

PROGRAMME



Sunday 29.09.2024

16:30–19:30 **WELCOME & REGISTRATION** State Archive Darmstadt

Monday 30.09.2024

08:00–09:00 **REGISTRATION**

09:00–09:10 **OPENING Vice President Research of TU Darmstadt, Matthias Oechsner**

SESSION 1 Growth 9:10–10:45 Chair: Guus Rijnders (U Twente)

09:10–09:35 Hot Complex Oxides—Turning up the Heat for Adsorption Control
Darrell Schlom, Cornell U (Invited)

09:35–09:50 Electron-Beam Writing of Atomic-Scale Reconstructions at Oxide Interfaces
Greta Segantini, U Geneva (Contributed)

09:50–10:05 Epitaxial VCrO₃ superlattice thin films on sapphire
Claudio Bellani, KU Leuven (Contributed)

10:05–10:20 Magnetic and polar properties of (010) DyFeO₃ thin films
Christoph Schneider, PSI (Contributed)

10:20–10:45 Thin film epitaxy of low valence metallic oxides: from negatively valent pnictides to divalent rare earth monoxides
Tomoteru Fukumura, Tohoku U (Invited)

10:45–11:10 *Coffee break*

SESSION 2 Interfaces 11:10–12:45 Chair: Jochen Mannhart (MPI Stuttgart)

11:10–11:35 Superconductivity at the KTaO₃ interfaces
Kaveh Ahadi, Ohio State U (Invited)

11:35–11:50 The quantum metric of the (111) LaAlO₃/SrTiO₃ interface
Giacomo Sala, U Geneva (Contributed)

11:50–12:05 Ferromagnetic Superconductive Two-Dimensional Electron Gases at (110) and (111) Oriented Epitaxial KTaO₃/LaTiO₃ Interfaces
Mostafa Marzouk, MPI Halle (Contributed)

12:05–12:20 Ultrathin Fe on SrTiO₃: Tunable 2D electron and 2D hole states at the interface
Pia Düring, Konstanz U (Contributed)

12:20–12:45 Emergent Magnetotransport Phenomena at Oxide Interfaces
Takahiro Fujita, U Tokyo (Invited)

12:45–13:00 **CONFERENCE PHOTO**

13:00–14:20 *Lunch*

SESSION 3 Nickelates 14:20–15:45

Chair: Jennifer Fowlie (Northwestern U)

- 14:20–14:45 Atomic-scale insights to lattice and electronic structure in superconducting nickelates
Berit Goodge, MPI Dresden (Invited)
- 14:45–15:00 Direct evidence for inversion symmetry breaking in RE nickelates
J r mie Teyssier, U Geneva (Contributed)
- 15:00–15:15 In situ preparation and ARPES study of superconducting infinite-layer lanthanum nickelates
Wenjie Sun, Nanjing U (Contributed)
- 15:15–15:30 Interface- and defect-induced quantum phases in nickelate thin films and superlattices
Rossitza Pentcheva, U Duisburg-Essen (Contributed)
- 15:30–15:45 Topotactic reduction effect in infinite-layer nickelates
Shengwei Zeng, A*STAR Singapore (Contributed)
- 15:45–16:15 *Coffee break*

SESSION 4 Heterostructures 16:15–17:50

Chair: Jean-Marc Triscone (U Geneva)

- 16:15–16:40 Engineering ultrafast dynamics and non-equilibrium phases in atomically layered oxides
Ankit Disa, Cornell U (Invited)
- 16:40–16:55 Interplay of metallicity, ferroelectricity and layer charges in SmNiO₃ and BaTiO₃ superlattices
Edith Simmen, ETH Z rlich (Contributed)
- 16:55–17:10 Engineering Unequal Antipolar Displacement in Ferromagnetic Layered Oxide Heterostructures
Marta Gibert, TU Vienna (Contributed)
- 17:10–17:25 Mapping the complex evolution of ferroelastic/ferroelectric domain patterns in epitaxially strained PbTiO₃ heterostructures
C line Lichtensteiger, U Geneva (Contributed)
- 17:25–17:50 Revisit the magnetotransport of perovskite manganite heterostructures
Lingfei Wang, USTC Hefei (Invited)
- 18:00–20:30 **POSTER 1 Drinks & Snacks Oktoberfest-style**

Tuesday 1.10.2024

SESSION 5 Membranes 9:00–10:35

Chair: Masashi Kawasaki (U Tokyo)

- 09:00–09:25 New Directions in Material Design: Harnessing Freestanding Oxide Membranes
Nini Pryds, DTU Lyngby (Invited)
- 09:25–09:40 Interface Design Beyond Epitaxy
Varun Harbola, MPI Stugart (Contributed)

- 09:40–09:55 Reconfiguring topology in free-standing antiferromagnetic membranes
Hariom Jani, *U Oxford* (Contributed)
- 09:55–10:10 Defect thermodynamics and engineering in transferable oxide thin films and bilayer heterostructures
Felix Gunkel, *FZ Jülich* (Contributed)
- 10:10–10:35 From oxide epitaxy to membranes: opportunities and challenges
Bharat Jalan, *U Minnesota* (Invited)
- 10:35–11:00 *Coffee break*

SESSION 6 Ferroelectrics 11:00–12:25

Chair: Beatriz Noheda (U Groningen)

- 11:00–11:25 Epitaxial ferroelectric HfO₂: effects of stress and strain
Florencio Sánchez, *ICMAB Barcelona* (Invited)
- 11:25–11:40 Emerging phase transitions in lead-free antiferroelectric heterostructures and membranes
Ruijuan Xu, *U North Carolina* (Contributed)
- 11:40–11:55 Ferroelectricity, chirality, spin-orbit coupling and cavity states in Pb₅Ge₃O₁₁ crystal
Eric Bousquet, *U Liège* (Contributed)
- 11:55–12:10 Ultrathin Crystalline Membranes of Ferroelectric Hafnia
Yufan Shen, *Kyoto U* (Contributed)
- 12:10–12:25 Electric field-manipulated optical chirality in ferroelectric vortex domains
Haojie Han, *Tsinghua U* (Contributed)
- 12:25–13:45 *Lunch*

SESSION 7 Memristors 13:45–15:20

Chair: Regina Dittmann (RWTH Aachen/FZ Jülich)

- 13:45–14:10 Epitaxial oxides for neuromorphic devices
Beatriz Noheda, *U Groningen* (Invited)
- 14:10–14:25 Electrochemical oxygen intercalation for precise tuning of functionalities in next-generation oxide-based devices
Federico Baiutti, *IREC Barcelona* (Contributed)
- 14:25–14:40 Coupled resistive and thermal switching in Metal/SrTiO₃ Devices
Victor Alvarez, *U Santiago* (Contributed)
- 14:40–14:55 Y₂O₃-based memristive devices
Eszter Piros, *TU Darmstadt* (Contributed)
- 14:55–15:20 Operando spectroscopic investigation of the valence change mechanism in La₂NiO_{4+δ}-based memristive devices
Mónica Burriel, *LMGP Grenoble* (Invited)
- 15:30–18:00 **POSTER 2** *Coffee and Cake*
- 19:15–23:00 **NETWORKING BANQUET/AWARD CEREMONY** Orangerie

Wednesday 2.10.2024

SESSION 8 Correlated Oxides 9:00–10:35

Chair: Martina Müller (U Konstanz)

- 09:00–09:25 Strange magnetism of orthorhombic iridates
Marjana Ležaić, FZ Jülich (Invited)
- 09:25–09:40 Nonlinear and nonreciprocal transport effects in untwinned thin films of topological Weyl metal SrRuO₃
Wei-Li Lee, Academia Sinica (Contributed)
- 09:40–09:55 Light-induced metastability in a cuprate ladder
Matteo Mitrano, Harvard U (Contributed)
- 09:55–10:10 Néel skyrmion bubbles in La_{0.7}Sr_{0.3}Mn_{0.95}Ru_{0.05}O₃ multilayers
Ionela Lindfors-Vrejoiu, U zu Köln (Contributed)
- 10:10–10:35 Topotactic Phase Transformation in Ferrites: Octahedral, Tetrahedral, and Square Planar FeO_x Configurations
Woo Seok Choi, SKKU Seoul (Invited)
- 10:35–11:00 *Coffee break*

SESSION 9 Towards Applications 11:00–12:15

Chair: Daniele Marré (U Genova)

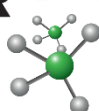
- 11:00–11:15 Integration of High-*T_C* Superconductors and High-Q-Factor Mechanical Resonators in LaAlO₃ Suspended Micro-Bridges
Nicola Manca, CNRS Spin (Contributed)
- 11:15 -11:30 VO₂ driven Electromechanically Reconfigurable THz Devices
Saurav Prakash, NUS Singapore (Contributed)
- 11:30–11:45 Ion irradiation induced surface electronic structure variation in the epitaxial lanthanum nickelate based heterostructures
Vishal Sharma, Micron India (Contributed)
- 11:45–12:00 Superconductivity and Quantum Criticality in Two-dimensional NbO₂ Layers
Takuto Soma, Tokyo IT (Contributed)
- 12:00–12:15 High sensitive magnetic sensors based on anisotropic magnetoresistive effect in epitaxial La_{2/3}Sr_{1/3}MnO₃ thin films
Laurence Méchin, U Caen/GREYC (Contributed)
- 12:15–12:30 **CLOSING & FAREWELL** Announcement of iWOE-31
- 12:30 *Lunch to go*
- 14:00–16:00 **LABTOUR** Materials Science Labs, Building L2/01, Campus Lichtwiese (Optional)



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