADF performs column-to-column compositional analysis of materials from the integrated intensities of an atomic-column resolved HAADF-STEM image.
qHAADF is based on a method developed by Sergio I. Molina et al. (University of Cadiz).

qDPC DigitalMicrograph Plug-in Quantitative Differential Phase Contrast + 4D STEM/Segmented Detector module



DPC stands for Differential Phase Contrast, and the qDPC plug-in integrates DPC signals to obtain a phase contrast image. The qDPC gives a boundary-artifact-free solution using DCT (Discrete Cosine Transform) contrary to the solution given by FFT (Fast Fourier transform).
The qDPC works with **4D STEM** or **Segmented Detector** module and gives the phase image in real-time (or on-line).

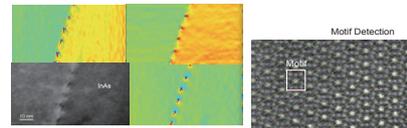
MSA DigitalMicrograph Plug-in Multivariate Statistical Analysis



MSA finds statistically significant features from spectrum images (XEDS, EELS, EFTEM and cathodoluminescence) using PCA (Principal Component Analysis).
MSA plug-in has originally been developed by Masashi Watanabe (Leigh University).

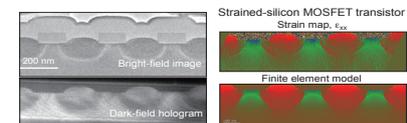
New: Non-Local Average Module

PPA DigitalMicrograph Plug-in Peak-Pairs Analysis



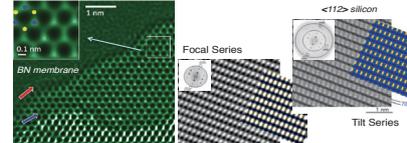
PPA locates atomic columns at sub-pixel resolution using 2D filtering or a small reference region (Motif), and offers peak intensity analysis and local strain map calculation from high-resolution images.
PPA is based on *Peak-Pairs* algorithm originally developed by Pedro L. Galindo (University of Cadiz).

HoloDark DigitalMicrograph Plug-in Dark-field holography for strain analysis



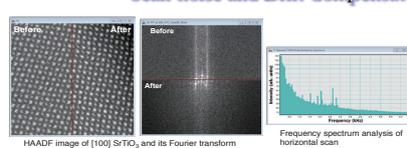
HoloDark generates quantitative deformation and strain maps with high-accuracy (Better than 0.1%) over wide fields of view from a pair of dark-field electron holograms of different diffraction vectors.
HoloDark is based on the patented technique and routines developed by Martin Hÿtch et al. (CNRS).

FTSR DigitalMicrograph Plug-in Focal and Tilt Series Reconstruction



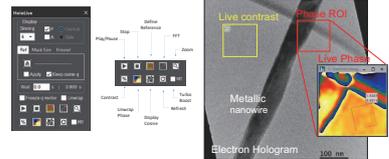
FTSR works with a through focal series (FSR) or tilt series (TSR) of HREM images to reconstruct the complex wave function at the specimen exit surface.
FTSR uses a Wiener filter developed by Angus Kirkland et al. (University of Oxford).

Jitterbug DigitalMicrograph Plug-in Scan-noise and Drift Compensator



Jitterbug will correct STEM image scan-noise, and restore image resolution and SNR. It will rectify image drift and lattice distortion for a crystal sample.
Jitterbug plug-in has originally been developed by Lewys Jones and Peter D. Nellist (University of Oxford).

HoloLive! DigitalMicrograph Plug-in Realtime off-axis holography



HoloLive! reconstructs and displays the phase from electron holograms in *real-time* at the microscope during experiments.
Seeing a live phase image will facilitate any holography observation, and is essential for in-situ and operando work.

New: Template Matching Module

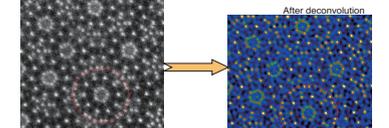
SmartAlign DigitalMicrograph Plug-in "SmartAlign" Scan-distortion Compensator



SmartAlign corrects stage-drift and scan-distortion using fast multi-frame image acquisition, and improves resolution, signal-to-noise ratio, and image-intensity distribution while reducing beam damage effects.

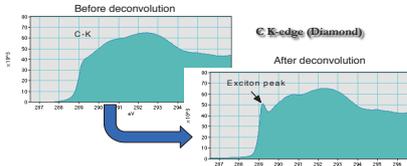
SmartAlign is based on Rigid & Non-rigid Image Registration originally developed by L. Jones (University of Oxford).

DeConvHAADF DigitalMicrograph Plug-in STEM-HAADF Image Deconvolution



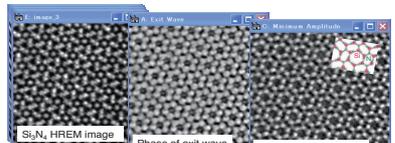
DeConvHAADF rectifies STEM-HAADF image by eliminating a spread of scan probe due to spherical aberration of the probe forming lens and/or a physical source size.
DeConvHAADF works well even on the STEM-HAADF image acquired with a Cs-corrected microscope by correcting a spread due to physical source size.

DeConvEELS DigitalMicrograph Plug-in Electron Energy Loss Spectrum Deconvolution



DeConvEELS rectifies an Electron Energy Loss Spectrum (EELS) by deconvoluting with a low-loss or zero-loss spectrum using *Maximum Entropy Method* or *Richardson-Lucy Algorithm*.

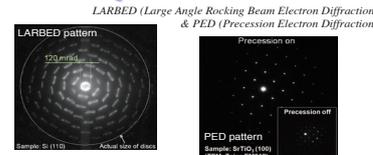
IWFR DigitalMicrograph Plug-in Iterative Wave Function Reconstruction



IWFR works with a through focal series of HREM images to reconstruct a complex wave function at the specimen exit surface, and corrects spherical aberration. IWFR uses Gerchberg-Saxton-type iteration using only image intensities developed by Les Alet et al. (University of Melbourne).

New: ALCHEMI Mode

QED DigitalMicrograph Plug-in Quantitative Electron Diffraction



QED acquires LARBED and/or PED patterns from a small area by precisely controlling the nano-sized electron beam in your TEM. The QED calibrates deflector coils, and measures aberrations of illumination system.
QED is based on the patented technique and routines developed by Christoph Koch at Max Planck Institute (now at Ulm University).

Higashimatsuyama, Saitama,
Tokyo office: Kojimachi, Chiyoda

HREM Research Inc.
Specialized in Electron Microscopy

support@hremresearch.com
www.hremresearch.com

MODEL 1051 TEM Mill



- 高エネルギーによる高速ミリング/低エネルギーによる仕上げミリングのいずれにも対応
- 独立に制御可能なTrueFocusイオン源を2つ搭載
- 広範な加速電圧 (100 eV~10 keV)に対して細かいビーム径を維持
- 調節可能なミリング角度 $-15^{\circ} \sim 10^{\circ}$
- ミリング加工中のその場観測/その場撮像
- 試料ステージの液体窒素冷却



国内総代理店 株式会社ニューメタルス エンド ケミカルス コーポレーション
担当 本社 Tel 03-5202-5665 柴田 shibata@newmetals.co.jp
大阪 Tel 06-6202-5108 谷野 tanino@newmetals.co.jp

未来の
科学に奉仕する。

科学機器・計測システムの技術・情報商社



OZAWA

オザワ科学株式会社

URL <https://www.ozawasc.co.jp> E-mail welcome@ozawasc.co.jp

