

Scientific & cultural program SALVE 2D22 April 4-7, 2022

All talks are in M28 (TTU) lecture room, Meyerhofstrasse, 89081 Ulm

Monday, April 4th

12:30 – 13:40 *Coming together with Coffee and Cake* (N27, Foyer)

13:40 – 13:55 *Chamber music ensemble, Muisches Zentrum UUlM,
Cond. Manuel Haupt* (M28, TTU)

14:00 – 14:15 Thorsten Bernhardt, Dean, Faculty of Natural
Sciences, Welcome
Ute Kaiser, Welcome

Chair: U. Kaiser *Session 1: New Materials & Methods*

14:15 – 15:00 Andrea Ferrari, *University of Cambridge, UK*
**Graphene and related materials, from production
to applications**

15:00 – 15:30 Rafal E. Dunin-Borkowski, *FZ Jülich, DE*
**Towards atomic-scale imaging of electrostatic
potentials and magnetic fields in 2D materials
using electron holography and electron magnetic
chiral dichroism**

15:30 – 16:00 David A. Muller*, *Cornell University, USA*
**Imaging Atoms and Fields by Electron
Ptychography**

16:00 – 16:30 Sarah J. Haigh, *University of Manchester, UK*
**Dynamic atomic motion and chemical synthesis in
liquids studied using our liquid cell 2D
heterostructures and scanning transmission
electron microscopy**

16:30 – 17:00 *Coffee break & Group photo* (N27, Foyer)

Chair: Y. Zhu *Session 2: New Instruments*

17:00 – 17:30 Martin Linck, *CEOS GmbH, Heidelberg, DE*
**Chromatic and spherical aberration correction for
atomic-resolution low-voltage TEM**

17:30 – 18:00 Ondrej L. Krivanek*, *NION R&D, Kirkland, WA, USA*
Ultra-high energy resolution EELS in the EM

18:30 – 19:30 *Visit of Ulm Minster with Organ music*

* Talks performed on-line due to corona issues.

Tuesday, April 5th, Morning Sessions

- Chair: E. Olsson *Session 3: Low-D Materials - Synthesis, Characterization and Calculations- I*
- 9:00 – 9:30 Kazu Suenaga*, *Osaka University, JP*
Electron microscopy and spectroscopy on 2D hybrid materials
- 9:30 – 10:00 Reshef Tenne, *Weizmann Institute, Rehovot, IL*
Inorganic nanotubes: From WS₂ to "misfit" compounds
- 10:00 – 10:30 Elena Besley, *University of Nottingham, UK*
E-beam Resilience of Metal Organic Frameworks
- 10:30 – 11:00 *Coffee break* (N27, Foyer)
- Chair: E. Besley *Session 4: Low-D Materials Synthesis, Characterization and Calculations- II*
- 11:00 – 11:30 Jannik C. Meyer, *Eberhard Karls University of Tübingen, DE*
Atom-by-atom chemical identification in presence of noise and residual aberrations
- 11:30 – 12:00 Georg S. Duesberg, *Universität der Bundeswehr München, DE*
Advances on polycrystalline films of Transition Metal Dichalcogenides for electronic applications
- 12:00 – 12:30 Xinliang Feng, *TU Dresden, DE*
Advances in Organic 2D Crystals
- 12:30 – 13:30 *Lunch* (N27, Foyer)

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Tuesday, April 5th, Afternoon Sessions

- Chair: C. T. Koch* *Session 5: In-situ TEM of low D materials*
- 13:30 – 14:00 Frances M. Ross, *MIT, Cambridge, USA*
Strategies for local control of the properties of the 2D layered magnet CrSBr
- 14:00 – 14:30 Eva Olsson, *Chalmers, Gothenburg, SE*
In situ TEM studies of strain induced changes in electrical, optical and structural properties
- 14:30 – 15:00 Erdmann Spiecker, *Universität Erlangen-Nürnberg, DE*
4D Scanning Confocal Electron Diffraction (4D-SCED): A dose-efficient technique for studying structural evolution in organic 2D materials and thin films
- 15:00 – 15:30 Andrei N. Khlobystov, *University of Nottingham, UK*
Chemistry of individual molecules through the lens of a transmission electron microscope
- 15:30 – 16:00 *Coffee break* (N27, Foyer)
- Chair: J. C. Meyer* *Session 6: SEM-STEM of low-D materials*
- 16:00 – 16:30 Jon K. Weiss, *TESCAN, Tempe, AZ, USA*
Application-driven Instrument Design for Next-Generation Nanocharacterization Tools
- 16:30 – 17:00 Dagmar Gerthsen, *KIT, Karlsruhe, DE*
Minimization of contamination in STEM at electron energies of 30 keV and below
- 17:00 – 17:30 Rasmus R. Schröder, *University Heidelberg, DE*
Backscattering EELS at ultra-low landing energies
- 17:30.–.17:50 *Finger food* (N27, Foyer)
- 18:00 – 19:00 *Piano Concert: Valerij Petasch* (O25, H 4/5)
- 19:30 – 23:00 *Dinner La Fontana, Ratskeller Ulm*

Wednesday, April 6th, Morning sessions

Chair: F. M. Ross

Session 7: Low-D Materials Synthesis, Characterization and Calculations- III

9:00 – 9:30

Yimei Zhu, *Brookhaven NL, Upton, NY, USA*

Cryogenic Electron Microscopy on Strongly Correlated Quantum Materials

9:30 – 10:00

Colin Humphreys, *Queen Mary University of London, UK*

Making optoelectronic devices from large-area transfer-free MOCVD graphene: Hall sensors and OLEDs

10:00 – 10:30

Philipp Wachsmuth, *JEOL GmbH, Freising, DE*

Pulsed laser integration and electrostatic systems for dose modulation and temporal resolution TEM

10:30 – 11:00

Coffee break

(N27, Foyer)

Chair: D. Gerthsen

Session 8: New methods

11:00 – 11:30

Claus Ropers, *MPI Göttingen, DE*

Developments in ultrafast electron microscopy

11:30 – 12:00

Christoph T. Koch, *Humboldt-Universität Berlin, DE*

Reconstructing 2D and 3D atomic structure from various types of TEM data

12:00 – 12:30

Christopher J. Russo, *MRC, Cambridge, UK*

Molecular structure determination extrapolated to zero dose with an electron cryomicroscope

12:30 – 13:00

Tatiana Latychevskaia, *PSI, Villingen, CH*

Convergent beam electron diffraction (CBED) of two-dimensional (2D) materials

13:00 – 14:00

Lunch

(N27, Foyer)

Wednesday, April 6th, Afternoon Sessions

- Chair: T. Pichler* *Session 9: Microscopy and Spectroscopy on low-D materials I*
- 14:00 – 14:30 Jani Kotakoski, *University of Vienna, AT*
In and ex-situ (S)TEM manipulation of 2D materials without air exposure
- 14:30 – 15:00 Michael Stöger-Pollach, *TU Wien, AT*
Low Energy Excitations at Low Beam Energies
- 15:00 – 15:30 Ivan Lazić, *Thermo Fisher Scientific, Eindhoven, NL*
Imaging of 2D materials using electrons from 300 keV down to 30 keV
- 15:30 – 16:00 *Coffee break* (N27, Foyer)
- Chair: W. Jäger* *Session 10: Microscopy and Spectroscopy on low-D materials II*
- 16:00 – 16:30 Saleh Gorji, *Ametek GmbH, München, DE*
Latest Development in EELS
- 16:30 – 17:00 Peter A. van Aken, *MPI Festkörperphysik, Stuttgart, DE*
Atomic-Scale Investigation of Structure and Electron-Beam-Induced Transformation of Beam-Sensitive Molecules
- 17:00 – 17:30 Toma Susi, *University of Vienna, AT*
abTEM: Transmission Electron Microscopy from First Principles
- 17:30 – 18:00 Arkady V. Krasheninnikov, *HZDR, Dresden, DE*
Identifying defects and new phases in 2D materials: how first-principles calculations help to interpret the results of TEM experiments
- 18:20 – 22:30 *Conference Dinner at Ulm University* (N27, Foyer)
around 19:30 *ERHU music performance by Dr. Y. Li* (M28, TTU)
followed by two after dinner talks:
Prof. Colin Humphreys (London, UK)
From Einstein to SALVE
Prof. Wolfgang Schleich (Ulm, DE)
Prime numbers, analytical continuation and quantum waves

Thursday, April 7th

- Chair: S. J. Haigh *Session 11: Low D Materials Properties*
- 9:00 – 9:30 Wu Zhou*, *University of Chinese Academy of Sciences, Beijing, CN*
Low voltage STEM-EELS at the single-atom level
- 9:30 – 10:00 Thomas Pichler, *University of Vienna, AT*
Recent advances of momentum resolved electron energy loss spectroscopy
- 10:00 – 10:30 Ursel Bangert, *University of Limerick, IR*
Subatomic scale revelation of sites and dynamics of individual atoms, as well as of electric dipole configurations, in materials envisaged for quantum device development
- 10:30 – 11:00 *Coffee break* (N27, Foyer)
- Chair: E. Spiecker *Session 12: New Horizons II*
- 11:00 – 11:30 Camilla Coletti, *IIT, Pisa, IT*
Synthesis, transfer, and properties of scalable 2D materials
- 11:30 – 12:00 Andrey Turchanin, *Friedrich Schiller University Jena, DE*
Influence of intrinsic and extrinsic defects on the electronic and photonic properties of 2D materials
- 12:00 – 12:30 Lothar Houben, *Weizmann Institute, Rehovot, IL*
Phase retrieval from ultrafast focal series of low dose counting mode images
- 12:30 – 13:00 Joachim Mayer, *FZ Jülich, DE*
The role of correlative CT and TEM investigations in the development of battery technologies
- 13:00 – open *Closing Remarks, Coffee, and Farewell*

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