

The 2nd East-Asia Microscopy Conference

"New Microscopy from East-Asia"

--- Contribution to Future Science ---

24 – 27 November 2015 Himeji, JAPAN



PROGRAM BOOK

Japanese Society of Microscopy
Chinese Electron Microscopy Society
Korean Society of Microscopy
Microscopy Society of Taiwan

Preface

Microscopy is definitely one of key techniques and growing its important role in science and technology. Particularly, in East-Asia region, the rapid development in industries has been closely linking with the advancement of pure and applied sciences related to microscopy. Therefore, it is timely important to organize a forum for the exchange of scientific and technological information on the development and applications of advanced and emerging techniques of microscopy with regard to life and materials sciences. The four microscopy societies of Japan, China, Korea and Taiwan have decided to hold the East-Asia Microscopy Conference (EAMC) under the auspice of the Committee of Asia-Pacific Societies for Microscopy (CAPSM), a member of the International Federation of Societies for Microscopy (IFSM). The first meeting of the EAMC1 was held in Chongqing, China on 15 – 18 October 2013. Based on the successful results of the EAMC1, the 2nd East-Asia Microscopy Conference (EAMC2) is held in Himeji, Hyogo, Japan on 24 – 27 November 2015.

Following the tradition, the EAMC2 has a combination of lectures and posters. It covers most aspects of advanced development in the techniques of microscopy and their applications to life and materials sciences. Particular emphasis is placed on the four plenary lectures by the world leading experts from Japan, China, Korea and Taiwan, and the poster presentations by the selected young scientists. The sessions include as follows.

- Session P Plenary Lectures
- Session A Advanced Development in Instrumentation
- Session B1-1 Advanced Techniques (TEM/STEM)
- Session B1-2 In-Situ (TEM/STEM)
- Session B1-3 SEM (includes FIB/SEM)
- Session B1-4 X-ray Microscopy
- Session B2-1 Nano-materials
- Session B2-2 Structural Materials
- Session B2-3 Functional Materials
- Session C1 Histology and Cell Biology
- Session C2 Biology of Plants and Microorganisms
- Session C3 3-dimensional Electron Microscopy
- Session C4 Super-resolved Fluorescence Microscopy
- Session C5 Molecular Labeling
- Session C6 Connectmics
- Poster Session

More than 139 lectures and 136 posters were submitted to the scientific sessions of EAMC2, and over 300 people attended the conference.

On behalf of the Organizing Committee of EAMC2, we would like to express our deep appreciation to the enormous efforts made by the Japanese Society of Microscopy (JSM), Chinese Electron Microscopy Society (CEMS), Korean Society of Microscopy (KSM) and Microscopy Society of Taiwan (MST). We also acknowledge gratefully the support for the exhibition of microscope manufacture companies such as JEOL, Hitachi, FEI, and so many others from the world. Finally, we would also express our thanks all of participants and cooperative organizations in Himeji. It would be difficult to make the EAMC2 fruitful without the active participation of those who concerned.

Nobuo Tanaka
(President of the Japanese Society of Microscopy)
Ze Zhang
(President of the Chinese Electron Microscopy Society)
Do Hyang Kim
(President of the Korean Society of Microscopy)
Jer-Ren Yang
(President of Microscopy Society of Taiwan)

Kazuo Furuya (Chair of EAMC2)
Yoshinobu Mineyuki & Keesam Shin
(Co-Chairs of EAMC2)
Syo Matsumura
(Chair of Scientific Program -- Materials Science)
Atsuo Miyazawa
(Chair of Scientific Program -- Life Science)
Toru Hara (General Secretary)
Toshie Yaguchi (Treasurer)
Shinsuke Ogiwara & Akira Masunaga (Exhibition)

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Akira Masunaga (Hitach High-Tech.)

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Shinsuke Ogiwara (JEOL)

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Kentaro Uesugi (JASRI)
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Hiroyuki Nagano (Univ. Hyogo)

JSM Local Committee of EAMC, Supporting Staff

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Fangjia Luo (Univ. Hyogo)
Ganasen Menega (Univ. Hyogo)
Muadz Bin Ahmad Mazian (Univ. Hyogo)
Ryuji Yanase (Univ. Hyogo)

General Information

Venue

The Himeji Chamber of Commerce and Industry (HCCI), Himeji, Hyogo, Japan
43 Shimodera, Himeji, Hyogo, Japan
Phone: +81(79)-222-6001

- Opening and Closing Ceremony, Plenary Lectures, Session A will be at Room A (Main Hall) at 1st Floor.
- Session B11 – B23 will be at Rooms B, C at 7th Floor and D at 6th Floor.
- Poster presentations will be in Exhibition Hall at 1st Floor and Lobby at 2nd Floor.

Registration Desk

The registration desk of the EAMC2 will be located in the entrance hall and will be opened during the following hours:

- Tuesday, November 24 17:00-19:00
- Wednesday, November 25 8:00-19:00
- Thursday, November 26 8:30-15:00
- Friday, November 27 8:30-13:30

Language

The official language is English. No translation will be provided during the sessions.

Name Badge

All participants are required to wear the official name badge at all times while in the venue. This badge will serve as your admission to all scientific sessions, exhibition and official functions included in your registration fee. Accompanying persons are also required to wear their name badges during all official functions that they attend.

Network and Internet Connections

For those who carry their own PCs to the EAMC2, wireless network connections are available in the areas of lecture rooms, exhibition, poster presentation, registration and lobbies in The Himeji Chamber of Commerce and Industry (HCCI). The SSID will be announced at the registration. The virus check is the own duty of the participants. The EAMC2 Organizing Committee cannot take any responsibility for the network security.

Meals and Refreshments

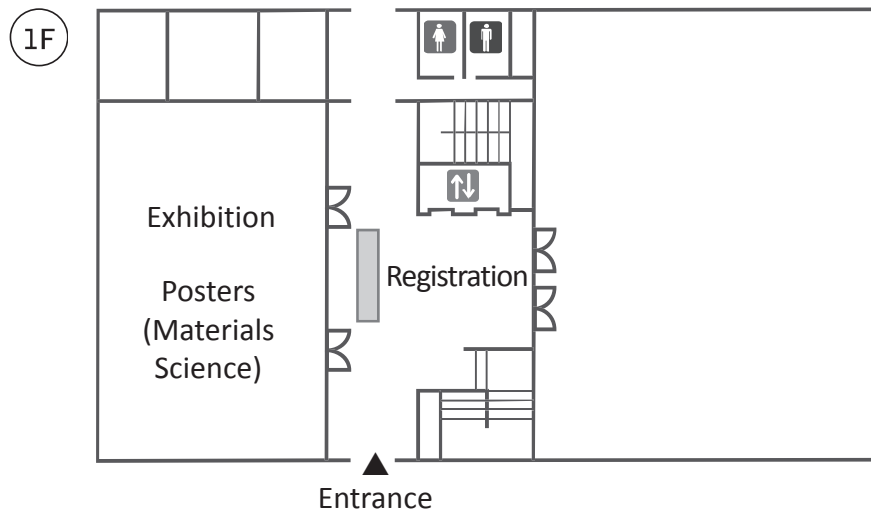
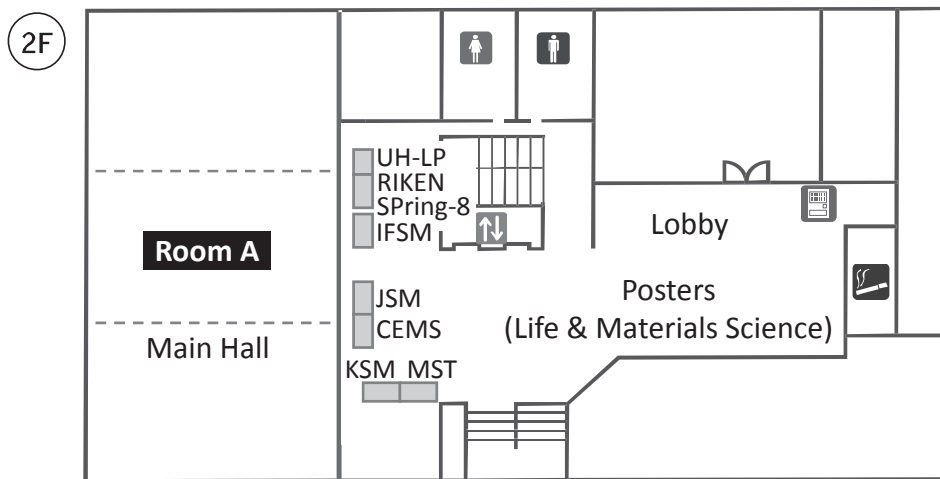
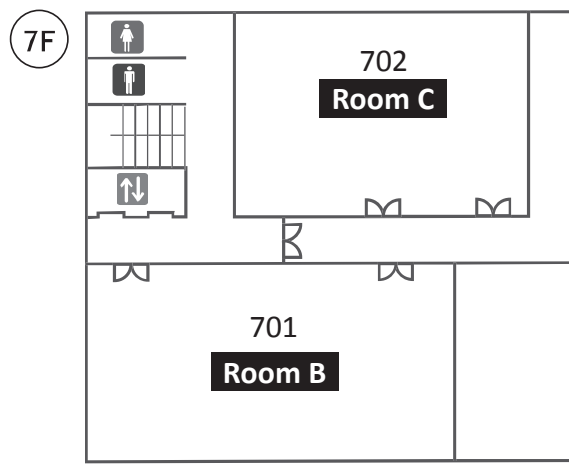
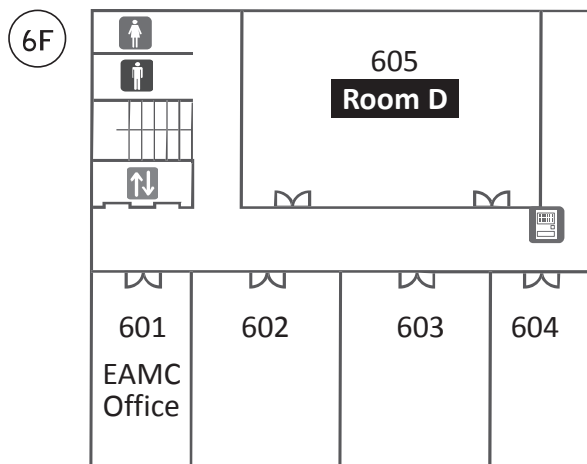
Coffee and tea will be available to all participants free of charge and will be served mid-morning and mid-afternoon each day. The participants can join in Luncheon seminars on November 25 and 26. A comprehensive restaurant guide in Himeji is included in the conference bag, for those wishing to enjoy Himeji's fancy restaurants.

Cloak

The cloak for the participants is not opened on November 24 to 26 at the HCCI. It will open on November 27 at the second floor for overseas participants going home. One can kindly check-in first and leave your luggage at your hotel and come to the HCCI.

The Himeji Chamber of Commerce and Industry (HCCI)

Main Building, Floor Map



ICONS

- Male Toilet
- Female Toilet
- Elevator
- Vending Machine
- Smoking Space

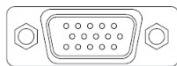
Instructions for Oral Presentations

Equipment

Oral presentations should be only presented by PC (PowerPoint etc.).

All speakers are requested to use their own laptop PC: either Windows or Macintosh.

The session rooms are equipped with a video projector. PCs must have a display output interface with a D-sub 15-pin plug. If necessary, bring an adaptor.



D-sub 15-pin plug

Speakers are recommended to bring their presentation data by a USB memory stick as a backup.

The electrical supply is 100 volts AC. Speakers are responsible for transformers and plug adaptors.



A type (Two-leg plug)

Preparation for oral presentation

Allotted time includes discussion period for each speaker is as follows.

Session		Invited Speakers	Other Speakers
P	Plenary Lecture	30min.	–
A	Advanced Development in Instrumentation	25min.	–
B1-1	Advanced Techniques (TEM/STEM)	25min.	13min.
B1-2	In-Situ (TEM/STEM)	25min.	13min.
B1-3	SEM (includes FIB/SEM)	25min.	13min.
B1-4	X-ray Microscopy	30min.	20min.
B2-1	Nano-materials	25min.	13min.
B2-2	Structural Materials	25min.	13min.
B2-3	Functional Materials	25min.	13min.
B2-4	Structural Materials for Next Decades	25min.	13min.
C1	Histology and Cell Biology	24min.	–
C2	Biology of Plants and Microorganisms	25min.	–
C3	3-dimensional Electron Microscopy	30min.	30min.
C4	Super-resolved Fluorescence Microscopy	30min.	–
C5	Molecular Labeling	30min.	–
C6	Connectmics	30min.	–

There will be discussion immediately after each presentation; a common discussion may take place when all papers scheduled for the session have been presented. All speakers are thus requested to remain for the entire session.

Oral presentations

All speakers **MUST** meet in the room at least 5 minutes prior to the beginning of the session.

All speakers are encouraged to check your laptop with the equipment on the podium before the session starts.

Please be seated at next speakers' seat.

When it is time for your presentation, go to the podium immediately when the previous speaker has finished the presentation and answered questions. You are required to plug your laptop into a video projector.

The session chair will introduce your presentation and ask you to start your presentation.

A warning sign will indicate that 5 minutes remain.

Instructions for Poster Presentations

The poster presentations will be in Exhibition Hall at 1st Floor and Lobby at 2nd Floor.

- Exhibition Hall: Materials Science (B12, B13, B14, B21, B22, and B23)
- Lobby: Life Science (C1, C2, C3, C4, C5, and C6) and Materials Science (B11)

The Layout of the posters is shown in Exhibition Hall and Lobby.

All authors are responsible for displaying your materials before the beginning of Poster Session. You can be allowed to display at below time.

Set up: November 25 9:00 – 12:00

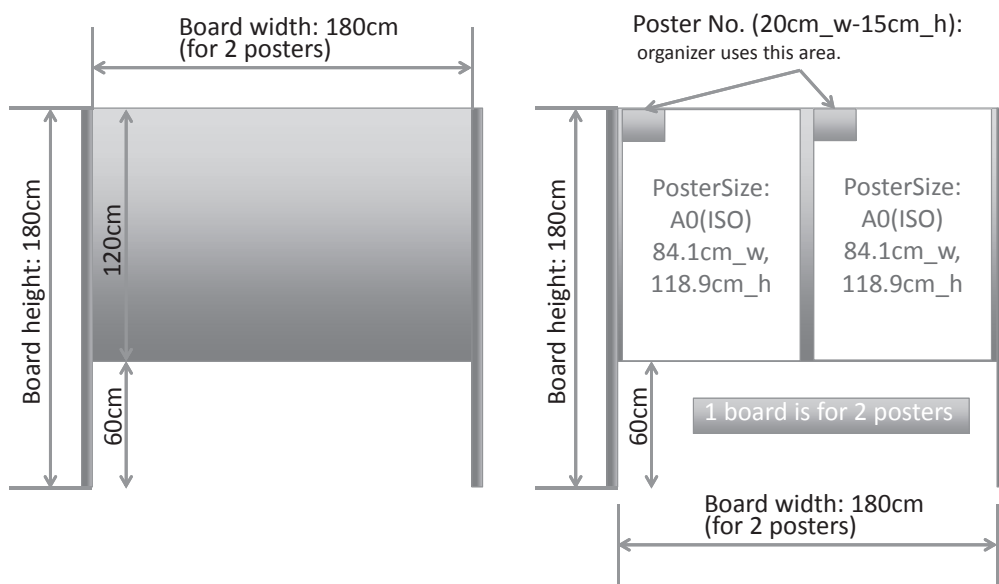
Removal: November 27 9:00 – 12:00

You are required to attend the sessions to answer questions in front of your poster during the period mentioned below.

Poster size

ISO A0 size (Height: 118.9cm, Width: 84.1cm.)

Size of the poster board is Height: 180cm, Width: 180cm as indicated in figure below. Please note that one poster board is for 2 presenters. Please don't exceed 90cm w.



Location

The boards will be numbered (program number) and placed on the 1st and 2nd floor.

Presenters should use adhesive tape to put up their posters. Tape will be prepared by the Conference Secretariat.

The Secretariat will not be responsible for the loss of the poster after removal time.

Period

Poster presentation will be held on Wednesday, November 25.

Please make sure your program number is even number or odd number.

During this time all presenters are requested to stay in front of their own panels.

Group 1 : for the Presenter whose Program number is “Even”

Core time: 17:30-18:15 on November 25

Group 2: for the Presenter whose Program number is “Odd”

Core time: 18:15-19:00 on November 25

Schedule at a glance

Tuesday, November 24

- 17:00 – 19:00 Registration (The Himeji Chamber of Commerce and Industry (HCCI))
 17:30 – 19:30 Reception (The Himeji Chamber of Commerce and Industry (HCCI))
 18:00 – 20:00 EAMC2 Executive Meeting (KOKOEN Gardens)

Wednesday, November 25

The Himeji Chamber of Commerce and Industry (HCCI)

Opening Ceremony (9:00 – 9:15) Room A			
P: Plenary Lecture (9:15 – 10:15) Room A P1: Yoshinori Fujiyoshi / Nobuo Tanaka (JSM)			
Room A (2nd Floor)	Room B (7th Floor)	Room C (7th Floor)	Room D (6th Floor)
A: Advanced Development in Instrumentation (10:15 – 12:20) A1:Hiroyuki Shinada A2:Yang Hoon Huh A3:Radostin Danev A4:Bruno M. Humbel A5:Chikara Sato	B1-4: X-ray Microscopy (10:15 – 12:15) B14-O-01:Yen-Fang Song B14-O-04:Akihisa Takeuchi	C4: Super-resolved Fluorescence Microscopy (10:15 – 12:15) C4-O-01:Shi-Wei Chu C4-O-02:Sunghoe Chang C4-O-03:Yujie Sun C4-O-04:Yasushi Okada	W1: Workshop (10:15 – 11:15) Microscopy Editorial Committee and OUP W2: Workshop (11:15 – 12:15) Gatan
Luncheon 1: (12:30 – 13:30) JEOL	Luncheon 2: (12:30 – 13:30) FEI Company	Luncheon 3: (12:30 – 13:30) Hitachi High-Tech	Luncheon 4: (12:30 – 13:30) Leica Microsystems
B1-1: Advanced Techniques (TEM/STEM) (13:30 – 17:40) B11-O-1:Yuichi Ikuhara B11-O-9:Litao Sun	B2-1: Nano-materials-I (13:30 – 15:30) B21-O-01:Kaori Hirahara C6: Connectmics (15:30 – 17:30) C6-O-01:Hirohide Iwasaki C6-O-02:Forrest Collman C6-O-03:Graham Knott C6-O-04:Yoshiyuki Kubota	C1: Histology and Cell Biology (13:30 – 15:30) C1-O-01:Woong Sun C1-O-02:Rui-An Wang C1-O-03:Akira Sawaguchi C1-O-04:Daisuke Endo C1-O-05:Yong Chul Bae C2: Biology of Plants and Microorganisms (15:30 – 17:30) C2-O-01:Ki Woo Kim C2-O-02:Byung-Ho Kang C2-O-03:Hiang Lian Hing C2-O-04:Makoto Miyata C2-O-05:Ichirou Karahara	B1-2: In-Situ-I (TEM/STEM) (13:30 – 17:30) B12-O-01:Yoshifumi Oshima B12-O-18:Jer-Ren Yang
Poster Presentation (17:30 -19:00) Exhibition Hall (1st Floor): Materials Science Lobby (2nd Floor): Materials & Life Science			

Thursday, November 26

The Himeji Chamber of Commerce and Industry (HCCI)

P2: Plenary Lecture (9:00 -10:00) Room A P2: Chan Gyung Park / Do Hyang Kim (KSM)			
Room A (2nd Floor)	Room B (7th Floor)	Room C (7th Floor)	Room D (6th Floor)
B2-1: Nano-materials-II (10:00 – 12:00) B21-O-09:Chien-Chun Chen	B2-3: Functional Materials-I (10:00 – 12:00) B23-O-01:Si-Young Choi	C3: 3-dimensional Electron Microscopy (10:00 – 12:00) C3-O-01:Im Joo Rhyu C3-O-02:Ping Zhu C3-O-03:Kazuyoshi Murata C3-O-04:Hideki Shigematsu	B1-2: In-Situ-II (TEM/STEM) (10:00 – 12:00) B12-O-01:Yoshifumi Oshima B12-O-18:Jer-Ren Yang
Luncheon 5: (12:15 – 13:15) Hitachi High-Tech	Luncheon 6: (12:15 – 13:15) Bruker AXS	Luncheon 7: (12:15 – 13:15) Gatan	Luncheon 8: (12:15 – 13:15) JEOL
P3: Plenary Lecture (13:15 – 14:15) Room A P3: Yun-Qing Li / Ze Zhang (CEMS)			
Group Photo (14:15 – 14:30)			
Excursion : (14:30 – 18:15) EX1: SPring-8 EX2: Shoshazan Engyoji EX3: Himeji Castle			
Conference Dinner (18:30 – 20:30) (The Himeji Chamber of Commerce and Industry)			

Friday, November 27

The Himeji Chamber of Commerce and Industry (HCCI)

P4: Plenary Lecture (9:00 – 10:00) Room A P4: Fu-Rong Chen / Jer-Ren Yang (MST)			
Room A (2nd Floor)	Room B (7th Floor)	Room C (7th Floor)	Room D (6th Floor)
B1-3: SEM (includes FIB/SEM) (10:00 – 13:00) B13-O-01:Dapeng Yu B13-O-11:Kaoru Sato	B2-2: Structural Materials (10:00 – 13:00) B22-O-01:Hiromi Miura B22-O-02:Jian-Feng Nie	C5: Molecular Labeling (10:00 – 12:00) C5-O-01:Pingyong Xu C5-O-02:Jung-Joon Min C5-O-03:Peilin Chen C5-O-04:Takeharu Nagai	B2-3: Functional Materials-II (10:00 – 13:00) B23-O-08:Shigeo Mori
Closing Ceremony (13:00 – 13:15) Room A			

Scientific Program

Tuesday, November 24

The Himeji Chamber of Commerce and Industry (HCCI)

17:00-19:00 Registration

17:30-19:30 Reception

KOKOEN Gardens

18:00-20:00 EAMC2 Executive Meeting

Wednesday, November 25

Room A (Main Hall at 2nd Floor)

●=Invited

9:00-9:15 OPENING CEREMONY

9:15-10:15 PLENARY LECTURE

Chair: Nobuo Tanaka, Nagoya University

Introduction by the President of JSM

Nobuo Tanaka, Nagoya University

●P1

Structure-Guided Drug Development Based on Cryo-Electron Microscopy

Yoshinori Fujiyoshi. Graduate School of Pharmaceutical Sciences, Nagoya University / Cellular and Structural Physiology Institute, Nagoya University

10:15-12:20 A: Advanced Development in Instrumentation

Organizers/Chairs: Fu-Rong Chen, National Tsing Hua University, Syo Matsumura, Kyusyu University

10:15 ●A1

Development of an Aberration Corrected 1.2-MV Holography Electron Microscope

Hiroyuki Shinada¹, Toshiaki Tanigaki¹, Tetsuya Akashi¹, Yoshio Takahashi¹, Tadao Furutsu¹, Tomokazu Shimakura¹, Takeshi Kawasaki¹, Keigo Kasuya¹, Nobuyuki Osakabe¹ and Akira Tonomura^{1,2}. ¹Research & Development Group, Hitachi, Ltd., ²RIKEN Center for Emergent Matter Science (CEMS)

10:40 ●A2

Installation of Bio-High Voltage Electron Microscope at Korea Basic Science Institute

Yang Hoon Huh. Nano-Bio Electron Microscopy Research Group, Korea Basic Science Institute

11:05 •A3

Near-Atomic Resolution Single Particle Analysis with the Volta Phase Plate

Radostin Danev, Maryam Khoshouei and Wolfgang Baumeister. Max Planck Institute of Biochemistry**11:30 •A4**

Correlative Light and Electron Microscopy in Cell Biology

Céline Loussert Fonta, Caroline Kizilyaprak, Jean Daraspe, Willy Blanchard and Bruno M. Humbel. Electron Microscopy Facility, University of Lausanne**11:55 •A5**

TEM and ASEM of Proteins and Cells in Ice and Water

Chikara Sato. Biomedical RI, National Institute of Industrial Science and Technology (AIST)

12:30-13:30 LUNCHEON SEMINAR 1

Development of New Generation Transmission Electron Microscope / JEM-F200

Akira Yasuhara. JEOL Ltd.**Sponsored by JEOL Ltd.**

13:30-17:40 B1-1: Advanced Techniques (TEM/STEM)*Organizers: Xiaodonghan Han, Beijing University of Technology, Naoya Shibata, The University of Tokyo**Chairs: Xiaodonghan Han, Beijing University of Technology, Jinping Zhang, Suzhou Institute of Nano-Tech & Nano-Bionics, CAS***13:30 •B11-O-01**

Atomic-Scale STEM Characterization of Grain Boundaries in Oxides

Yuichi Ikuhara^{1,2,3}, Ryo Ishikawa¹, Tsubasa Nakagawa¹, Eita Tochigi¹, Tetsuya Tohei¹ and Naoya Shibata¹. ¹Institute of Engineering Innovation, School of Engineering, The University of Tokyo, ²Nanostructures Research Laboratory, Japan Fine Ceramics Center, ³Advanced Institute for Materials Research, Tohoku University**13:55 B11-O-02**

Mapping Valance and Coordination by Monochromated STEM EELS

He Tian. State Key Laboratory of Silicon Materials and School of Materials Science & Engineering, Zhejiang University**14:08 B11-O-03**

Quantification of Oxygen Vacancies in Nanostructured Oxides by TEM Techniques: Electron Energy Loss Spectroscopy and Negative Cs Imaging

Daniel G. Stroppa^{1,2}. ¹International Iberian Nanotechnology Laboratory, ²Ernst Ruska Centre, Forschungszentrum Jülich**14:21 B11-O-04**

Atomic-Resolution STEM-EDS Investigation of Grain Boundary Solute Segregation Behavior in Yttria-Stabilized Zirconia

Bin Feng¹, Tatsuya Yokoi², Akihito Kumamoto¹, Masato Yoshiya², Yuichi Ikuhara^{1,3,4} and Naoya Shibata¹. ¹Institute of Engineering Innovation, The University of Tokyo, ²Department of Adaptive Machine System, Osaka University, ³Nanostructure Research Laboratory, Japan Fine Ceramics Center, ⁴WPI Advanced Institute for Materials Research, Tohoku University**14:34 B11-O-05**

Role of Defect as a Diffusion Barrier for Carriers in InGaN/GaN Quantum Wells

Mi-Hyang Sheen¹, Sung-Dae Kim¹, Jong-Hwan Lee¹, Hyun-Ju Kim¹, Jong-In Shim² and Young-Woon Kim¹. ¹Research institute of Advanced Materials, Department of Materials Science and Engineering, Seoul National University, ²Department of Electronics and Communication Engineering, Hanyang University

14:47 B11-O-06

Depth-Resolution Imaging of Crystalline Nano Clusters Using Aberration-Corrected TEM

Jun Yamasaki¹, Akihiko Hirata², Yoshihiko Hirotsu³, Kaori Hirahara⁴ and Nobuo Tanaka⁵. ¹Research Center for Ultra-High Voltage Electron Microscopy, Osaka University, ²Advanced Institute for Materials Research, Tohoku University, ³Institute of Scientific and Industrial Research, Osaka University, ⁴Department of Mechanical Engineering, Osaka University, ⁵EcoTopia Science Institute, Nagoya University

15:00 B11-O-07

Electron Tomography Observation of Dislocation Morphology near Surfaces of Mo (001) Thin Foils

Satoshi Hata¹, Makoto Shimizu¹, Ken-ichi Ikeda² and Hideharu Nakashima¹. ¹Kyushu University, ²Hokkaido University

15:13 B11-O-08

Rapid 3D Reconstruction in the EDS Tomography by Using Iterative Series Reduction (ISER) Method

Yoshitaka Aoyama, Hideo Nishioka and Yukihito Kondo. JEOL Ltd.

Chairs: Naoya Shibata, The University of Tokyo, DaPeng Yu, Peking University

15:30 •B11-O-09

In-situ High Resolution TEM on Sub-10nm Materials

Litao Sun. SEU-FEI Nano-Pico Center, Joint Research Institute of Southeast University and Monash University, Collaborative Innovation Center for Micro/Nano Fabrication, Device and System, Southeast University

15:55 B11-O-10

In situ Atomic Scale Mechanical Microscopy

Xiaodong Han¹ and Ze Zhang^{1,2}. ¹Beijing Key Laboratory and Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, ²Department of Materials Science & Engineering, Zhejiang University

16:08 B11-O-11

Atomic-Scale Tracking Cation Diffusion in Lithium Manganese Oxide

Peng Gao¹, Ryo Ishikawa¹, Eita Tochigi¹, Akihito Kumamoto¹, Naoya Shibata¹ and Yuichi Ikuhara^{1,2}. ¹Institute of Engineering Innovation, The University of Tokyo, ²Nanostructures Research Laboratory, Japan Fine Ceramics Center

16:21 B11-O-12

Development of Hollow Cone Dark Field Environmental Electron Microscopy and Their Biological Application

Tsu-Hao Yang, Yu-Hung Weng, Hung-Tien Zheng, Shih-Yi Liu, Chun-Ying Tsai, Fan-Gang Tseng and Fu-Ron Chen. Department of Engineering and System Science, National Tsing Hua University

16:34 B11-O-13

A New Atomic Scale EMCD Measurement Scheme by STEM-EELS under 3-beam Diffraction Condition

Shunsuke Muto¹, Jan Rusz², Jakob Spiegelberg² and Kazuyoshi Tatsumi¹. ¹Electron Nanoscopy Section, Advanced Measurement Technology Center, Institute for Materials and Systems for Sustainability, Nagoya University, ²Department of Physics and Astronomy, Uppsala University

16:47 B11-O-14

Coherences of Spin-Polarized and Pulsed Electron Beam Extracted from a Semiconductor Photocathode in TEM

Makoto Kuwahara^{1,2}, Kensuke Sameshima², Kota Aoki², Hidefumi Asano², Toru Ujihara², Koh Saitoh^{1,2} and Nobuo Tanaka¹. ¹EcoTopia Science Institute, Nagoya University, ²Graduate School of Engineering, Nagoya University

17:00 B11-O-15

Simultaneous Realization of Foucault Imaging and Small Angle Electron Diffraction by Conventional TEM

Hiroshi Nakajima¹, Atsuhiko Kotani¹, Yui Ishii¹, Ken Harada^{1,2} and Shigeo Mori¹. ¹Department of Materials Science, Osaka Prefecture University, ²Research and Development Group, Hitachi Ltd.

17:13 B11-O-16

The Design of a Compact Cs Corrector for Desktop Electron Microscope

Wei-Yu Chang and Fu-Rong Chen. Department of Engineering and System Science, National Tsing Hua University

17:26 B11-O-17

Development and Deployment of a New Drift Compensation Software for STEM Image Acquisition

Hikomitsu Furukawa, Miyoko Shimizu and Hidetaka Fukushima. SYSTEM IN FRONTIER INC.

Room B (701 at 7th Floor)

●=Invited

10:15-12:15 B1-4: X-ray Microscopy

Organizers/Chairs: Mau-Tsu Tang, National Synchrotron Radiation Research Center; Kentaro Uesugi, Japan Synchrotron Radiation Research Institute (JASRI)

10:15 ●B14-O-01

In-situ and 3-Dimensional Nano-Transmission X-ray Microscopy at NSRRC

Yen-Fang Song and Chun-Chieh Wang. National Synchrotron Radiation Research Center

10:45 B14-O-02

X-ray Imaging at Taiwan Photon Source

Mau-Tsu Tang. National Synchrotron Radiation Research Center

11:05 B14-O-03

Development of *In-situ* Sample Cells for Scanning Transmission X-ray Microscopy at UVSOR

Takuji Ohigashi¹, Masanari Nagasaka¹, Toshio Horigome¹, Nobuhiro Kosugi¹, Scott M. Rosendahl² and Adam P. Hitchcock³. ¹UVSOR Synchrotron, Institute for Molecular Science, ²Canadian Light Source, ³McMaster University

11:25 ●B14-O-04

X-Ray Microscopy and Microtomography at SPring-8

Akihisa Takeuchi and Kentaro Uesugi. Japan Synchrotron Radiation Research Institute (JASRI) / SPring-8

11:55 B14-O-05

Correlative Imaging Analysis of Tardigrada (Water Bears) Under the Active and Dehydrated States By X-ray Micro-Computed Tomography, Electron Microscopy and Confocal Microscopy

Kohei Hatta¹, Kyoko Fukuda¹, Ayano Nakasone¹, Kisa Kakiguchi², Shigenobu Yonemura², Kenta Kuwabara¹, Kentaro Uesugi³, Akihisa Takeuchi³, Yoshio Suzuki³, Kaoru Nozue¹, Kyoko Shibata¹, Sakushi Morikawa¹, Shin-ichi Okamoto¹ and Mari Okubo¹. ¹Graduate School of Life Science/Department of Science University of Hyogo, ²RikenCLST, ³JASRI

12:30-13:30 LUNCHEON SEMINAR 2

In-situ S/TEM: Technology and Applications

Alex Bright. FEI Company

Sponsored by FEI Company Japan Ltd.

13:30-15:30 B2-1: Nano-materials

Organizers: Kazuhisa Sato, Osaka University, Cheng-Yen Wen, National Taiwan University

Chair: Cheng-Yen Wen, National Taiwan University

13:30 ●B21-O-01

In-situ Electron Microscopy on Nanomechanics of Nanocarbon and Related Materials

Kaori Hirahara. Center for Atomic and Molecular Technologies and Department of Mechanical Engineering, Osaka University

13:55 B21-O-02

In situ TEM Observation of Cu-Doped Graphene

Emi Kano^{1,2}, Ayako Hashimoto^{1,2,3,4} and Masaki Takeguchi^{1,2,3}. ¹Graduate School of Pure and Applied Sciences, University of Tsukuba, ²Surface Physics and Structure Unit, National Institute for Materials Science, ³Transmission Electron Microscopy Station, National Institute for Materials Science, ⁴Global Research Center for Environment and Energy based on Nanomaterials Science, National Institute for Materials Science

14:08 B21-O-03

The Identification of Grain Boundaries in Two-Dimensional Graphene Using Moire Pattern Fringe

Jung Hwa Kim¹, Kwanpyo Kim² and Zonghoon Lee^{1,2}. ¹School of Materials Science and Engineering, ²Department of Physics, Ulsan National Institute of Science and Technology (UNIST)

14:21 B21-O-04

Phase Map of a Single MoS₂ Sheet Retrieved by Aberration Corrected Transport of Intensity Equation

Xiaobin Zhang and Yoshifumi Oshima. School of Materials Science, Japan Advanced Institute of Science and Technology

14:34 B21-O-05

Atomic Motion in Monolayer Molybdenum Disulfide Probed by In-situ ADF-STEM

Jinhua Hong¹, Yuhao Pan², Zhixin Hu², Danhui Lv¹, Wei Ji², Chuanhong Jin¹, Jun Yuan^{3,1} and Ze Zhang¹. ¹Center of Electron Microscopy, State Key Laboratory of Silicon Materials, School of Materials Science and Engineering, Zhejiang University, ²Beijing Key Laboratory of Optoelectronic Functional Materials & Micro-Nano Devices, Department of Physics, Renmin University of China, ³Department of Physics, University of York

14:47 B21-O-06

Structure-Property Analysis of Semiconductor Nanostructures Using Aberration-Corrected STEM

Luying Li. Center for Nanoscale Characterization and Devices, Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology

15:00 B21-O-07

Non-Simultaneous Growth and Compositional Discontinuity of Electron Blocking Layer of Core-Shell Type Nano-Rod GaN LED Analyzed by TEM and APT

Woo-Young Jung¹, Chang-Min Kwak¹, Won-Ho Kim³, Yong-Han Jeon³, Deok-Won Seo³, Eun-Hyung Lee³ and Chan-Gyung Park^{1,2}. ¹Department of Material Science and Engineering, Pohang University of Science and Technology (POSTECH), ²National Institute for Nanomaterials Technology (NINT), Pohang University of Science and Technology (POSTECH), ³Advanced Materials & Components Laboratory, R&D Center, LG Innotek

15:13 B21-O-08

Synthesis and Characterization of Epitaxial Au/Co Core-Shell Nanoparticles

Kazuhisa Sato¹, Yuta Matsushima² and Toyohiko J. Konno¹. ¹Institute for Materials Research, Tohoku University, ²Department of Materials Science, Tohoku University

15:30-17:30 C6: Connectmics [This symposium is supported by CREST, JST.]

Organizers/Chairs: Shigeo Okabe, The University of Tokyo, CREST, JST, Yongji Yang, The Second Military Medical University

15:30 •C6-O-01

Three-Dimensional Reconstruction of Neural Tissue from Serial Sections Collected by ATUM

Hirohide Iwasaki^{1,2} and Shigeo Okabe^{1,2}. ¹The University of Tokyo, ²CREST, JST

16:00 •C6-O-02

Mapping Synapses by Conjugate Light-Electron Array Tomography

Forrest Collman¹, Joann Buchanan¹, Kristen D. Phend², Kristina D. Micheva³, Richard J. Weinberg² and Stephen J. Smith¹. ¹Allen Institute for Brain Science, ²Department of Cell Biology and Physiology, University of North Carolina, ³Department of Molecular and Cellular Physiology, Stanford University

16:30 •C6-O-03

Quantifying Adult Brain Ultrastructure Using Focussed Ion Beam Scanning Electron Microscopy

Graham Knott. Bio Electron Microscopy Facility, Life Science Faculty, EPFL

17:00 •C6-O-04

An Excitatory and Inhibitory Synapse Density on Various Nonpyramidal Cells in the Rat Cerebral Cortex

Y Kubota^{1,2}, A Sekigawa^{1,2}, S Hatada¹ and Y Kawaguchi^{1,2}. ¹Div Cerebral Circuitry, National Institute for Physiological Sciences,

²The Graduate University for Advanced Studies (SOKENDAI)

Room C (702 at 7th Floor)

●=Invited

10:15-12:15 C4: Super-resolved Fluorescence Microscopy

Organizers/Chairs: Yasushi Okada, RIKEN, Shi-Wei Chu, National Taiwan University

10:15 •C4-O-01

Super-Resolution Imaging Based on Nonlinearities of Plasmonic Scattering

Shi-Wei Chu^{1,2}, Satoshi Kawata³ and Katsumasa Fujita³. ¹Department of Physics, National Taiwan University, ²Molecular Imaging Center, National Taiwan University, ³Department of Applied Physics, Osaka University

10:45 •C4-O-02

Cellular Imaging from the Diffraction-Limited to the Super-Resolution

Daehun Park and Sunghoe Chang. Department of Physiology and Biomedical Sciences, Seoul National University College of Medicine

11:15 •C4-O-03

Super-Resolution Study of The Chromatin Structure and Processes

Q. Peter Su, Meiqin Chen and Yujie Sun. BIOPIC, School of Life Sciences, Peking University

11:45 •C4-O-04

Ultrafast Superresolution Fluorescence Imaging with Spinning Disk Confocal Microscope Optics

Yasushi Okada. Quantitative Biology Center, RIKEN

12:30-13:30 LUNCHEON SEMINAR 3

Ultimate Imaging & Analysis by Unique HITACHI Technology - Ultra Low Voltage SEM, Low Voltage STEM/EELS

Hiroyuki Ito. Hitachi High-Technologies Corp.

Sponsored by Hitachi High-Technologies Corp.

13:30-15:30 C1: Histology and Cell Biology

Organizers/Chairs: Young Chul Bae, Kyungpook National University, Takehiko Koji, Nagasaki University

13:30 •C1-O-01

Control of Mitochondrial Dynamics in Neuronal Development

Woong Sun, So Yoen Choi, Hyo Min Cho and Bongki Cho. Department of Anatomy Korea University College of Medicine

13:54 •C1-O-02

Carcinogenesis by Stem Cell Misplacement: A New Cancer Theory

Rui-An Wang. Department of Pathology, the Fourth Military Medical University

14:18 •C1-O-03

Dynamics of Thrombus Formation in Mouse Testicular Surface Vein Visualized by Newly Devised “Vascular Mapping” Method for Live-CLEM Imaging *in vivo*

Akira Sawaguchi¹ and Satoshi Nishimura^{2,3,4}. ¹Department of Anatomy, Ultrastructural Cell Biology, Faculty of Medicine, University of Miyazaki, ²Department of Cardiovascular Medicine, The University of Tokyo, ³Translational Systems Biology and Medicine Initiative, The University of Tokyo, ⁴Center for Molecular Medicine, Jichi Medical University

14:42 •C1-O-04

Testis-Specific Knockdown of Dnmt1 Induced Mislocalization of rRNA Genes in the Nuclei of Mouse Spermatocytes

Daisuke Endo and Takehiko Koji. Department of Histology and Cell Biology, Nagasaki University Graduate School of Biomedical Science

15:06 •C1-O-05

Central Connectivity and Distribution of Transient Receptor Potential Melastatin 8 (TRPM8)-Expressing Axons in the Brain Stem and Dental Pulp

Yong Chul Bae. Department of Anatomy and Neurobiology, School of Dentistry, Kyungpook National University

15:30-17:30 C2: Biology of Plants and Microorganisms

Organizers/Chairs: Ichirou Karahara, University of Toyama, Ki Woo Kim, Kyungpook National University

15:30 •C2-O-01

Ultrastructure of the Epiphytic Sooty Mold *Capnodim* and Surface-Colonized Walnut Leaves

Ki Woo Kim. School of Ecology and Environmental System, Kyungpook National University

15:55 •C2-O-02

Dimorphic Secretory Vesicles Produced from the Golgi Stacks of Mucilage Secreting Root Cap Cells

Byung-Ho Kang¹, Cui Yong¹, Cameron Goldbeck² and L. Andrew Staehelin³. ¹School of Life Science, Center for Organelle Biogenesis and Function, State Key Laboratory for Agrobiotechnology, The Chinese University of Hong Kong, ²Department of Mathematics, University of California, Santa Barbara ³Molecular Cellular and Developmental Biology, University of Colorado at Boulder

16:20 •C2-O-03

Importance of Rapid Diagnostic Electron Microscopy in Emerging Infectious Diseases

H.L. Hing¹, Y. Muranaka², A. Kurth³, H. Gelderbloms³, A.Z. Sahalan¹, M.A. Kaswandi¹ and A. Hyatt⁴. ¹Department of Biomedical Sciences, Faculty of Allied Health Sciences, Universiti, Kebangsaan Malaysia, ²Laboratory for Ultrastructure Research, Research Equipment Center, Hamamatsu University School of Medicine, ³Consultant Laboratory for Diagnostic Electron Microscopy in Infectious Diseases, Robert Koch Institute, ⁴Australian Animal Health Laboratory

16:45 •C2-O-04

Gliding Machinery of *Mycoplasma mobile*, Pathogenic Bacterium

Makoto Miyata^{1,2}. ¹Graduate School of Science, Osaka City University, ²The OCU Advanced Research Institute for Natural Science and Technology (OCARINA), Osaka City University

17:10 •C2-O-05

Non-Destructive Observation of Aerenchyma Development in the Primary Root of Rice Using X-ray Micro-CT

Ichirou Karahara¹, Yusuke Matsuzawa¹, Tadafumi Bando¹, Daisuke Tamaoki^{1,2}, Jun Abe³, Kentaro Uesugi⁴, Daisuke Yamauchi² and Yoshinobu Mineyuki². ¹Department of Biology, Graduate School of Science and Engineering, University of Toyama, ²Department of Life Science, Graduate School of Life Science, University of Hyogo, ³School of Agriculture, Tokai University, ⁴Japan Synchrotron Radiation Research Institute

Room D (605 at 6th Floor)

●=Invited

10:15-11:15 WORKSHOP 1

The Best of Microscopy: From Submission to Publication
Microscopy Editorial Committee and Oxford University Press.

Sponsored by Microscopy Editorial Committee and Oxford University Press

11:15-12:15 WORKSHOP 2

Taking Imaging and Spectroscopy to New Era in Material Science Research
Koji Inoke. Gatan Inc.

Sponsored by Gatan Inc.

12:30-13:30 LUNCHEON SEMINAR 4

Cryo Preparation – from High Pressure Freezing to Cryo Transfer into the Analysis System
Gisela Hoeflinger. Leica Microsystems K.K.

Sponsored by Leica Microsystems K.K.

13:30-17:30 B1-2: In-Situ (TEM/STEM)

Organizers: Kazuto Arakawa, Shimane University, Young Woon Kim, Seoul National University

Chair: Kazuto Arakawa, Shimane University

13:30 ●B12-O-01

In-Situ TEM Observation of Electrochemical Process

Yoshifumi Oshima. School of Materials Science, Japan Advanced Institute of Science and Technology

13:55 B12-O-02

Observation of Dominant Diffusion Path of Copper in the Electrically Biased Interconnects Using in-situ TEM

Young-Hwa Oh, Seung-Yong Lee, Tae-Young Ahn, Miyoung Kim and Young-Woon Kim. Seoul National University

14:08 B12-O-03

In Situ TEM Study of Nanostructural and Transport Property Changes in Phase-Change Memory

Ruiwen Shao¹, Kun Zheng^{1,2} and Xiaodong Han^{1,2}. ¹Institute of Microstructure and Properties of Advanced Materials, Beijing University of Technology, ²Beijing Key Laboratory of Microstructure and Property of Advanced Material, Beijing University of Technology, ³Materials Engineering, The University of Queensland

14:21 B12-O-04

Controlling Experimental Conditions in Advanced *in-situ* S/TEM Experiments

Joerg R. Jinschek¹, Eric Van Cappellen² and Alex Bright³. ¹FEI Company, Eindhoven, ²FEI Company Hillsboro, ³FEI Company, Tokyo

14:34 B12-O-05

Towards Dynamic Electron Holographic Analysis of Solid State Electrochemical Devices at Operating Condition

Kentaro Soma¹, Stan Konings², Genki Kobayashi³ and Seiji Takeda¹. ¹Institute of Scientific and Industrial Research, Osaka University, ²FEI Company, ³Institute for Molecular Science

14:47 B12-O-06

Phase Change Behavior of Ge-Sb-Te Based Chalcogenide Investigated by In-situ Electrical Probing Transmission Electron Microscopy
Jin-Soo Oh, Byeong-Seon An, Tae-Hoon Kim and Cheol-Woong Yang. School of Advanced Material Science & Engineering, Sungkyunkwan University

15:00 B12-O-07

Self-Relaxed Conductive Filament in ReRAM Analyzed by In-situ TEM and Atom Probe Tomography

B. G. Chae¹, K. J. Baek¹, J. H. Song¹, H. S. Hwang¹, S. H. Oh¹, J. B. Seo² and C. G. Park^{1,2}. ¹Department of Materials Science and Engineering, POSTECH, ²National Institute for Nanomaterials Technology

15:13 B12-O-08

Microstructural Investigation of Multi-Level Resistive Switching Behavior in Multi-Layered Pt/TaO_x Using In-situ TEM

Seong-Il Kim, Seung-Pyo Hong and Young-Woon Kim. Department of Materials Science and Engineering, Seoul National University

Chair: Young Woon Kim, Seoul National University

15:30 B12-O-09

Lorentz TEM Observation of Magnetic Bubbles in Manganites

A. Kotani¹, H. Nakajima¹, K. Harada^{1,2}, Y. Ishii¹ and S. Mori¹. ¹Department of Materials Science, Osaka Prefecture University, ²Hitachi Ltd.

15:43 B12-O-10

Water Enhanced Electron Beam Nano-Lithography of Metal Oxides

Yue Lu¹, Wen-Qiang Ding¹, Zhen-Hua Zhang¹, Tsu-Wei Huang², Shih-Yi Liu², Man-Ling Sui¹ and Fu-Rong Chen². ¹Institute of Microstructure and Properties of Advanced Materials, Beijing University of Technology, ²Department of Engineering and System Science, National Tsing Hua University

15:56 B12-O-11

Development of Self-Designed Liquid Holder and Wet-Cell Chips for TEM Applies to Analysis the Precipitation of Calcium Carbonate

Shih-Chi Lin, T. W. Huang and Fu-Rong Chen. Department of Engineering and System Science, National Tsing Hua University

16:09 B12-O-12

In-Situ Observation of Photo-Catalytic Reactions for Platinum Loaded Titanium Dioxide in Liquid Environmental TEM

Kai-Lin Peng, T. W. Huang and Fu-Rong Chen. Engineering and System Science Department/National Tsing Hua University

16:22 B12-O-13

In-situ TEM Observation of Biological Specimen in Liquid Cells

Goshu Tamura^{1,2}, See Wee Chee², Duane Loh^{2,3}, Utkur Mirsaidov^{2,3} and Paul Matsudaira^{1,2}. ¹Mechanobiology Institute (MBI), National University of Singapore (NUS), ²Centre for Bio-Imaging Sciences (CBIS), Department of Biological Sciences, Faculty of Science, National University of Singapore (NUS), ³Department of Physics, Faculty of Science, National University of Singapore (NUS)

16:35 B12-O-14

Size-Controllable Fabrication and Dynamic Evolution of Faceted Nanopores in Magnesium

Jianbo Wang, He Zheng, Shujing Wu, Fan Cao, Shuangfeng Jia, Huaping Sheng and Lei Li. School of Physics and Technology, Center for Electron Microscopy, MOE Key Laboratory of Artificial Micro- and Nano-structures, and Institute for Advanced Studies, Wuhan University

16:48 B12-O-15

In Situ Observation of Pt Silicide Formation at Pt/SiO_x Interface Under Electron Irradiation

T. Nagase^{1,2}, R. Yamashita² and J. -G. Lee³. ¹Research Center for Ultra-High-Voltage Electron Microscopy, Osaka University, ²Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University, ³Powder & Ceramics Division, Korea Institute of Materials Science

17:01 B12-O-16

Importance of Spatial and Time Resolution of Camera for In-situ Experiments in TEM

Koji Inoke. Gatan Inc.

17:14 B12-O-17

Microsecond Time-Scale In Situ Observations of Electron-Irradiation-Induced Crystallization in an Amorphous Antimony Nanoparticle by Ultra-High Voltage Electron Microscopy

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

Exhibition Hall at 1st Floor / Lobby at 2nd Floor

17:30-19:00 POSTER SESSION

The poster presentations will be in Exhibition Hall at 1st Floor and Lobby at 2nd Floor.

- Exhibition Hall: Materials Science (B12, B13, B14, B21, B22, and B23)
- Lobby: Life Science (C1, C2, C3, C4, C5, and C6) and Materials Science (B11)

The Layout of the posters is shown in Exhibition Hall and Lobby.

17:30-18:15: Group 1 - for the Presenter whose Program number is “Even”

18:15-19:00: Group 2 - for the Presenter whose Program number is “Odd”

*Please see page b55 – b68 for the details of poster presentations.

Thursday, November 26

Room A (Main Hall at 2nd Floor)

●=Invited

9:00-10:00 PLENARY LECTURE

Chair: Do Hyang Kim, Yonsei University

Introduction by the President of KSM

Do Hyang Kim. Yonsei University

●P2

Atom Probe Tomography (APT) Combined with In-situ TEM ; 3D Analysis for Electronic Memory Device Technology

J. H. Lee^{1,3}, W. Y. Jeong¹ and C. G. Park^{1,2}. ¹Department of Materials Science and Engineering, Pohang University of Science and Technology (POSTECH), ²National Institute for Nanomaterials Technology, POSTECH, ³Semiconductor Division, Samsung Electronics

10:00-12:00 B2-1: Nano-materials

Organizers: Kazuhisa Sato, Osaka University, Cheng-Yen Wen, National Taiwan University

Chair: Kazuhisa Sato, Osaka University

10:00 ●B21-O-09

Determination of Three-Dimensional Coordinates of Individual Atoms in Nano-Materials by Electron Tomography

Chien-Chun Chen. Department of Physics, National Sun Yat-sen University

10:25 B21-O-10

The New High-Resolution Electron Tomography for Nano-Crystal

Liu-Gu Chen¹, Angus I. Kirkland², Dirk Van Dyck³ and Fu-Rong Chen¹. ¹Department of Engineering and System Science, National Tsing Hua University, ²Department of Materials, University of Oxford, ³Department of Physics, University of Antwerp

10:38 B21-O-11

Quantitative and Qualitative Study of Halogen and Sodium Doped Silicon by Atom Probe Tomography

N. Mayama¹, S. Ishimura¹, N. Arai¹, T. Sasaki¹, Y. Hori² and H. Uchida². ¹TEM Analysis Technology Laboratory, Physical Analysis Technology Center, Toshiba Nanoanalysis Corporation, ²Surface Material Analysis Technology Laboratory, Physical Analysis Technology Center, Toshiba Nanoanalysis Corporation

10:51 B21-O-12

Structure Unit Behavior in Pr-Doped ZnO [0001] Symmetric Tilt Grain Boundaries

Ji-young Roh¹, Yukio Sato² and Yuichi Ikuhara^{1,3,4}. ¹The University of Tokyo, ²Kyushu University, ³Japan Fine Ceramics Center, ⁴Tohoku University

11:04 B21-O-13

Metal Silicide Epilayers Self-Organized at Grain Boundaries in Silicon

Y. Ohno¹, K. Inoue¹, K. Kutsukake¹, M. Deura¹, T. Ohsawa¹, I. Yonenaga¹, H. Yoshida², S. Takeda², R. Taniguchi³, H. Otubo³, S. R. Nishitani³, N. Ebisawa⁴, Y. Shimizu⁴, H. Takamizawa⁴, K. Inoue⁴ and Y. Nagai⁴. ¹Institute for Materials Research, Tohoku University, ²Institute of Scientific and Industrial Research, Osaka University, ³Department of Information, Kwansei Gakuin University, ⁴The Oarai Center, Institute for Materials Research, Tohoku University

11:17 B21-O-14

Ultra-Large Elasticity and Liquid-Like Behavior of Nano-Materials

Xiaodong Han¹ and Ze Zhang^{1,2}. ¹Beijing Key Laboratory and Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, ²Department of Materials Science & Engineering, Zhejiang University

11:30 B21-O-15

Strain in Si/Ge Heterojunction Nanowires

Cheng-Yen Wen¹, Chia-Hao Yu¹, Tzu-Hsien Shen¹, Takashi Nemoto², Yoshifumi Fujiyoshi², Mitsutaka Haruta² and Hiroki Kurata². ¹Department of Materials Science and Engineering, National Taiwan University, ²Institute for Chemical Research, Kyoto University

12:15-13:15 LUNCHEON SEMINAR 5

High Precision 3D Structural Analysis Using a Novel FIB-SEM

Takeshi Ishikawa. Hitachi High-Technologies Corp.

Sponsored by Hitachi High-Technologies Corp.

13:15-14:15 PLENARY LECTURE

Chair: Ze Zhang, Beijing University of Technology, Zhejiang University

Introduction by the President of CEMS

Ze Zhang, Beijing University of Technology, Zhejiang University

●P3

Neural Circuits for Pain Modulation in the Central Nervous System

Yun-Qing Li. Department of Anatomy, Histology and Embryology and KK Leung Brain Research Centre, School of Basic Medical Sciences, The Fourth Military Medical University

Room B (701 at 7th Floor)

●=Invited

10:00-12:00 B2-3: Functional Materials*Organizers: Kenji Tsuda, Tohoku University, Cheol-Woong Yang, Sungkyunkwan University**Chairs: Si-Young Choi, Korea Institute of Materials Science, Cheol-Woong Yang, Sungkyunkwan University***10:00 ●B23-O-01**

Peculiar Domains by Local Out-of-Plane Strain in Chemically Modified Bismuth Ferrite Thin Films

Si-Young Choi, Sung-Dae Kim and Jungho Ryu. Korea Institute of Materials Science**10:25 B23-O-02**Atomic Level One-Dimensional Structural Modulations at the Negatively Charged Domain Walls in BiFeO₃ Films*W. Y. Wang, Y. L. Tang, Y. L. Zhu and X. L. Ma.* Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences**10:38 B23-O-03**Observation of the Crystal Structure and the Domains in the Layered Bismuth Titanate Bi₄Ti₃O₁₂*D. Urushihara¹, M. Komabuchi¹, N. Ishizawa¹, M. Iwata², K. Fukuda¹ and T. Asaka¹.* ¹Department of Materials Science and Engineering, Nagoya Institute of Technology, ²Department of Engineering Physics, Electronics and Mechanics, Nagoya Institute of Technology**10:51 B23-O-04**

Probing the Atomic and Electronic Structure in Materials Through Aberration-Corrected Scanning Transmission Electron Microscopy

Lin Gu and Xin-An Yang. Institute of Physics, Chinese Academy of Sciences/Beijing National Laboratory for Condensed Matter Physics**11:04 B23-O-05**Thermal Dynamics of Magnetic Domain in Co₂Z-Type Hexaferrite: TEM Studies by In-situ Heating and Lorentz Microscopy*Sung-Dae Kim¹, Youngmok Rhyim¹, Gi-Yeop Kim^{1,2} and Si-Young Choi¹.* ¹Advanced Characterization and Analysis Group, Korea Institute of Materials Science (KIMS), ²School of Materials Science and Engineering, Pusan National University**11:17 B23-O-06**

Effect of the Desorption and Recombination Process on Anisotropy Enhancement in HDDR Processed Nd-Fe-B Magnet

Tae-Hoon Kim¹, Hee-Ryoung Cha², Jung-Goo Lee², Hae-Woong Kwon³ and Cheol-Woong Yang¹. ¹School of Advanced Materials Science Engineering, Sungkyunkwan University, ²Powder & Ceramics Division, Korea Institute of Materials Science, ³Department of Materials Science and Engineering, Pukyong National University**11:30 B23-O-07**

Multivariate Statistical Analysis of EMCD Spectra Measured at the Fe/MgO Interface

Jakob Spiegelberg¹, Thomas Thersleff² and Jan Ruzs¹. ¹Department of Physics and Astronomy, Uppsala University, ²Department of Engineering Sciences, Uppsala University**12:15-13:15 LUNCHEON SEMINAR 6**

High Speed EDS and EBSD-TKD Analysis

*Takeshi Hanada. Bruker AXS***Sponsored by Bruker AXS**

Room C (702 at 7th Floor)

●=Invited

10:00-12:00 C3: 3-dimensional Electron Microscopy*Organizers/Chairs: Kaoru Mitsuoka, Osaka University, Changcheng Yin, Peking University***10:00 ●C3-O-01**

Three Dimensional Reconstruction of the Nervous System; Some Strategies and Applications on Neuroscience Researches

Hyun-wook Kim¹, Kea Joo Lee² and Im Joo Rhyu¹. ¹Department of Anatomy, Korea University College of Medicine, ²Research Division, Korea Brain Research Institute**10:24 ●C3-O-02**

Structure of 30-nm Chromatin Fiber Revealed by Cryo-Electron Microscopy

Ping Zhu. Institute of Biophysics, Chinese Academy of Sciences**10:48 ●C3-O-03**Single Particle 3D Reconstruction of *Eh* V-ATPase by Zernike Phase Contrast Cryo-Electron Microscopy Equipped with a Direct Detector*Kazuyoshi Murata¹, Takeshi Murata², Hiroshi Ueno³ and Ryota Iino⁴.* ¹National Institute for Physiological Sciences, ²Department Science, Chiba University, ³School of Engineering, The University of Tokyo, ⁴Okazaki Institute for Integrative Bioscience and Institute for Molecular Science**11:12 ●C3-O-04**

Functional Structures of Ion Channels in Lipid Environment

Hideki Shigematsu^{1,2}, Fred Sigworth² and Mikako Shirouzu¹. ¹RIKEN Center for Life Science Technologies, ²Yale University School of Medicine**11:36 C3-O-05**Electron Cryo-Tomography of *Thermoplasma acidophilum* with Volta Phase Plate*Yoshiyuki Fukuda, Florian Beck, Radostin Danev, Istvan Nagy and Wolfgang Baumeister.* Department of Molecular Structural Biology, Max-Planck Institute of Biochemistry**12:15-13:15 LUNCHEON SEMINAR 7**

Broad Argon Beam Tools for Preparing Near Perfect Samples for SEM and TEM Analysis

*Koichi Takauchi and Hiroshi Fujitani. Gatan Inc.***Sponsored by Gatan Inc.**

Room D (605 at 6th Floor)

●=Invited

10:00-12:00 B1-2: In-Situ (TEM/STEM)*Organizers: Kazuto Arakawa, Shimane University, Young Woon Kim, Seoul National University**Chair: Yoshifumi Oshima, Japan Advanced Institute of Science and Technology***10:00 ●B12-O-18**Insight into the Deformation Behavior of Spinodal Nanostructured δ -Ferrite in a 2205 Duplex Stainless Steel*Jer-Ren Yang¹, Yi-Chieh Hsieh¹, Ling Zhang², Takahito Ohmura³ and Takuya Suzuki³.* ¹Department of Materials Science and Engineering, National Taiwan University, ²College of Materials Science and Engineering, Chongqing University, ³National Institute for Materials Science

10:25 B12-O-19

Real-Time Atomistic Observation of the Mechanical Deformations in Au Nanostructures

He Zheng¹, Jianbo Wang¹, Shuangfeng Jia¹, Huaping Sheng¹ and Scott X Mao². ¹School of Physics and Technology, Center for Electron Microscopy, MOE Key Laboratory of Artificial Micro- and Nano-structures, and Institute for Advanced Studies, Wuhan University, ²Department of Mechanical Engineering & Materials Science, University of Pittsburgh

10:38 B12-O-20

In-situ Observation and Chemical Analyses Under High Gas Pressure Conditions Using Aberration Corrected 300 kV Microscope with Gas-Cell Type Specimen Holder

Ichiro Ohnishi, Eiji Okunishi, Yu Jimbo, Takeo Sasaki, Hidetaka Sawada, Toshihiro Suzuki and Yukihito Kondo. JEOL Ltd.

10:51 B12-O-21

Development of High Pressure Gas Environmental Cell and its Application to Hydrogen Reaction

H. Nagakura¹, T. Wakasugi¹, K. Ohkubo¹, T. Tanioka¹, T. Endo¹, S. Isobe^{1,2}, Y. Wang^{1,2}, N. Hashimoto¹ and S. Ohnuki¹. ¹Graduate School of Engineering, Hokkaido University, ²Creative Research Institution, Hokkaido University

11:04 B12-O-22

Development of *in situ* TEM Techniques for Characterization of Energy-Related Nanomaterials

Toshie Yaguchi¹, Keiji Tamura¹, Takashi Kubo¹, Yasuhira Nagakubo¹, Hiroaki Matsumoto¹, Takahiro Shimizu² and Takeo Kamino^{2,3}. ¹Hitachi High-Technologies Corporation, ²Japan Automobile Research Institute, ³Fuel Cell Nanomaterials Research Center, University of Yamanashi

11:17 B12-O-23

Reduction of Hematite by Ceramics in TEM

N. Ishikawa¹, T. Kimura¹, M. Takeguchi¹, T. Aizawa² and T. Inami². ¹National Institute for Materials Science (NIMS), ²Faculty of Engineering, Ibaraki University

11:30 B12-O-24

In-situ Observation of Temperature Dependent Nanomorphology-Performance Relations in Emitting Layer of OLEDs by TEM

Young-Tae Kim¹, Young-Hoon Kim¹, Jae-Bok Seo¹, Tae-Woo Lee¹ and Chan-Gyung Park^{1,2}. ¹Department of Material Science and Engineering, Pohang University of Science and Technology (POSTECH), ²National Institute for Nanomaterials Technology (NINT), POSTECH

11:43 B12-O-25

Development of MEMS Based Heater for In Situ TEM

Meng-Ju Tsai, Fan-Gang Tseng and Fu-Rong Chen. Department of Engineering and System Science, National Tsing Hua University

12:15-13:15 LUNCHEON SEMINAR 8

Introduction of JSM-7100F,7800F/3View2XP System

Yuuki Yamaguchi. JEOL Ltd.

Sponsored by JEOL Ltd.

The Himeji Chamber of Commerce and Industry (HCCI)

14:15-14:30 Group Photo

18:30-20:30 Conference Dinner

Excursion

14:30-18:15 EX1: SPring-8**EX2: Shoshazan Engyoji****EX3: Himeji Castle****Friday, November 27****Room A (Main Hall at 2nd Floor)**

●=Invited

9:00-10:00 PLENARY LECTURE*Chair: Jer-Ren Yang, National Taiwan University*

Introduction by the President of MST

*Jer-Ren Yang, National Taiwan University***●P4**

Coherent Electron Tomography: Dynamics and Shape of Nanomaterials at Atomic Resolution

F.-R. Chen¹, L.-G. Chen¹, D. Van Dyck², A. Kirkland³ and C. Kisielowski⁴. ¹National Tsing-Hua University, ²University of Antwerp, EMAT, Department of Physics, ³Department of Materials Science, Oxford University, ⁴The Molecular Foundry and Joint Center for Artificial Photosynthesis, Lawrence Berkeley National Laboratory**10:00-13:00 B1-3: SEM (includes FIB/SEM)***Organizers: Masaru Itakura, Kyushu University, Zhihong Jia, Chongqing University**Chair: Takashi Sekiguchi, NIMS***10:00 ●B13-O-01**High Spatial/Energy Resolution Cathodoluminescence Spectroscopy: Powerful Tool for Precise Characterization of Nanostructures
Xuwen Fu, Zhimin Liao and Dapeng Yu. Department of Physics, Laboratory for Nanostructures and Low-dimensional Physics, Peking University**10:25 B13-O-02**Electron Channeling Contrast Imaging: A Powerful Technique to Quantitative Microstructure Characterization in the SEM
Ivan Gutierrez-Urrutia. Research Center for Strategic Materials, National Institute for Materials Science**10:38 B13-O-03**

A High Sensitivity and High Responsivity Pin Diode Detector Design for a Backscattering Electron Detection of SEM

Yi-Hsiang Chien¹, Yun-Ju Chuang², Chih-Hao Lee¹ and Fu-Rong Chen¹. ¹Department of Engineering and System Science, National Tsing Hua University, ²Department of Biomedical Engineering, Ming Chuan University**10:51 B13-O-04**

Fabrication of High Energy Resolution Silicon Drift Detector for Energy Dispersive X-ray Spectrometer

Yu-Chao Ma¹, Chiao-Chun Hsu¹, Fan-Gang Tseng¹, Chih-Hao Lee¹, Yun-Ju Chuang² and Fu-Rong Chen¹. ¹Department of Engineering and System Science, National Tsing Hua University, ²Department of Biomedical Engineering, Ming Chuan University

11:04 B13-O-05

Low Voltage EDS for Sub-10nm Spatial Resolution Elemental Characterization in FE-SEM

Simon Burgess and Xiaobing Li. Oxford Instruments Nanoanalysis

11:17 B13-O-06

Evolution of Texture in 6016 Aluminum Alloy During Processing

Zhihong Jia¹, Jinyue Xie¹, Zhang Wen¹, Qing Liu¹ and PiZhi Zhao². ¹College of Materials Science and Engineering, Chongqing University, ²Department of Fabrication Process and Technology for Aluminum Alloys, Suzhou Research Institute for Nonferrous Metals

Chair: Zhihong Jia, Chongqing University

11:40 B13-O-07

Dual-Phase Steel Structure Visualized by Fast, Slow and Extremely Slow Electrons

Sarka Mikmekova and Katsumi Yamada. Steel Research Laboratory, JFE Steel Corporation

11:53 B13-O-08

In-situ Observation of Microstructure Changes at Higher Temperature with Forward Scatter Electron Images Formed by EBSD Pattern Signal

Tatsuya Fukino and Seiichi Suzuki. TSL Solutions K. K

12:06 B13-O-09

Multi-Dimensional Quantification of Dislocation Substructure by SEM Electron Channeling Contrast Imaging Method

Shigeto Yamasaki, Masatoshi Mitsuhashi, Satoshi Hata and Hideharu Nakashima. Faculty of Engineering Sciences, Kyushu University

12:19 B13-O-10

Low Energy Secondary Electron Imaging for Various Semiconductors Using Fountain Detector

Takashi Sekiguchi^{1,2}, Hideo Iwai¹, Toshihide Agemura² and Takashi Kimura¹. ¹National Institute for Materials Science (NIMS), ²Graduate School of Pure and Applied Sciences, University of Tsukuba

12:32 •B13-O-11

The Impact of Modern Scanning Electron Microscopy on Materials Science

Kaoru Sato¹, Masayasu Nagoshi² and Tomohiro Aoyama³. ¹JFE Steel, Chiba, ²JFE Steel, Kawasaki, ³JFE Steel, Fukuyama

13:00-13:15 CLOSING CEREMONY

Room B (701 at 7th Floor)

●=Invited

10:00-13:00 B2-2: Structural Materials

Organizers: Litao Sun, Southeast University, Atsushi Yamamoto, University of Hyogo

Chairs: Keesam Shin, Changwon National University, Hung-Wei Yen, National Taiwan University

10:00 •B22-O-01

Microstructure and Mechanical Properties of AZ61Mg Alloy Multi-Directionally Forged Using Die Under Decreasing Temperature Conditions

H. Miura and M. Kobayashi. Department of Mechanical Engineering, Toyohashi University of Technology

10:25 •B22-O-02

Characterization of Precipitates in Magnesium Alloys Using Atomic Resolution HAADF-STEM and EDS

Jian-Feng Nie^{1,2} and Houwen Chen². ¹Department of Materials Science and Engineering, Monash University, ²School of Materials Science and Engineering, Chongqing University

10:50 B22-O-03

Investigation of the Carbides Evolution Under Extended Heat Treatment in Cr-Mo Steels

Seung-Pyo Hong¹, Seong-Il Kim¹, Ming-zhe Li¹, Soon-Taik Hong² and Young-Woon Kim¹. ¹Seoul National University, Department of Materials Science and Engineering, ²POSCO, Technical Research Laboratories

11:03 B22-O-04

The Discovery of ω -Fe in Common Steels by TEM and XRD

Dehai Ping¹, Masato Ohnuma² and Takahito Ohmura¹. ¹National Institute for Materials Science, ²Faculty of Engineering, Hokkaido University

11:16 B22-O-05

Have a Good TRIP: Atom Probe Investigations on Ultrafine Austenite in Strong Steels

Guan-Ju Cheng¹, Steve Woei Ooi², Simon P. Ringer³ and Hung-Wei Yen¹. ¹Department of Materials Science & Engineering, National Taiwan University, ²Department of Materials & Metallurgy, the University of Cambridge, ³The Australian Centre for Microscopy & Microanalysis, the University of Sydney

11:29 B22-O-06

Microstructural Evolution of 304SS upon Shot Peening and Heat Treatment

Yinsheng He¹, Han-sang Lee², Cheol-Woong Yang³, Je-Hyun Lee¹ and Keesam Shin¹. ¹School of Nano and Advanced Materials Engineering, Changwon National University, ²Advanced Materials Group, Korea Electric Power Research Institute, ³School of Advanced Materials Science & Engineering, Sungkyunkwan University

11:42 B22-O-07

Microstructural Evolution of Some Metals and Alloys upon Shot Peening

Keesam Shin and Yinsheng He. School of Nano and Advanced Materials Engineering, Changwon National University

11:55 B22-O-08

Influence of Heating Rate on Microstructure and Recrystallization Behavior of Al-Zn-Mg-Cu Alloy After Rolling

Zhiqing Zhang and Qunying Yang. College of Materials Science and Engineering, Chongqing University

12:08 B22-O-09

Analysis of Stable Precipitates in Beta-Titanium Alloys Aged at Medium Temperature for Long-Time Periods

Eiichi Sukedai¹, Elisabeth Aebly-Gautier² and Moukrane Dehmas². ¹Okayama University of Science (Formerly), and Institut Jean Lamour, Universite de Lorraine (Visiting Researcher), ²Institut Jean Lamour, Universite de Lorraine

12:21 B22-O-10

Transmission Electron Microscopy Characterization of the Microstructures in a Rapidly Solidified Mg-Sn Alloy

Yurong Ma, Li Ye, Dongshan Zhao and Jianbo Wang. Center for Electron Microscopy, School of Physics and Technology, Wuhan University

12:34 B22-O-11

Atomic Scale STEM Analysis of Structure and Dopant Effects on α -Alumina Grain Boundary

Tetsuya Tohei¹, Masahiro Sakai¹, Naoya Shibata¹ and Yuichi Ikuhara^{1,2}. ¹Institute of Engineering Innovation, The University of Tokyo, ²Nanostructures Research Laboratory, Japan Fine Ceramics Center

12:47 B22-O-12

In Situ Atomic Scale Observation of Grain Rotation Mediated by Grain Boundary Dislocations

Lihua Wang¹, Ze Zhang^{1,2}, En Ma³, Mingwei Chen³ and Xiaodong Han¹. ¹Beijing Key Laboratory and Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, ²Department of Materials Science & Engineering, Zhejiang University, ³Department of Materials Science, John Hopkins University

Room C (702 at 7th Floor)

●=Invited

10:00-12:00 C5: Molecular Labeling

Organizers/Chairs: Peilin Chen, Research Center for Applied Sciences, Academia Sinica, Takeharu Nagai, Osaka University

10:00 ●C5-O-01

Live Cell Superresolution Imaging with Unique Photoactivatable Fluorescent Proteins

Xi Zhang, Mingshu Zhan and Pingyong Xu. Institute of Biophysics, Chinese Academy of Sciences

10:30 ●C5-O-02

Targeted Imaging and Theranostics with Peptides and Novel Protein Scaffolds, Repebody and Monobody

Misun Yun¹, Seung Hwan Park¹, Yeongjin Hong² and Jung-Joon Min^{1,2}. ¹Department of Nuclear Medicine, Chonnam National University Medical School, ²Department of Microbiology, Chonnam National University Medical School

11:00 ●C5-O-03

Nanoparticles for *in vitro* and *in vivo* Optical Imaging

Peilin Chen. Research Center for Applied Sciences, Academia Sinica

11:30 ●C5-O-04

Genetically-Encoded Tools to Optically Control and Image Ca²⁺ Dynamics

Takeharu Nagai. The Institute of Scientific and Industrial Research, Osaka University

Room D (605 at 6th Floor)

●=Invited

10:00-13:00 B2-3: Functional Materials

Organizers: Kenji Tsuda, Tohoku University, Cheol-Woong Yang, Sungkyunkwan University

Chairs: Shigeo Mori, Osaka Prefecture University, Kenji Tsuda, Tohoku University

10:00 ●B23-O-08

Microstructures in Improper Ferroelectric Compounds Revealed by Electron Microscopy

S. Mori¹, H. Tsukasaki¹, Y. Ishii¹ and K. Kurushima². ¹Osaka Prefecture University, ²Toray Research Center

10:25 B23-O-09

Ordered and Domain Structure in Hexagonal-Based Potassium Tungsten Bronze Nanosheets

Shuangfeng Jia, Jianbo Wang, He Zheng, Lili Kong and Wei Han. School of Physics and Technology, Center for Electron Microscopy, MOE Key Laboratory of Artificial Micro- and Nano-structures, and Institute for Advanced Studies, Wuhan University

10:38 B23-O-10

Misfit Accommodation Mechanism of the {111} Diamond/Cubic Boron Nitride Interface

C. L. Chen¹, Z. C. Wang¹, T. Kato², N. Shibata³, T. Taniguchi⁴ and Y. Ikuhara^{1,2,3}. ¹Advanced Institute for Materials Research, Tohoku University, ²Nanostructures Research Laboratory, Japan Fine Ceramics Center, ³Institute of Engineering Innovation, The University of Tokyo, ⁴National Institute for Materials Science

10:51 B23-O-11

Identification of Σ -Twinning in HVPE-AlN Single Crystals

J. P. Zhang¹, J. J. Zhao¹, X. J. Su¹, U. Jahn², Y. Ji³, M. S. Sun¹, Y. X. Qiu¹, X. H. Liu¹, J. Huang¹, J. C. Zhang^{1,4} and K. Xu^{1,4}. ¹Suzhou Institute of Nano-Tech and Nano-bionics, Chinese Academy of Sciences, ²Paul-Drude Institute for Solid-State Electronics, ³Beijing University of Technology, ⁴Suzhou Nanowin Science and Technology Co., Ltd

11:04 B23-O-12

Visualization of Potential Map in a Thin-Film Solar Cell by High Sensitivity Phase-Shifting Electron Holography

Kazuo Yamamoto¹, Takuya Matsui², Hajime Shibata², Ryuji Yoshida¹, Takeharu Kato¹, Koji Matsubara², Shigeru Niki² and Tsukasa Hirayama¹. ¹Nanostructures Research Laboratory, Japan Fine Ceramics Center, ²National Institute of Advanced Industrial Science and Technology, Research Center for Photovoltaics

11:17 B23-O-13

Shape-Controlled Synthesis of Trisectahedral Gold Nanocrystals with Exposed High-Index Facets for H₂O₂ Sensing Application

Yu-Cheng Liu and Young Ku. Department of Chemical Engineering, National Taiwan University of Science and Technology

11:30 B23-O-14

Direct Observation the Vacant Sites in the GeSbTe Metastable Polycrystalline Phase

Bin Zhang¹, Zhenju Shen², Yongjin Chen¹, Jixue Li², Wei Zhang³, Evan Ma³, Ze Zhang^{1,2} and Xiaodong Han¹. ¹Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, ²Center of Electron Microscopy and State Key Laboratory of Silicon Materials, Department of Materials Science and Engineering, Zhejiang University, ³Center for Advancing Materials Performance from the Nanoscale, State Key Laboratory for Mechanical Behavior of Materials, Xi'an Jiaotong University

11:43 B23-O-15

van der Waals Epitaxial Growth of Highly-Textured ZnO Thin Film on Surface-Modified Silicon Substrates by Chemical Bath Deposition

Chia-Hao Yu¹, Kuan-Hung Chen¹, Zhang-Chen Luo¹, Shao-Sian Li¹, Yih-Ren Chang¹, Chien-Ting Wu², Chun-Wei Chen¹ and Cheng-Yen Wen¹. ¹Department of Material Science and Engineering, National Taiwan University, ²National Nano Device Laboratories, National Applied Research Laboratories

11:56 B23-O-16

Correlation of Thermoelectric Properties to Microstructure of an Annealed Sb-Doped Mg₂Si_{0.5}Sn_{0.5} Solid Solution with TEM

Minghui Song¹, Ji-Wei Liu², Masaki Takeguchi¹, Naohito Tsujii³ and Yukihiro Isoda⁴. ¹Electron Microscopy Station, National Institute for Materials Science (NIMS), ²School of Materials Science and Engineering, Changzhou University, ³Quantum Beam Unit, NIMS, ⁴Battery Materials Unit, NIMS

12:09 B23-O-17

Controllably Triggering Metal-Insulator Transition of VO₂

Z. H. Zhang¹, H. Guo², W. Q. Ding¹, B. Zhang¹, Y. Lu¹, X. X. Ke¹, F. R. Chen³ and M. L. Sui¹. ¹Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, ²Department of Materials Science and NanoEngineering, Rice University, ³Department of Engineering and System Science, National Tsing Hua University

12:22 B23-O-18

Effectiveness of Multi-Scale Observations for Polycrystalline Superconducting Materials

Yusuke Shimada¹, Satoshi Hata², Akiyoshi Matsumoto³, Hiroaki Kumakura³, Akiyasu Yamamoto⁴, Hideharu Nakashima² and Toyohiko J. Konno¹. ¹Institute for Materials Research, Tohoku University, ²Department of Engineering Sciences for Electronics and Materials, Kyushu University, ³Superconducting Materials Science, National Institute for Materials Science, ⁴Department of Applied Physics, Tokyo University of Agriculture and Technology

Luncheon Seminar

Wednesday, November 25, 12:30-13:30

Room A (Main Hall at 2nd Floor)

Luncheon 1 : JEOL Ltd.

Development of New Generation Transmission Electron Microscope / JEM-F200

Speaker: Akira Yasuhara

We developed a new generation field-emission transmission electron microscope, JEM-F200 (nickname "F2"). JEM-F200 has designed to realize the targets, which are high resolution, high efficiency, high stability and high user accessibility.

JEM-F200 has the higher mechanical and electrical stabilities, since JEM-F200 was designed based on our knowledge about developing the Cs corrected electron microscopes. And newly designed hardware and software user interfaces support strongly the users' operation. Besides, "improved Cold FEG" and "Dual SDD system" perform the high resolution imaging and highly efficient analysis.

We believe this new microscope marvelously helps the studies and researches in material and biological fields.

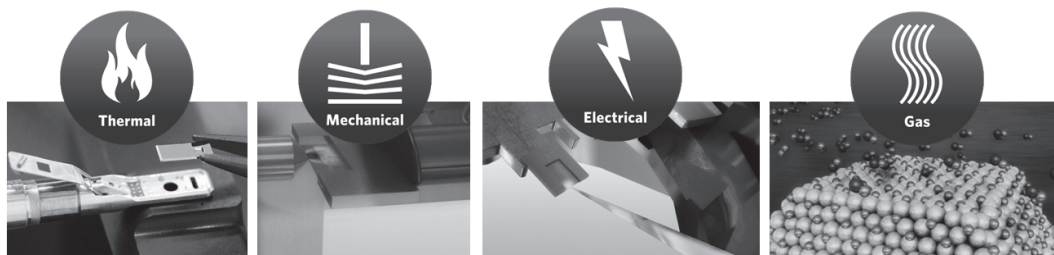
Room B (701 at 7th Floor)

Luncheon 2 : FEI Company Japan Ltd.

In-situ S/TEM: Technology and Applications

Speaker: Alex Bright

TEM and STEM imaging and analysis typically use static pre-prepared thin specimens at room temperature and under high vacuum. However some fields of research benefit from *in-situ* analysis, which is the ability to perform experiments inside the microscope while imaging or to place the sample in a gas environment. In-situ S/TEM technology has advanced significantly in recent years and it is now practical, for example, to take high quality lattice images of specimens above 1000°C in a gas environment, to capture EDX maps at 700°C, to perform indentation experiments while imaging and measuring mechanical properties and to flow current through a sample while viewing the microstructural changes that result. We will discuss the key technologies and some of the limitations of *in-situ* S/TEM and show the current status with recent research results.



Room C (702 at 7th Floor)

Luncheon 3 : Hitachi High-Technologies Corp.

Ultimate Imaging & Analysis by Unique HITACHI Technology - Ultra Low Voltage SEM, Low Voltage STEM/EELS

Speaker: Hiroyuki Ito

Latest FE-SEM technology developed and introduced by Hitachi High-Tech to meet the cutting edge demands for nano-material analysis by high resolution observation with ultra low accelerating voltage utilizing deceleration function, STEM function, lattice observation, electron beam diffraction, and unique low voltage Electron Energy Loss Spectroscopy (EELS).

Room D (605 at 6th Floor)**Luncheon 4 : Leica Microsystems K.K.****Cryo Preparation – from High Pressure Freezing to Cryo Transfer into the Analysis System**

Speaker: Gisela Hoeflinger

Cryo-SEM techniques are a key technology for high resolution visualization of biological samples in their native state. High pressure freezing enables researchers to create a time snapshot of cellular processes by ultrafast freezing with minimum artefact. To observe structures such as cell organelles, membranes, emulsions or surface interfaces of liquids, freeze fracture is the only way to do that. Freeze fracture and freeze etching techniques require ultrathin heavy metal and carbon films deposited under vacuum on the fractured surface. Sample mounting onto the sample holder is performed under LN₂, the sample is then retracted into the pre-cooled transfer shuttle and transferred under high-vacuum condition and actively cooled between different preparation and analysis devices.

This lunch workshop will guide you through the whole process, from the sample preparation steps to the transfer into the analysis system. A complete portfolio of instruments will be presented from freezing the sample in the Leica EM ICE, cryo manipulation and transfer with the EM VCM and EM VCT500, freeze fracture and cryo coating with and Leica EM BAF900.

Thursday, November 26, 12:15-13:15

Room A (Main Hall at 2nd Floor)**Luncheon 5 : Hitachi High-Technologies Corp.****High Precision 3D Structural Analysis Using a Novel FIB-SEM**

Speaker: Takeshi Ishikawa

A FIB-SEM with unique column layout is proposed for 3D structural analysis having contents of Orthogonal column layout, High-resolution, high-contrast imaging, Cut & See, Real-time 3D analysis, and Atom probe sample preparation. High precision 3D applications to various materials will be also presented.

Room B (701 at 7th Floor)**Luncheon 6 : Bruker AXS****High Speed EDS and EBSD-TKD Analysis**

Speaker: Takeshi Hanada

Bruker QUANTAX FlatQUAD has a Maximum Efficiency in X-ray Detection and QUANTAX EBSD is available with unequaled support for Transmission Kikuchi Diffraction (TKD) analysis through the OPTIMUS™ TKD detector head and the TKD toolkit.

Room C (702 at 7th Floor)**Luncheon 7 : Gatan Inc.****Broad Argon Beam Tools for Preparing Near Perfect Samples for SEM and TEM Analysis**

Speakers: Koichi Takauchi, Hiroshi Fujitani

Broad Argon Ion Beam Tools provide a way to improve the analytical and imaging results for both TEM and SEM applications compared to Focused Ion Beam (FIB), mechanical or electrochemical polishing. Although Broad Ion Beams tools are suitable for both SEM and TEM Prep., the key parameters are different.

In the case of TEM, most often lamella are produced by FIB. For this application, there is both structural damage from the kinetic energy of the Ga beam as well as chemical damage from the implantation and reaction of the sample with the Ga. For Plasma FIB's there is structural damage from the energy of the high energy ions. Thus the primary specification is for a very low energy, with high current in a Broad Argon Ion Beam tool to reduce or eliminates this damage. Typically the energy is less than 300eV. The position of the beam on the lamella is critical and the amount of material is quite small. Lastly it is important to eliminate curtaining or preferential milling along grain boundaries to insure high resolution imaging and atomic level EELS.

For SEM applications, the important result is again no damage remaining on the surface but areas as large as possible for imaging or EBSD analysis. In some cases these areas are greater than 10mm in diameter. Again planarity is important but this must be maintained while removing a significant larger volume of material. Additionally, it is now possible to do 3D analysis with a Broad Argon Beam Tool automatically. Preliminary results from a tool will be presented as well.

Room D (605 at 6th Floor)**Luncheon 8 : JEOL Ltd.****Introduction of JSM-7100F,7800F/3View2XP System**

Speaker: Yuuki Yamaguchi

Biological tissues have highly complexed structure. Therefore it needs three dimensional observation with high resolution of electron microscopy in order to observe the structure in detail. SEM three dimensional reconstruction method can achieve such observation. In this seminar, we would like to introduce the application method by using the JSM-7100F, 7800F/3View2XP system. The JSM-7100F and 7800F are JEOL's FE-SEMs which incorporate in lens schottky electron gun. It is designed to create a smaller electron probe with higher probe current at lower accelerating voltage in comparison to conventional FE-SEMs so as to provide high contrast and high resolution images in short time. The 3View2XP from Gatan Inc. is a specimen stage equipped with a ultramicrotome. It repeatedly cut and see a surface of a block specimen in a SEM chamber, so you can take serial two-dimensional images and reconstruct into a three-dimensional image.

Sponsored Workshop

Wednesday, November 25, 10:15-12:15, Room D, 6th Floor (605)

Room D (605 at 6th Floor)

W1 : 10:15-11:15, **Microscopy Editorial Committee and Oxford University Press**

The Best of Microscopy: From Submission to Publication

Room D (605 at 6th Floor)

W2 : 11:15-12:15, **Gatan Inc.**

Taking Imaging and Spectroscopy to New Era in Material Science Research

Speaker: Koji Inoke

Aberration corrected electron microscope breaks the barrier of resolution. Traditionally, electron microscope had to optimize objective lens for high resolution imaging with narrow polepiece gap or high contrast/high tilt configuration with the large gap. However, aberration correction enables to satisfy the both contradictory demands. Now we are facing the new barrier that how to record the proper atomic resolution image and how to utilize the room in the lens gap.

The longer exposure time gives more signal to the detector and improve the S/N. But it is prone to blur the image because of drifting, vibration, and other interferences. The one way to overcome this situation is summing multiple frames to accumulate signal and improve S/N. The simple summation is still affected by the interference, but if drift correction is applied for each frames, the improvement of image quality is expected without deterioration.

The sensitivity improvement in EDS analysis using large opening angle of SDD-EDS detectors speeded up and acquisition time becomes very short. So high throughput EDS analysis without compromising atomic scale resolution is achieved by the aid of aberration correction. And now it is realistic for simultaneous acquisition with EELS signal. From P/B and S/N ratio point of view, each has advantage and disadvantage. But the improvement of collection efficiency for both method enables complementary analysis, not simple qualitative analysis, but supplemental chemical analysis from EELS and simultaneous analysis for wide variety of elements(from low-Z to high-Z) by EDS.

The large space around specimen opens the way for in-situ analysis with accepting wide variety of specimen holders. Such in-situ experiments requires the high quality but long recording time for targeting the reaction in atomic scale.

In this workshop, I will present the recent enabling technologies and applications from imaging, spectroscopy, specimen environment, and software point of view.

Social Events

Reception

Date: Tuesday, November 24, 17:30-19:30

Venue: The Himeji Chamber of Commerce and Industry (HCCI)

Conference Dinner

Date: Thursday, November 26, 18:30-20:30

Venue: The Himeji Chamber of Commerce and Industry (HCCI)

Tours

There are three excursion tours. The participants may choose one of them without any cost.

Date: Thursday, November 26

Time: 14:30-18:15

Excursion 1: SPring-8 Campus Bus Tour

SPring-8 campus is located 30km from the center of Himeji city. SPring-8 synchrotron radiation facility and SACLA X-ray free electron laser facility are placed in SPring-8 campus. In the tour, “Cryo-electron microscopy system for life science” is also shown to the participants.



Excursion 2: Shoshazan Engyoji Bus Tour

“Shoshazan Engyoji” is located 9km from the center of Himeji city. It was founded by Shoku Shonin in 966. The complex of buildings is at the top of Mt. Shosha. The area is one of the best places of the viewing of colorful leaves (koyo) in Japanese Autumn.



Excursion 3: Himeji Castle Self-Guided Tour

National Treasure, World Heritage, “Himeji castle” is located at center of Himeji city. The castle is now beautiful white colored because it is just after the repair construction. The participants get the entrance ticket and walk 15min to Himeji castle.



The 2nd East-Asia Microscopy Conference (EAMC2) Young Scientists Satellite Meeting — Toward Next Generation of Microscopic Sciences —

Date: November 27 to 28, 2015

Venue: AWAJI YUMEBUTAI International Conference Center, Awaji Island, Japan
1 Yumebutai, Awaji City, Hyogo 656-2306 Japan

The Satellite Meeting is designed for Young Scientists from academics and industries in four East-Asian societies to find something extra leading to the next generation microscopy, and to progress it toward cross-disciplinary researches between life and material sciences.

We are pleased to welcome everybody to participate this meeting to make it fruitful one.

For details, please access: <http://www.med.miyazaki-u.ac.jp/2anat/pg132.html>

Contact to: eamc2ysm@med.miyazaki-u.ac.jp

The Japanese Society of Microscopy (JSM) Meetings

公益社団法人日本顕微鏡学会 関連会議

11月24日(火) 11:20 ~ 12:00 財務委員会
13:00 ~ 14:30 常務理事会
14:30 ~ 16:30 学術運営合同会議

場所: イーグレひめじ 第1・第2会議室

11月25日(水) 12:30 ~ 13:30 Microscopy 編集委員会

場所: 姫路商工会議所 602会議室 (Room F)

11月26日(木) 14:45 ~ 18:15 理事会

場所: 姫路商工会議所 602会議室 (Room F)

Exhibition

Venue

The Himeji Chamber of Commerce and Industry (HCCI)
Exhibition Hall, 1st Floor

Date and Time

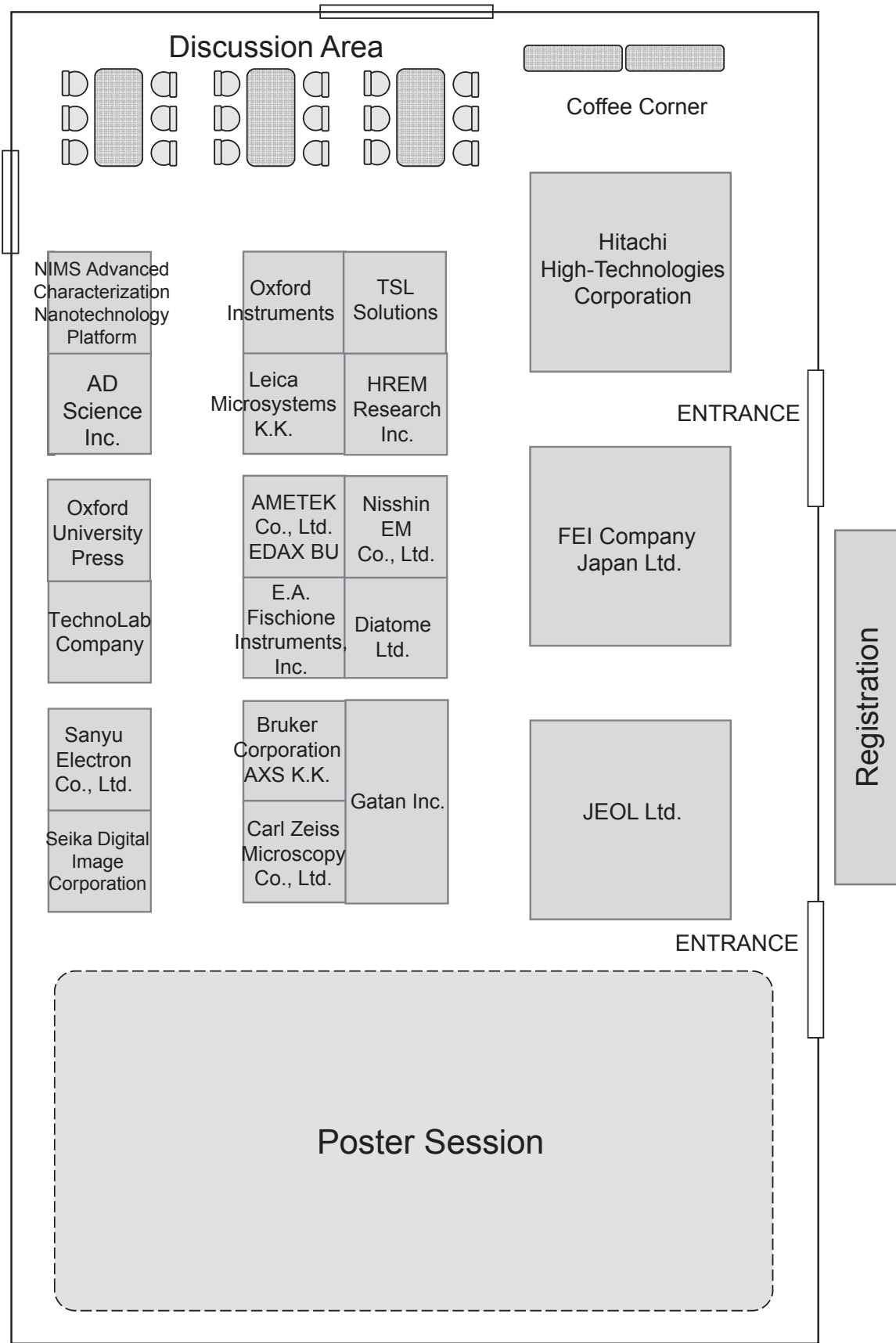
Wednesday, November 25, 9:00-20:00
Thursday, November 26, 9:00-17:00

Exhibitors List

Name	Location
JEOL Ltd.	1st Floor
FEI Company Japan Ltd.	1st Floor
Hitachi High-Technologies Corporation	1st Floor
AD Science Inc.	1st Floor
AMETEK Co., Ltd. EDAX BU	1st Floor
Bruker Corporation AXS K.K.	1st Floor
Carl Zeiss Microscopy Co., Ltd.	1st Floor
Diatome Ltd.	1st Floor
E.A. Fischione Instruments, Inc.	1st Floor
Gatan Inc.	1st Floor
HREM Research Inc.	1st Floor
Leica Microsystems K.K.	1st Floor
NIMS Advanced Characterization Nanotechnology Platform	1st Floor
Nisshin EM Co., Ltd.	1st Floor
Oxford Instruments	1st Floor
Oxford University Press	1st Floor
Sanyu Electron Co., Ltd.	1st Floor
Seika Digital Image Corporation	1st Floor
TechnoLab Company	1st Floor
TSL Solutions	1st Floor
Leading Program, University of Hyogo (UH-LP)	2nd Floor
RIKEN, SPring-8	2nd Floor
The Japanese Society of Microscopy (JSM)	2nd Floor
Chinese Electron Microscopy Society (CEMS)	2nd Floor
Korean Society of Microscopy (KSM)	2nd Floor
Microscopy Society of Taiwan (MST)	2nd Floor
International Federation of Societies for Microscopy (IFSM)	2nd Floor
Nanotechnology Platform	2nd Floor

Exhibition Floor Layout

1st Floor



*Booths of UH-LP, RIKEN SPring-8, IFSM, JSM, CEMS, KSM, and MST are located on the 2nd floor.

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