



# Max Planck Institute for Solid State Research

Stuttgart Center for Electron Microscopy – StEM

Heisenbergstraße 1, D-70569 Stuttgart, Germany

[www.fkf.mpg.de/StEM](http://www.fkf.mpg.de/StEM)





StEM Workshop at Ringberg Castle, Lake Tegernsee, Germany


## “Multidimensionality in In-Situ Electron Microscopy”


July 20th – July 22nd, 2022

### Programme

	Wednesday, July 20th, 2022
14:50 – 15:00	<b>Opening and Welcome</b> <b>Peter A. van Aken</b>
	<b>Functional properties</b> <b>Chair: Wilfried Sigle</b>
15:00 – 15:30	Rafal Dunin-Borkowski <i>Fact and artefact in measurements of functional properties of nanoscale materials using transmission electron microscopy</i>
15:30 – 16:00	Xiaoke Mu <i>Correlated analysis of multi-characters using a single 4D-STEM measurement</i>
16:00 – 16:30	<b>Coffee break and posters</b> 
	<b>Dynamic interplay</b> <b>Chair: Peter A. van Aken</b>
16:30 – 17:00	Christian Liebscher <i>Dynamic observations of complex alloys exposed to strain and temperature</i>
17:00 – 17:30	Marc Willinger <i>In-situ observations on the dynamic interplay between metal nanoparticles and oxide support under redox conditions</i>
17:30 – 18:00	Rainer Straubinger <i>AXON Dose: A Machine Vision Solution for Accurate, Quantifiable Dose Management in the TEM – relevant applications in in-situ TEM</i>
18:30	<b>Dinner</b>
20:00	<b>After dinner speech Wilfried Sigle</b>

	Thursday, July 21st, 2022	
	<b>Catalysis</b>	<b>Chair: Kenan Elibol</b>
<b>09:00 – 09:30</b>	Thomas Hansen <i>Approaches to Monitoring Structural Changes in Materials Using In Situ Electron Microscopy</i>	
<b>09:30 – 10:00</b>	Marc Heggen <i>Nanoparticle catalysts for energy conversion studied by high-resolution in-situ and identical-location transmission electron microscopy</i>	
<b>10:00 – 10:30</b>	Vasilik Tileli <i>From solid-liquid interfaces to product detection using in situ TEM for oxygen-evolving oxide catalysts</i>	
<b>10:30 – 11:00</b>	<b>Coffee break and posters</b> 	
	<b>Catalysis and beam-sensitive materials</b>	<b>Chair: Vesna Srot</b>
<b>11:00 – 11:30</b>	Rik Brydson <i>Native State Analysis of Complex Beam Sensitive Systems</i>	
<b>11:30 – 12:00</b>	Thomas Lunkenbein <i>Reaction-induced complexity enhancement in heterogeneous catalysts - insights from operando electron microscopy experiments</i>	
<b>12:00 – 12:20</b>	Anna Scheid <i>Electron ptychographic phase imaging of beam-sensitive all-inorganic halide perovskites</i>	
<b>12:30</b>	<b>Lunch</b>	

Thursday, July 21st, 2022	
	<b>In situ</b> <b>Chair: Tobias Heil</b>
<b>14:00 – 14:30</b>	Rolf Erni <i>Atomic scale mechanisms of particle nucleation in liquid-phase STEM</i>
<b>14:30 – 15:00</b>	Christian Kübel <i>In-situ TEM</i>
<b>15:00 – 15:30</b>	Sarah Haigh <i>2D Material heterostructure liquid cells: A platform for atomic resolution STEM imaging with liquids</i>
<b>15:30 – 16:00</b>	<b>Coffee break and posters</b> 
	<b>In situ</b> <b>Chair: Hongguang Wang</b>
<b>16:00 – 16:30</b>	Axel Lubk <i>Probing magnetic textures in two and three dimensions at low and very low temperatures</i>
<b>16:30 – 17:00</b>	Eva Olssen <i>In-situ electron microscopy for site specific studies of mechanisms</i>
<b>17:00 – 17:30</b>	Kenan Elibol <i>Uncovering real-time evolution of low-energy plasmons in nanopatterned aluminum plasmonics on graphene</i>
<b>17:30 – 18:00</b>	<b>Guided Castle Tour</b>
<b>18:30</b>	<b>Bavarian buffet dinner</b>
<b>20:00</b>	<b>After dinner speech Peter van Aken</b>

	Friday, July 22nd, 2022
	<b>Complex Oxide Interfaces I</b> <b>Chair: Eren Suyolcu</b>
<b>09:00 – 09:30</b>	Quentin Ramasse <i>High-resolution EELS of hetero-interfaces for spintronics: towards the in-situ detection of spin waves and topological modes</i>
<b>09:30 – 09:50</b>	Nicolas Bonmassar <i>Atomic-scale localization of charge carriers in a superconducting superlattice</i>
<b>09:50 – 10:10</b>	Hongguang Wang <i>Tunable magnetic anisotropy in large-scale patterned SrRuO<sub>3</sub> artificial atoms arrays</i>
<b>10:10 – 10:30</b>	Chao Yang <i>Determination of grain-boundary structure and electrostatic characteristics in a SrTiO<sub>3</sub> bi-crystal by 4D-STEM</i>
<b>10:30 – 11:00</b>	<b>Coffee break and posters</b> 
	<b>Complex Oxide Interfaces II</b> <b>Chair: Peter A. van Aken</b>
<b>11:00 – 11:20</b>	Yu-Mi Wu <i>Nano-scale control of charge distribution by strain engineering in oxide heterostructures</i>
<b>11:20 – 11:50</b>	Eren Suyolcu <i>Precise stoichiometry control for sharpening the interfaces in oxide molecular-beam epitaxy</i>
<b>12:00</b>	<b>Lunch</b>
<b>13:00</b>	<b>Discussion and Closing</b>
<b>13:15</b>	<b>Departure</b>

## **Some more information concerning the workshop**

### **Venue**

Schloss Ringberg  
Conference Site of the Max Planck Society e. V. (MPG)  
Schlossstraße 20  
83708 Kreuth

Tel.: +49 (0) 8022-279-0  
Fax: +49 (0) 8022-279-259  
e-mail: Ringberg@rzg.mpg.de

(for more information such as how to get there please have a look at their home page:  
<http://www.schloss-ringberg.mpg.de/>)

### **Bus Shuttle Service**

We will arrange for a bus shuttle service to take participants from train station Tegernsee to Ringberg Castle. Taxi Kaufmann (+49 (0)8022 - 5555) will pick you up at 2:30 pm in front of the station. The StEM group will travel by bus from Stuttgart to Ringberg Castle.

### **Talks**

Duration of talks: 20 or 30 minutes. **Please leave at least 3 minutes for discussion.**

### **Presentation/Abstract**

A beamer will be available. Please have your presentation on USB stick for easy transfer.

### **Posters**

Posters can be shown during the coffee breaks

### **Food**

Please inform us ([office-stem@fkf.mpg.de](mailto:office-stem@fkf.mpg.de)) in case you prefer vegetarian food or if you are suffering from any allergies

### **Corona regulations**

According to the regulations of the conference centre Schloss Ringberg, only vaccinated and recovered persons have access to the castle. Please have a proof of vaccination or documentation of recovery available. Furthermore, please be so kind and do a self-test on the day of arrival. We will provide test kits for Thursday and Friday.

### **Departure**

Friday, July 22<sup>nd</sup>, 2022 (after lunch)