Conference Schedule

Nanobrücken 2022: Nanomechanical Testing Conference and User Meeting

Charles University | Prague, Czech Republic

Day 1: Wednesday, June 8th

Welcome

13:30 Opening Remarks
Jaroslav Lukeš and Ude Hangen, Bruker

Student Talks — Session I

Chair: Ude Hangen, Bruker

13:45 "Small-scale mechanical testing of grain boundary doped ultrafine-grained W – Challenges and insights"
Michael Wurmshuber, Montanuniversität Leoben

14:00 "Properties of thin films studied by in-situ TEM"
Lucia Bajtošová, Charles University Prague

14:15 "Micromechanical testing approaches for local interface properties of interconnects in microelectronics"
Wieland Heyn, Fraunhofer IKTS

14:30 "Segregation-induced microscale strengthening of a Cu asymmetric Σ5 grain boundary doped with Ag"
Mohammed Kamran Bhat, MPIE Düsseldorf

14:45 "A quantitative analysis of stress-induced amorphization and grain boundary sliding in forsterite"
Ihtasham Ul Haq, University of Antwerp

15:00 "Mechanics of lithium metal at nanoscale by in-situ EBSD coupled nanoindentation"
Jack Aspinall, University of Oxford

Poster Set-Up

15:15 Short Break / Coffee Provided

Student Talks — Session II

Chair: Birte Riechers, BAM

15:45 "Microtensile Behavior of Additively Manufactured 17-4PH Stainless Steel Through In-Situ SEM Experimentation"
David Gonzalez-Nino, University Arkansas

16:00 "Nanoscale creep behavior and creep size effect of an additively manufactured Zr-based bulk metallic glass"
Siqi Liu, Norwegian University of Science and Technology

16:15 "Plastic instabilities in epitaxial NiMnGa Heusler films"
Adnan Fareed, BAM-Berlin

16:30 "Size effects in fracture mechanics: a detailed investigation on crack growth at the micro- and mesoscale"
Jutta Luksch, University of Saarbrücken

16:45 "Batch Fabrication of Silicon indenter tips for adhesion investigations using Deep Reactive Ion Etching (DRIE)"
Selina Raumel, Leibnitz University Hannover

17:00 "Following in-situ crack propagation"
Klemens Schmuck, Montanuniversität Leoben

Poster Session
All Posters are Eligible for Top Poster Prize

17:15 Poster Session (All posters, see list on page 4) / Barbecue

Bruker User Meeting (open to all participants)

19:00 Introduction
Oden Warren, Bruker

19:05 EDS for in-situ elemental analysis in SEM and TEM
Meiken Falke, Bruker

19:15 Exciting New Product Developments
Sanjit Bhowmick and Rhys Jones, Bruker

19:30 Round Table & Q&A Session (opportunity for users to ask questions)

Day 2: Thursday, June 9th

09:00 Nanobrücken Conference – Opening Remarks
Miroslav Cieslar, Charles University and Oden Warren, Bruker

Keynote Lecture

09:10 "**Release with ease - challenges and bioinspired concepts for handling micro-objects**"
Prof. Eduard Arzt, Institute for New Materials, Saarbrücken

10:00 Short Break / Coffee Provided

Talks — Session I
Chair: Jaroslav Lukeš, Bruker

10:35 "Correlative Structure-Property Characterisation of the Leafcutter Ant, Atta cepholotes, Mandible"
Richard E. Johnston, Swansea University

10:55 "The cytolinker and scaffolding protein ''Plectin" disarray, leads to softening of cancer cells"
Anahid Amiri, TU Darmstadt

11:10 "Micromechanical Characterization of Enzyme Crystals"
Achim Overbeck, University of Braunschweig

Invited Talk

11:30 "Surfaces and Interfaces: Measuring Mechanical and Tribological Properties at the Nanoscale"
Jurgita Zekonyte, University of Portsmouth

Lunch Break

12:00 Lunch Provided On-Site

Talks — Session II

Chair: Sanjit Bhowmick, Bruker

13:00 "Combining electron microscopy and nanoindentation to characterize microstructural gradients in high-purity Niobium single crystals deformed at low and high strain rate"
Celia Caer, ENSTA Bretagne

13:20 "Recent developments on characterization of nanomaterials using On-Axis TKD in SEM"
Daniel Goran, Bruker Nano GmbH

13:40 "Comparison of Conventional and Nanoindentation-based Residual Stress Values for Automotive and Armour Steels"
Mohan Setty, Deakin University

14:00 "Developing rapid residual stress measurements via nanoindentation on a commercial aerospace alloy Al7050"
Elizabeth Sackett, Swansea University

Invited Talk

14:20 "Stress induced amorphization in olivine: new insights from ex-situ and in-situ TEM nanomechanical testing"
Hosni Idrissi, University Louvain La Neuve

14:50 Short Break / Coffee Provided

Talks — Session III

Chair: Ehrenfried Zschech, DeepScan

15:20 "Measuring the mechanical damping using nano-compression tests"
Jose F. Gómez-Cortés, University of the Basque Country

15:40 "Measuring Flexoelectric response of Free-standing beams by Nanoindentation"
Emerson Coy, NanoBioMedical Centre, Adam Mickiewicz University, Poznan

16:00 "HCF fatigue testing and analysis of nanometer-sized copper bending beams"
Florian Schäfer, Universität des Saarlandes

16:20 "Elastic and Plastic Time Dependent Mechanical Properties of Lithium Measured by Nanoindentation"
J Ed Darnbrough, University of Oxford

16:40 "Size effects at nanoscale on superelasticity measured by nano compression: Universal scaling law for Cu-Based shape memory alloys"
Jose M. San Juan, University of the Basque Country

17:00 End of Session

19:00 Confernce Banquet Dinner

Day 3: Friday, June 10th

Talks — Session IV

Chair: Jurgita Zekonyte, University of Portsmouth

09:00 "Miniaturized mechanical tests in a laboratory X-ray microscope – Design, integration and applications"
Ehrenfried Zschech, DeepScan

Invited Talk

09:20 "Nanomechanical analysis of cement-based heterogeneous microstructures"
Jiri Nemecek, Czech Technical University in Prague

09:50 "In-situ nanoindentation of hard coatings at elevated temperatures"
Saeed Mirzaei, Academy of Science of the Czech Republic

10:10 "Mechanical properties of hard protective coatings for high temperature applications"
Aljaž Drnovšek, Josef Stefan Institute

10:30 Short Break / Coffee Provided

Talks — Session V

Chair: Jose Maria San-Juan

Invited Talk

10:50 "Nano-mechanical probing of elasticity length-scales in metallic glasses"
Birte Riechers, BAM

11:20 "Molecular Dynamics Simulations of Push-To-Pull Tests in Graphene Sheets"
Javier Varillas

11:40 "Combining Nanoindentation and Simulation for elasto-plastic material data of thin metal films"
Nathaniel Jöhrmann, TU Chemnitz, Materials and Reliability of Microsystems

12:00 "Nanoindentation of thin films – accurate assessment of Young's modulus"
Stanislav Žák, Erich Schmidt Institute, Leoben

12:20 Closing Remarks and Farewell
Jaroslav Lukeš and Ude Hangen, Bruker

12:30 End of Conference

Poster List

Ordered by last name of presenting author

1. "Mechanical Properties of Interface Adhesion in Solid State Batteries"
   Shatha AlMarri, University of Oxford
2. "Nanoindentation and nanostructures flattening as a tool to obtain surface tension in chalcogenide glass-forming materials"
   Jaroslav Barták, University of Pardubice
3. "Nanomechanical study of PLA-based nanocomposite materials"
   Todor Batakliev, Institute of Mechanics, Bulgaria
4. "Advances in combined mechanical and electrical SPM characterization of thin films"
   Günther Benstetter, Deggendorf Institute of Technology
5. "Correlative Characterisation of Rangifer Tarandus (Reindeer) Antler, Evaluating Differences Between Male and Female and Calving Females"
   Rachel Board, Swansea University

6. "Comparison of methods for nanomechanical characterization of soft specimens"
   Daniel Haško, International Laser Centre, Slovak Republic
7. "Investigation of the adhesion of molybdenum and molybdenum trioxide to cube corner indenters by nanowear tests"
   Norman Heimes, Institute of Forming Technology and Machines, Leibniz Universität Hannover
8. "Effect of combination of carbon nanofillers on the nanomechanical properties of PLA-based composites films"
   Evgeni Ivanov, Institute of Mechanics, Sofia
9. "Different approaches for determination of the mechanical behavior changes in micro-structured glasses"
   Petr Knotek, University of Pardubice
10. "Local mechanical properties testing of zirconium alloy nuclear fuel claddings"
    Ondřej Libera, Centrum Výzkumu Řež
11. "Micro-mechanical testing of highly air-sensitive Argyrodite by in-situ nanoindentation and micro-cantilever bending"
    Johann Perera, University of Oxford
12. "Surface properties of MXene sprayed films"
    Michal Procházka, Polymer institute, Bratislava
13. "Development of a push to pull microsystem for tensile strength tests with cells of filamentous microorganism"
    Marcel Schrader, Technische Universität Braunschweig
14. "Micromechanical Properties of Native Human Ligamentum Flavum"
    Josef Sepitka, Czech Technical University in Prague
15. "Development of protocols for measuring twinning stress using micropillar compression"
    Camila A. Teixeira, IAM-KIT
16. "Near-surface viscosity in amorphous chalcogenides"
    Michaela Včeláková, University of Pardubice

Practical Information

Nanobrücken 2022 Venue

Nanobrücken 2022 will be held at the Charles University, located in the beautiful city of Prague.

Nanobrücken, Bruker's annual Nanomechanical Testing Conference and User Meeting for international researchers and industrial leaders in nanoindentation and nanotribological testing, includes oral presentations from leading research groups, as well as live demonstrations and discussions with Bruker experts.

For additional information, please visit the conference website at https://www.bruker.com/Nanobruecken.

Talk Lengths

Student talks are 12 minutes in length, with an additional 3 minutes for discussion.
Contributed talks are 15 minutes in length, with an additional 5 minutes for discussion.
Invited talks are 25 minutes, with an additional 5 minutes for discussion.