The 6th Joint Sino-German Workshop on Advanced and Correlative Electron Microscopy of Catalysts, Quantum Phenomena and Soft Matter

8 - 12 July, 2024

Bad Honnef, Germany

Co-chairs of the 6th Sino-German Symposium

Rafal E. Dunin-Borkowski, Forschungszentrum Jülich
Marc Heggen, Forschungszentrum Jülich
Wolfgang Jäger, Christian-Albrechts-Universität zu Kiel
Feng Wang, Dalian Institute of Chemical Physics, CAS
Qiang Guo, Dalian Institute of Chemical Physics, CAS
Fu-Rong Chen, University of Hong Kong
Xiaoyan Zhong, University of Hong Kong

The first half of the symposium (Monday & Tuesday) will focus on ultrafast electron microscopy, correlative light and electron microscopy, advanced instrumentation and quantum electron microscopy, electron microscopy of soft matter and orbital imaging.

The second half of the symposium (Wednesday - Friday) will focus on in-situ and operando electron microscopy, catalyst synthesis, nanoparticle catalyst evolution and degradation, strong metal support interaction, electrocatalysis and photocatalysis.

Invited Talks: 20 minutes + 5 minutes discussion
Student Talks: 10 minutes + 5 minutes discussion

Local organizers:
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Conference Location:
The Yard Hotel
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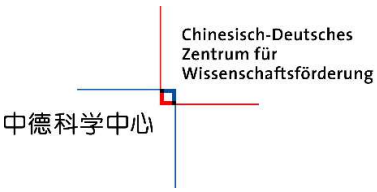

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Sunday, 7. July 2024

	Arrival of Participants
17:00 - 18:00	Registration and Welcome
18:00	Dinner

Ultrafast, biological and quantum electron microscopy and orbital imaging

Monday, 8. July 2024

Session chair	**Yu-Chun Hsueh**	
08:45 - 09:00	Rafal Dunin-Borkowski	Welcome note
09:00 - 09:25	Xuewen Fu	Ultrafast electron microscopy: instrument development and applications
09:25 - 09:50	Till Domröse	Nanobeam ultrafast electron diffraction of structural phase transformations at megahertz rates
09:50 - 10:15	Sophie Meuret	The dynamics of semiconductors studied with an ultrafast transmission electron microscope
10:15 - 10:45	Coffee break	
Session chair	**Penghan Lu**	
10:45 - 11:10	Xiaoyan Zhong	Towards orbital imaging with atomic plane resolution
11:10 - 11:35	Jonas Lähnemann	***Cancelled***Correlative studies of semiconductor nanostructures using cathodoluminescence spectroscopy
11:35 - 12:00	Hasan Ali	Atomic scale mapping of magnetic moments in a probe-corrected scanning transmission electron microscope
12:00 - 12:25	Yu-Chun Hsueh	Design of Electron Optical Components towards a Quantum Resonator with Pulsed Electrons
12:30 - 14:00	Lunch break	
Session chair	**Yu Han**	
14:00 - 14:25	Changlin Zheng	Tailing electron wave for 3D imaging and electric field mapping
14:25 - 14:50	Hao Liang	Ultrafast Kapitza-Dirac Effect
14:50 - 15:15	Xiaoxiao Fu	Improving the quantification accuracy and precision of magnetic moments in electron magnetic chiral dichroism
15:15 - 15:45	Coffee break	
Session chair	**Nadezda Tarakina**	
15:45 - 16:10	Penghan Lu	Advancing instrumentation and workflow for cryogenic and low dose phase contrast imaging and crystallography
16:10 - 16:35	Amir Tavabi	New concepts and directions for studies of light-electron-matter interactions in the transmission electron microscope
16:35 - 17:00	Fei Sun	In situ and time-resolved cryo-electron microscopy for life science
17:00 - 17:15	Bin Lin	Atomic-Plane Resolved Electron Energy-loss Spectroscopy with Parallel Illumination and its Applications
17:15 - 17:30	Qi Liu	Resolving Lateral Component of Magnetic Stray Field in Conventional SEM
18:00	Dinner	

Tuesday, 9. July 2024

Session chair	**Changlin Zheng**	
09:00 - 09:25	Sascha Schäfer	Ultrafast transmission electron microscopy: From instrumental developments to applications
09:25 - 09:50	Uwe Bovensiepen	Femtosecond electron-transfer dynamics across interfaces between solvated alkali ions and metal surfaces
09:50 - 10:15	Yu Han	High-resolution electron microscopy imaging of highly beam-sensitive materials
10:15 - 10:45	Coffee break	
Session chair	**Sascha Schäfer**	
10:45 - 11:10	Philipp Haslinger	Spin Resonance Spectroscopy with a Transmission Electron Microscope
11:10 - 11:35	Nadezda Tarakina	Understanding functionalities of carbon nitrides using operando transmission electron microscopy
11:35 - 12:00	Hongchu Du	Atomic structure of twin boundaries in monoclinic oxides
12:00 - 12:25	Janghyun Jo	Quantitative Comparison of Long-Range Electric Fields and Potentials Measured using Off Axis Electron Holography and 4D-STEM
12:30 - 14:00	Conference photo Lunch break	
Session chair	**Nahid Talebi**	
14:00 - 14:25	Tingting Yang	Unveiling degradation mechanisms in layered Li-rich cathode materials using combined in operando neutron diffraction and 4D-STEM
14:25 - 14:50	Vesna Srot	Advancing In-Situ Sample Preparation for MEMS-Based (S)TEM Characterization
14:50 - 15:15	Yan Lu	Charge quantitation on metal-oxide and organic nanoparticles using off-axis electron holography
15:15 - 15:45	Coffee break	
Session chair	**Vesna Srot**	
15:45 - 16:10	Christoph Koch	Momentum-resolved electron energy-loss spectroscopy of phonons, excitons, plasmons, and core-electrons in pure and hybrid materials
16:10 - 16:35	Nahid Talebi	Cathodoluminescence Spectroscopy of Quantum Materials
16:35 - 17:00	Yalin Wang	Application of CLEM in biomedical research
17:00 - 17:25	Liang Jin	Optimize event processing for Hybrid Pixel Detectors
17:25 - 17:50	Xiaoyan Zhong, Rafal Dunin-Borkowski	Wrap up and Discussion
18:00	Dinner	

Metal-oxide interface structures and catalytic properties of materials

Wednesday, 10. July 2024

Session chair	**Feng Wang**	
09:00 - 09:25	Marc Willinger	Active catalysts and associated dynamics at phase boundaries: Insights from operando electron microscopy
09:25 - 09:50	See Wee Chee	Probing the Heterogeneity and Complexity in Electrocatalysts under Reaction Conditions through Operando Microscopy
09:50 - 10:15	Robert Sinclair	TEM Studies of Twisted Epitaxial Gold Nanodiscs in Twisted Molybdenum Disulphide Bilayers
10:15 - 10:45	Coffee break	
Session chair	**Matthias Epple**	
10:45 - 11:10	Feng Wang	Photocatalytic biomass to hydrogen or syngas
11:10 - 11:35	Lin Gan	Atomic Imaging and Spectroscopy of Dynamic Metal-Oxide Interfaces for Electrocatalytic Reactions
11:35 - 12:00	Qiang Guo	Ceria based catalysts for the C-C coupling of small molecules
12:00 - 12:25	Paul Paciok	Heat treatment effects on the activity and stability of Mo/Rh-doped PtNi octahedra as catalysts for the oxygen reduction reaction
12:30 - 14:00	Lunch break	
Session chair	**Qiang Guo**	
14:00 - 14:25	Regina Palkovits	Single-Site and Single-Atom Catalysts for Energy Applications
14:25 - 14:50	Matthias Epple	Electron microscopy to elucidate the structure of ultrasmall metal nanoparticles
14:50 - 15:15	Serhiy Cherevko	Catalyst Dissolution – the Main Challenge in Low Ir Loading PEMWE
15:15 - 15:45	Coffee break	
Session chair	**Regina Palkovits**	
15:45 - 16:10	Kateryna Loza	Exploring Nanoparticle Dynamics: In situ TEM Techniques for Noble Metals
16:10 - 16:35	Wen Shi	Revealing the SMSI of Heterogenous Catalyst: from ex-situ to in-situ study
16:35 - 17:00	Marc Ledendecker	Electrocatalyst restructuring during electrochemical degradation
17:00 - 17:25	Marc Heggen	In-situ transmission electron microscopy study of nanoparticle catalysts
18:00	Dinner	

Thursday, 11. July 2024

Session chair	**Pengyi Tang**	
09:00 - 09:25	Andras Kovacs	In situ mechanical straining of magnetic materials in the TEM
09:25 - 09:50	Shibabrata Basak	Role of in-situ electron microscopy for improving solid oxide fuel cell materials
09:50 - 10:15	Xingli Wang	Direct Imaging of Electrified Solid-liquid Interfaces in Reaction with Liquid Cell Electron Microscopy

10:15 - 10:45	Coffee break	
Session chair	**Marc Willinger**	
10:45 - 11:10	Siyuan Zhang	In situ STEM observation of thermoelectric materials under heating and biasing conditions
11:10 - 11:35	Pengfei Cao	Mechanisms of Self-Activation Process in Catalysts for Methane Dry Reforming: Insights into Ni Exsolution on LaNio3 Catalysts via In Situ TEM
11:35 - 11:50	Therese Cibaka	Electrochemical CO2 reduction using silver-based catalyst in a direct-coupled photovoltaic and electrochemical cell under realistic ambient condition: Effective solution for long term energy storage
11:50 - 12:05	Ansgar Meise	Reactive Metal-Support Interaction of Zinc Palladium Nanoparticles on Zinc Oxide: An Environmental Scanning Transmission Electron Microscopy Study
12:05 - 12:20	Dylan Jennings	Direct Atomic-Scale Investigation of the Coarsening Mechanisms of Exsolved Catalytic Nanoparticles
12:30 - 14:00	Conference photo Lunch break	
14:00 - 17:00	Excursion	Guided Tour to the Drachenfels (dragons rock) & Drachenburg Castle Bus Transfer: 14:00, Return 17:00
18:00	Conference Dinner	Restaurant Markt3, Markt 3, 53604 Bad Honnef

Friday, 12. July 2024

Session chair	**Wolfgang Jäger**	
09:00 - 09:25	Marc Armbrüster	Highly Dynamic Intermetallic Compounds in Methanol Steam Reforming
09:25 - 09:50	Qianqian Lan	Visualization of Interface Polarization and Electrostatic Potential through Off-Axis Electron Holography
09:50 - 10:15	Pengyi Tang	The Surface/Interface Structure and Mechanism Investigation of Catalysts for Photoelectrochemical Application
10:15 - 10:45	Coffee break	
Session chair	**Marc Armbrüster**	
10:45 - 11:10	Wolfgang Jäger	Advanced Transmission Electron Microscopy for the Development of High-Efficiency Solar Cells
11:10 - 11:35	Chuanhong Jin	Imaging mechanism and contrast separation in low-voltage scanning electron microscopy imaging of arrayed single-wall carbon nanotubes wafers
11:35 - 12:00	Zhixin Zhang	Controllable synthesis of Ceria-based catalyst and their catalytic applications
12:00 - 12:15	F. Wang, Q. Guo, M. Heggen	Wrap Up and Discussion
12:15 - 12:30	All co-chairs	Conclusion and Farewell
12:30 - 14:00	Lunch break	
14:00 - 18:00	Lab Tour	Ernst Ruska-Centre, Bus Transfer: 14:00, Return: 17:00
		Departure of the Participants