

CISCeM 2016

3rd International Conference on In-Situ and Correlative Electron Microscopy

PROGRAM

September 21, 2016

TUESDAY, OCTOBER 11, 2016

09:30 Registration and Coffee

09:50 Opening words by *Niels de Jonge*
INM – Leibniz Institute for New Materials, Saarbrücken, Germany

SESSION 1

Studying Reactions at the Solid-Gas Interface with Environmental
Electron Microscopy

Chair: Layla Mehdi

10:00 invited “The Dynamics of Active Metal Catalysts Revealed by *In Situ* Electron
Microscopy”
Marc Georg Willinger, Fritz Haber Institute of the Max Planck Society, Berlin,
Germany

10:30 invited “Environmental TEM at Atmospheric Pressure: An Operando View of the
Materials at the Nanoscale”
Ovidiu Ersen, IPCMS, Université de Strasbourg, France

11:00 “Rapid Tomography in Environmental TEM: How Fast Can We Go to Follow the
3D Evolution of Nanomaterials *In Situ*?”
Thierry Epicier, Université de Lyon, INSA-Lyon, France

11:15 “High Temperature and *In Situ* Study of SrO Surface Precipitation on Perovskite
Ceramics”
Renaud Podor, ICSM, Bagnols/Cèze, France

11:30 Coffee break

SESSION 2

Liquid-Phase and Correlative Electron Microscopy of Soft Matter and Biominerals

Chair: Damien Alloyeau

12:00 invited “Correlative *In Situ* Analysis of Magnetosome Magnetite Biomineralization”
Tanya Prozorov, Ames Laboratory, IA, USA

12:30 “Studying Polymer Self-Assembly by Combined Cryogenic and Liquid Phase
Transmission Electron Microscopy”
Nico Sommerdijk, Eindhoven University of Technology, The Netherlands

12:45 "Tracking the Early Events of Mineral Formation during Coral Development"
Anat Akiva, Weizmann Institute of Science, Rehovot, Israel

13:00 Lunch

SESSION 3

In Situ Electron Microscopy of Electrochemical Processes

Chair: Kristian Mølhave

14:30 keynote "Liquid Cell Transmission Electron Microscopy for Imaging Electrochemical Processes"
Frances M. Ross, IBM T.J. Watson Research Center, Yorktown Heights (NY), USA

15:15 invited "*In-Situ* S/TEM and In-Situ SIMS Multi-Modality Probing of Chemical and Structural Evolution of Rechargeable Battery"
Chongmin Wang, Pacific Northwest National Laboratory, Richland (WA), USA

15:45 invited "Understanding the Effect of Additives in Li-Ion and Li-Sulfur Batteries by *Operando ec*-(S)TEM"
Layla Mehdi, Pacific Northwest National Laboratory, Richland (WA), USA

16:15 "*In-Situ* Liquid/Bias Transmission Electron Microscopy to Visualize the Electrochemical Lithiation/Delithiation Behaviors of $\text{LiFe}_{0.5}\text{Mn}_{0.5}\text{PO}_4$ "
Walid Dachraoui, Université de Picardie Jules Verne, Amiens, France

POSTER PITCHES

Chair: Kristian Mølhave

16:30 Pitch #1

16:35 Pitch #2

POSTER SESSION

16:40 Posters and drinks

18:30 Bus to restaurant "Stiefelbräu"

19:00 Conference dinner www.stiefelgastronomie.de

WEDNESDAY, OCTOBER 12, 2016

- 08:30 Coffee
- 08:50 Opening Words by *Damien Alloyeau*
Université Paris Diderot-Paris 7, France

SESSION 4

Liquid-Phase and Correlative Electron Microscopy of Cells and Proteins
Chair: Niels de Jonge

- 09:00 invited "Role of Heterogeneity in Cancer Cells Examined through Quantitative Analysis of Single HER2 Protein Distribution and Activation Status"
Diana Peckys, Saarland University, Homburg, Germany
- 09:30 invited "Zooming in on Cells and Macromolecules with Correlative Light-Electron Electron Microscopy"
Abraham J. Koster, Leiden University Medical Centre, The Netherlands
- 10:00 invited "Imaging Single Tumor Cells Invading Mouse Tissue using Multimodal Correlative Microscopy"
Matthia Karreman, EMBL Heidelberg, Germany
- 10:30 "Monitoring Extracellular-Vesicles Dynamics at the Nanoscale by Liquid-Cell TEM"
Max Piffoux, Université Paris Diderot, France
- 10:45 Coffee break

SESSION 5

Liquid-Phase Electron Microscopy of Nanomaterials
Chair: Nico Sommerdijk

- 11:15 invited "Visualizing Nanoscale Assembly in Solution using *In Situ* TEM"
Utkur Mirsaidov, National University of Singapore, Singapore
- 11:45 "Zig-Zag Self-Assembly of Magnetic Octahedral Fe₃O₄ Nanocrystals using *In Situ* Liquid Transmission Electron Microscopy"
Arnaud Demortière, CNRS, Amiens, France
- 12:00 "Shape Transformations during the Growth of Gold Nanostructures"
Nabeel Ahmad, Université Paris Diderot, France
- 12:15 "Harnessing Control of Radiolysis during Liquid Cell Electron Microscopy to Enable Visualization of Nanomaterial Transformation Dynamics"
Patricia Abellan, SuperSTEM Laboratory, Daresbury, UK
- 12:30 Lunch

SESSION 6

Innovations in Methods for Correlative Microscopy

Chair: Thierry Epicier

- 13:30 invited “Super-Resolution Fluorescence in Electron Micrographs using *In-Situ* Integrated Microscopy”
Jacob Hoogenboom, Delft University of Technology, The Netherlands
- 14:00 “Correlative Atomic Force and Transmission Electron Microscopy toward Applications of Atomic Force Microscopy to Heterogeneous Systems”
Yutaro Yamada, Kanazawa University, Japan
- 14:15 “Combining X-Ray and Electron Based *In Situ* Characterization of Catalysts”
Christian D. Damsgaard, Technical University of Denmark, Lyngby, Denmark
- 14:30 “Topological Impurity Segregation at Faceted Silicon Grain Boundaries Studied by Correlative Atomic-Resolution STEM and APT”
Christian Liebscher, Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf, Germany

SESSION 7

In Situ Measurements of Materials Properties

Chair: Kristian Mølhave

- 14:45 “Size and Environment Effect on the Room Temperature Plastic Deformation of Ceramic Nanoparticles”
Karine Masenelli-Varlot, Université de Lyon, France
- 15:00 “*In-Situ* Characterization of Individual Building Blocks for Nanophotonic Solar Cells by Correlative Microscopy”
Sebastian Schmitt, Helmholtz-Zentrum für Materialien und Energie, Berlin, Germany
- 15:15 “Direct Observation of Redox Switching in Resistive Memory Devices Operated *In-Situ* in a Transmission Electron Microscope by Electron Energy Loss Spectroscopy and Off-Axis Electron Holography”
David Cooper, Université Grenoble Alpes / CEA LETI, France
- 15:30 Coffee break

SESSION 8

Corporate Presentations

Chair: Damien Alloyeau

- 16:00 “Platform Independent CLEM Solutions – From Picture Overlay Navigation to Full-Grid Imaging”
Manuel Reinhard, JEOL (Germany) GmbH, Freising, Germany
- 16:15 “Advanced Orientation and Strain Analysis at 1 nm Scale using Precession Electron Diffraction Techniques in TEM – *In-Situ* Examples and Perspectives”
Thanos Galanis, NanoMEGAS, Brussels, Belgium

- 16:30 "New Tools for Correlative Microscopy and *In-Situ* Studies"
Lennard M. Voortman, Delmic, Delft, The Netherlands
- 16:45 "Triple Beam *In Situ* Investigation of Biological and Food Samples"
Rostislav Váňa, TESCAN Brno, s.r.o., Czech Republic
- 17:00 "Frontiers in Electron and X-Ray Microscopy: New Correlative Microscopy Workflows"
Peter Gnauck, Carl Zeiss Microscopy, Oberkochen, Germany
- 17:15 "The Advancement of *In Situ* TEM Technologies and Techniques"
Eric Kievit, DENSSolutions, Delft, The Netherlands
- 17:30 Closing Words by *Kristian Mølhav*
Technical University of Denmark, Lyngby, Denmark