

Scope

Since the invention of the transmission electron microscope (TEM) by Ernst Ruska in the 1930s, scientists in Germany and Japan have played important roles in its development and application. Progress in instrumentation and techniques has been accelerated significantly in recent years, notably as a result of the development of spherical aberration correctors, high brightness electron guns, monochromators, improved electron detectors and computational techniques for instrument control, automation of workflows and data analysis. The TEM continues to be an indispensable tool for both fundamental and applied research across all scientific fields, from nanotechnology, materials science and electron optics to geoscience, soft matter and biology. Scientists and engineers in Germany and Japan have made significant contributions to these activities. The Japanese Society of Microscopy (JSM) is celebrating its 70th anniversary during its annual meeting in Nagoya in June 2019. It is therefore timely to hold a Germany-Japan Joint Seminar during the annual meeting of the JSM in 2019, in order to initiate new collaborations between Japan and Germany in advanced transmission electron microscopy and spectroscopy.

Organizers

Joachim Mayer
Rafal E. Dunin-Borkowski
Wolfgang Jäger
Takahisa Yamamoto
Tsukasa Hirayama
Nobuo Tanaka
Yuichi Ikuhara

Information

Registration Free on June 16th at JFCC and 19th at Nagoya University. As for 17th and 18th at Nagoya Congress Center, registration is required for the 70th annual meeting of the Japanese Society of Microscopy in 2019.

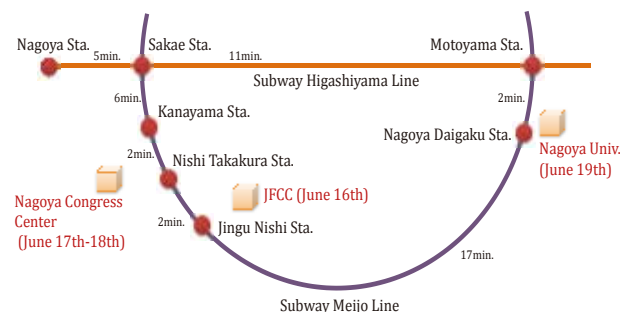
Topics

Holography, Ptychography, Low Voltage, Aberration-Correction, Instrumentation
TEM, STEM, EELS and Materials Science

Schedule

June 16th (Sun)	Japan Fine Ceramics Center
9:20 - 16:40	Oral session
16:40 - 18:10	Laboratory Tour and Demonstration
18:30 -	Reception
June 17th (Mon)	Nagoya Congress Center
9:00 - 17:30	Oral session
June 18th (Tue)	Nagoya Congress Center
9:00 - 11:30	Oral session
12:30 - 18:00	Excursion
June 19th (Wed)	Nagoya University
10:00 - 10:50	Oral session
10:50 - 12:20	Introduction to High Voltage E-TEM Laboratory Tour and Demonstration at High Voltage E-TEM
13:30 - 15:00	Introduction to Spin-Polarized Pulse-TEM and Laboratory Tour
15:00 -	Closing Remarks

Access between venues



Acknowledgements

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DFG & JSPS Seminar

Deutsche Forschungsgemeinschaft
& Japan Society for the Promotion of Science

Germany-Japan Joint Seminar on Advanced Electron Microscopy and Its Application

June 16th – 19th 2019 Nagoya, Japan

June 16th Japan Fine Ceramics Center
June 17th Nagoya Congress Center
June 18th Nagoya Congress Center
June 19th Nagoya University

Web site <http://gjjs.amtc6.com/>

Program

June 16th (Sun) Japan Fine Ceramics Center
(2F Lecture Room #1 – #4)

Session for Young Scientists

Chair: Rafal E. Dunin-Borkowski, Naoya Shibata

- 9:30 “Unravelling of Degradation Phenomena and Structure-Activity-Relationships of Bimetallic Fuel Cell Catalysts by Electron Microscopy”
Paul Paciok (FZ Jülich)
- 9:50 “Accurate Measurement of Electric Potentials in P-N Junctions by Phase-Shifting Electron Holography and Sparse Coding”
Satoshi Anada (JFCC)
- 10:10 “Ultrafast Transmission Electron Microscopy Using Laser-Triggered Field Emitters”
Thomas Danz (University of Göttingen)
- 10:30 “Quantitative Comparison of Momentum-Resolved STEM and Off-Axis Electron Holography at Atomic Resolution”
Florian Winkler (FZ Jülich)
- 11:10 “Investigation on Lanthanum Tungstate for Gas Separation by High-resolution Transmission Electron Microscopy”
Ke Ran (RWTH Aachen)
- 11:30 “Development of In-situ Electron Microscopy for Nanoscale Phenomena in Liquids”
Yuki Sasaki (JFCC)
- 11:50 “Direct Observation of Dislocation Plasticity in FeCrCoMnNi High-Entropy Alloys”
Subin Lee (MPIE Düsseldorf)
- 12:10 “Bond and Phase Analysis of Amorphous Materials by 4D-STEM Pair Distribution Function”
Xiaoke Mu (Karlsruhe)
- 12:30 “Electron Beam Broadening in TEM Samples at Low Electron Energies”
Milena Hugenschmidt (KIT Karlsruhe)”

Holography and Ptychography

Chair: Michael Lehmann, Koji Kimoto

- 13:50 “Quantitative Measurements of Magnetic Skyrmions and Hybrid Solitons Using Off-Axis Electron Holography”
Andras Kovacs (FZ Jülich)
- 14:20 “Electric Potential Measurements by Operando Phase-Shifting Electron Holography”
Tsukasa Hirayama (JFCC)
- 14:50 “High-Resolution Electromagnetic Field Observations by Aberration Corrected 1.2-MV Holography Electron Microscope”
Toshiaki Tanigaki (Hitachi)
- 15:40 “Application of Information Science to Electron Holography”
Yasukazu Murakami (Kyushu Univ.)
- 16:10 “Spectroscopy and Ptychographic Imaging of Nanomaterials in a Dedicated STEM at Low Accelerating Voltage”

Christoph Koch (Humboldt Univ. Berlin)

Introduction to JFCC and Laboratory Tour

- 16:40 Laboratory Tour and Demonstrations
Holography TEM (Hitachi HF 3300EH)
STEM with Cs-corrector and monochromator (JEM ARM200)
Environmental TEM (TITAN ETEM)

June 17th (Mon) Nagoya Congress Center
(Building #1, 4F Reception Hall East)

Plenary I

Chair: Wolfgang Jäger, Tsukasa Hirayama

- 9:05 “Minimum-Dose Phase-Contrast Tomography by Successive Numerical Optical Sectioning Employing the Aberration-Corrected STEM and a Pixelated Detector”
Harald Rose (Ulm Univ.)
- 9:35 “Mechanical and Chemical Dynamics of Oxide Interfaces”
Yuichi Ikuhara (Univ. of Tokyo)

Holography

Chair: Yasukazu Murakami, Toshiaki Tanigaki

- 10:30 “Holographic Vector Field Electron Tomography”
Hannes Lichte (Techn. Univ. Dresden)
- 11:00 “Advanced TEM-Methods for Structural Analysis of Nanophotonic Devices”
Michael Lehmann (TU Berlin)

Low Voltage TEM and Nanomaterials

Chair: Ute Kaiser, Kazutomo Suenaga

- 13:00 “Properties of Advanced Two-Dimensional Materials from Low-Voltage Atomic Scale TEM experiments”
Ute Kaiser (Ulm Univ.)
- 13:30 “Valence- and Core-Level EELS from Low-Dimensional Materials”
Kazutomo Suenaga (AIST)
- 14:00 “Opportunities of Correlative SEM and STEM Imaging in a Scanning Electron Microscope”
Dagmar Gerthsen (KIT Karlsruhe)
- 14:30 “Towards Multiscale Operando Electron Microscopy for the Study of Heterogeneous Catalysts under Working Conditions”
Thomas Lunkenbein (FHI Berlin)
- 15:00 “The Dresden in-situ (S)TEM Special with a Continuous-flow Liquid-He Cryostat”
Felix Börrnert (MPI Halle)

Theory, Aberration Correction, Instrumentation and EELS

Chair: Helmut Kohl, Hidetaka Sawada

- 16:00 “Simulation of Atomically Resolved Elemental Maps with a Multislice Method for Relativistic Electrons”
Helmut Kohl (Univ. Münster)
- 16:30 “Ultra Highly Sensitive EDS Analysis of Gold Corrosion”

- Hidetaka Sawada** (JEOL)
- 17:00 “Elements of ADF Imaging for Crystallography: Quantitative, Precise and Reproducible Methodology”
Koji Kimoto (NIMS)

June 18th (Tue) Nagoya Congress Center
(Building #1, 4F Reception Hall East)

STEM and Materials Science

Chair: Christoph Koch, Sho Matsumura

- 9:00 “Towards Sub-Atomic Resolution Electron Microscopy”
Naoya Shibata (Univ. of Tokyo)
- 9:30 “High-Accuracy EELS for Plasmonics, Valence and Structure Determination”
Thomas Gemming (IFW Dresden)
- 10:00 Quantitative Element/Site-Selective Chemical Analysis Based on Electron Channelling Effects in Crystalline Materials
Shunsuke Muto (Nagoya Univ.)
- 10:30 Atom-Location of Dopant Elements in Intermetallic Compounds by STEM-XEDS
Sho Matsumura (Kyushu Univ.)
- 11:00 Advanced and In Situ TEM for the Development of High-Efficiency Solar Cells
Wolfgang Jäger (Kiel Univ.)

June 19th (Wed) Nagoya University
(Building #ES, 1F ES Meeting room)

Plenary II

Chair: Hannes Lichte

- 10:10 “Electric Field Mapping of a Biased Atom Probe Needle Using Electron Holography”
Rafal E. Dunin-Borkowski (FZ Jülich)

Introduction to High Voltage E-TEM and Laboratory Tour

Chair: Takahisa Yamamoto

- 10:50 “Environmental High-Voltage Transmission Electron Microscopy for Advanced Materials”
Nobuo Tanaka (Nagoya Univ.)
- 11:20 Laboratory Tour and Demonstration at High Voltage E-TEM

Introduction to Spin-Polarized Pulse-TEM and Laboratory Tour

Chair: Nobuo Tanaka

- 13:30 “Coherent Pulse Beam for Time-Resolved Phase Imaging in TEM”
Makoto Kuwahara (Nagoya Univ.)
- 14:00 Laboratory Tour for Spin-Polarized Pulse-TEM
- 15:00 Closing Remarks