

Day 1: Tuesday, March 4

Welcome

13:30 Welcome
Jaroslav Lukes, Bruker & Falk Naumann, Fraunhofer IMWS

Talks — Session I

- 13:45 Correlative in situ micropillar compression for understanding anisotropic hardening in ferrite
Angelica Medina, Karlsruhe Institute of Technology (KIT)
- 14:00 Unraveling structure-process-property relationships of 3D printed polymer microstructures
Clara Vazquez Martel, Heidelberg University
- 14:15 Anti fouling coatings from glassy poly electrolyte multilayers
John Akintola, Florida State University
- Invited Talk
- 14:30 Nanowear resistance of insect mandibles
David Labonte, Imperial College London
- 15:00 Hysitron TI Premier II NanoIndenter
David Vodnick, Bruker Nano Surfaces and Metrology
- 15:20 Coffee Break

Talks — Session II

- 15:50 Nanomechanical and nanoelectrical analysis of the proton exchange membrane water electrolyzer anode – impact of reinforcement fibers and porous transport layer
Julian Borowec, Forschungszentrum Jülich GmbH
- 16:05 Analysis of thermally activated processes via high temperature scanning indentation
Marcel Sos, Technical University of Darmstadt
- 16:20 Employing shear punch testing to investigate thermomechanical properties of nanocrystalline brass
Oliver Petry, Technical University of Darmstadt
- 16:35 What happens before the first Pop-In?
Valeria Lemkova, Saarland University
- 16:50 Moisture dependence of Polyimide – Silicon Nitride interfaces: comparison between In-Situ and Ex-Situ indentation-induced delamination
Filippo Sabatini, STMicroelectronics srl, Politecnico di Milano

Invited Talk

- 17:05** Mechanistic insights into twinning mechanisms of the Cantor High Entropy Alloy
Christoph Kirchlechner, Karlsruhe Institute of Technology (KIT)
- 17:35** **Welcome Reception & Poster Session**
All Posters are Eligible for Top Poster Prize (see list on page 7)
- 19:30** End of Day 1

Day 2: Wednesday, March 5

Talks — Session III

- 09:30** Welcome
Oden Warren, Bruker & Erica Lilleodden, Fraunhofer IMWS
- Invited Talk**
- 09:40** Elastic microstructures in metallic glasses
Birte Riechers, Federal Institute of Materials Research and Testing (BAM)
- 10:10** Hysitron PI89 SEM PicoIndenter
Sanjit Bhowmick, Bruker Nano Surfaces and Metrology
- 10:30** Coupled nanoindentation and EBSD analysis for correlating the microstructure and mechanical behavior of reduced Iron ore pellets
Meriem Ben Haj Slama, Bruker Nano Analytics
- 10:50** Coffee Break

Talks — Session IV

Invited Talk

- 11:20** Beyond indentation - the impact of sliding on microstructural evolution
Christian Greiner, Karlsruhe Institute of Technology (KIT)
- 11:50** Characterization of a damaged bearing steel 100Cr6 using statistical nanoindentation tests
Romaric Collet, CETIM
- 12:10** In situ TEM nanocompression and nanofriction experiments in vacuum or under water to investigate the effect of graphene in ceramic composites for tribological applications
Lucile Joly-Pottuz, INSA Lyon
- 12:30** Ice formation and ice friction from laser-patterned spheres
Karlis Gross, Riga Technical University

Lunch Break

- 12:50** Lunch Provided On-Site

Talks — Session V

Invited Talk

- 14:00** **Nanomechanics in the context of polymer-based composite**
Thomas Pardoen, Université Catholique de Louvain & WEL Research Institute
- 14:30** **Application of nanoindentation techniques in the chemical industry: Insights into material performance**
Svetlana Guriyanova, BASF SE
- 14:50** **Microscale viscoelastic properties of cement pastes and PMMA quantified by nanoindentation**
Jiri Nemecek, Czech Technical University in Prague
- 15:10** **Novel nanoindentation protocol for non-embedded spruce wood and analysis of polymer-modified birch**
Luis Zelaya-Lainez, TU Wien
- 15:30** **Coffee Break**

Talks — Session VI

- 16:15** **Factors that challenge the estimation of the elastic modulus in nanoindenter-loaded monolayer WSe₂: A molecular dynamics study**
Javier Varillas, Czech Academy of Sciences
- 16:35** **Understanding the fundamentals of grain boundary sliding through micromechanics**
Divya Sri Bandla, Karlsruhe Institute of Technology (KIT)
- 16:55** **Mechanisms and anisotropy of serrated flow: insights from microcompression and TEM-based measurements**
Henry Ovri, Helmholtz-Zentrum Hereon

Keynote Lecture

- 17:15** **From nanomechanics of hard phases to microstructure and process design**
Prof. Dr. Sandra Korte-Kerzel, RWTH Aachen
- 18:00** **End of Conference Day**
- 19:00** **Conference Dinner**

Day 3: Thursday, March 6

Talks — Session VII

Invited Talk

- 09:30** Experimental assessment of the mechanical reliability of microelectronics using advanced micromechanical testing strategies
Andre Clausner, Fraunhofer Institute for Ceramic Technologies and Systems IKTS
- 10:00** Measurement of interfacial toughness between Polycrystalline and Monocrystalline Silicon Carbide
Emanuele Cattarinuzzi, STMicroelectronics srl
- 10:20** Study of epoxy-based molding compound degradation at high temperature operation using nano-indentation mapping techniques
Falk Naumann, Fraunhofer Institute for Microstructure of Materials and Systems IMWS
- 10:40** Speeding up Micromechanics Sample Prep for Indentation Testing Using Ultrashort Laser Pulses
Thomas Höche, Fraunhofer Institute for Microstructure of Materials and Systems IMWS
- 11:00** Coffee Break

Talks — Session VIII

Invited Talk

- 11:30** Spherical nanoindentation of nuclear steels
Anna Kareer, University of Oxford
- 12:00** Nanoindentation - why and when does the tip sharpness matter
Stanislav Zak, Montanuniversität Leoben
- 12:20** Memorizing the stone age of NI
Matthias Petzold, Fraunhofer Institute for Microstructure of Materials and Systems IMWS

Conference Closing

- 12:40** Celebrating 50 years of instrumented indentation in Eastern Germany

Lunch

- 12:50** Lunch Provided On-Site

Demo & Labtour

- 13:20** PI 89 SEM PicoIndenter demonstration and new TI Premier II demonstration.
Lab tour of IMWS facilities, including: Laserprep, TEM-analytics, Non-destructive material testing, Micromechanics.

Poster List

1. **Investigating the design of macromolecular-based inks for two-photon 3D laser printing**
Samantha Catt, Heidelberg University
2. **Nanomechanical studies on ZDDP based tibofilms grown on sapphire substrate**
Florian Pape, IMKT Leibniz Universität Hannover
3. **Road to Failure: AFM indentation of polymers**
Julia Groeger, Erich Schmid Institute
4. **Determining the elasticity of bacterial cells using microcompression tests**
Marketa Khyrova, Brno University of Technology
5. **Investigating the effect of nanoparticles on toughness in silicon nitride thin films**
Filippo Sabatini, STMicroelectronics srl, Politecnico di Milano
6. **Viscoelastic Performance of Cellulose Nanofiber-Reinforced Bio-Nanofilms Under Extreme Conditions**
Berk Dalkilic, Sinop University
7. **Determining the influence of cooling 1.7225 on the microstructural properties using nanoindentation**
Matthias Hammes, Leibniz University Hannover, IFUM
8. **Quantitative characterisation of the mechanical and electrical properties of nanowires used for nano-energy harvesting**
Zhi Li, Physikalisch-Technische Bundesanstalt, PTB
9. **From atoms to applications: Unraveling coating failure through multi-scale analytical modeling combining molecular dynamics, stress evaluation and surface experiments**
Nick Bierwisch, SIO, Saxonian Institute of Surface Mechanics
10. **Advanced feedback modes in nanomechanical testing**
Douglas Stauffer, Bruker Nano Surfaces and Metrology
11. **In-situ push-to-pull testing of graphene sheets**
Jaroslav Lukes, Bruker Nano Surfaces and Metrology
12. **Insights into dispersed mechanical properties**
Ude Hangen, Bruker Nano Surfaces and Metrology
13. **Study of thermomechanical stability of plasma deposited thin films using in situ high temperature nanoindentation**
Vilma Bursikova, Masaryk University
14. **Doping strategies to enhance micromechanical strength in sol-gel-derived metal oxide semiconductors**
Seydanur Kaya, Kastamonu University
15. **Surface Investigation by Atomic Force Microscopy of a Li-ion battery electrode**
Monika Parihar, Université Paris Saclay
16. **Stability of nanoparticles with a focus on their morphology, and mechanical properties with the dynamics of proteins as well as other biomolecules for health diseases**
Seniha Simale Su Uygan
17. **Predicting the microstructural evolution of ion-irradiated Eurofer97: Nanoindentation study supported by CPFEM and TEM**
Tymofii Khvan, National Center for Nuclear Research (NCBJ)
18. **Functionality versus Wear Resistance: Insights into Cuticular Materials**
Andre E. Vellwock, Max Planck Institute of Colloids and Interfaces Potsdam & B CUBE Dresden