

Session Program

13-17 Sept 2021

**EUROPEAN CONGRESS AND EXHIBITION ON
ADVANCED MATERIALS AND PROCESSES -
EUROMAT 2021**

***D3_Micro- and Nano-mechanics -
Characterization and Modelling***

Virtual

Wednesday 15 September

17:30

D3_Micro- and Nano-mechanics - Characterization and Modelling: D3_1_Bulk Materials

Session | **Location:** Room 11

17:30-18:10

Deformation of Mg-Al-Ca alloys across the scales (Keynote)

Speaker

Prof. Sandra Korte-Kerzel

18:10-18:30

Micromechanics of silica inclusions in ferrous alloys

Speaker

Ms Alejandra Slagter

18:30-18:50

Extrinsic and Intrinsic Size Effects on Deformation and Fracture in Barium Titanate

Speaker

Mr Nidhin George Mathews

18:50

Thursday 16 September

09:50

D3_Micro- and Nano-mechanics - Characterization and Modelling: D3_2_Metals and Metal Thin Films

Session | Location: Room 11

09:50-10:10

Size effects in bi-crystalline Cu micropillars containing a coherent twin boundary

Speaker

Mr Reza Hosseinabadi

10:10-10:30

Enhancing the Ductility of Gold Thin Films by Directing Deformation Mechanisms

Speaker

Dr Benoit Merle

10:30-10:50

Effect of ageing on the mechanical behavior of nanocrystalline metallic thin films

Speaker

Marie-Stéphane Colla

10:50-11:10

Impact of grain size on the fracture toughness for tungsten-copper nanocomposites

Speaker

Mr Klemens Schmuck

11:10-11:30

High strain rate thermo-mechanical fatigue study on differently galvanically prepared Cu structures on Si

Speaker

Mr Sebastian Moser

11:30

11:50

D3_Micro- and Nano-mechanics - Characterization and Modelling: D3_3_High & Low Temperature Testing

Session | Location: Room 11

11:50-12:10

Brittle-ductile transition in bcc metals: Insights from analyzing the thermally activated dislocation mechanism in Mo

Speaker

Karsten Durst

12:10-12:30

Advanced bulge setup for investigating thin film fatigue at elevated temperature

Speaker

Anna Krapf

12:30–12:50

Real-time High Temperature Scanning Indentation: how to probe physical changes in thin film metallic glasses?**Speaker**

Ms Solène Comby-Dassonneville

12:50–13:10

A cryogenic indentation tool with in situ optical observation to survey the mechanical properties of II-VI semiconductors**Speaker**

Eric Le Bourhis

13:10

14:40

**D3_Micro- and Nano-mechanics - Characterization and Modelling:
D3_4_Metallic glasses and Metal-Oxide layered systems****Session** | **Location:** Room 11

14:40–15:00

Plasticity mechanisms in ZrNi metallic glass thin films with high strength/ductility balance**Speaker**

Prof. Hosni Idrissi

15:00–15:20

Nanoscale mapping of shear banding events in thin film metallic glasses**Speaker**

Dr Oleksandr Glushko

15:20–15:40

Size and structure dependent ductility, strength and toughness of thin hybrid Al/Al₂O₃ nanolaminated films**Speaker**

Paul Baral

15:40–16:00

Fragmentation of Al/Al₂O₃ multilayers on flexible substrates in uniaxial and biaxial tension**Speaker**

Dr Barbara Putz

16:00

16:40

**D3_Micro- and Nano-mechanics - Characterization and Modelling:
D3_5_Fracture Mechanics****Session** | **Location:** Room 11

16:40–17:00

The Cyclic Crack Growth Behavior of bcc Metals studied by Dynamic Microcantilever Bending**Speaker**

Stefan Gabel

17:00–17:20

Influence of various parameters on the crack mode-mixity during the buckling delamination

Speaker

Dr Stanislav Zak

17:20–17:40

Interfacial fracture toughness on SiC/SiC CMCs

Speaker

Dr Oriol Gavalda Diaz

17:40–18:00

Locally resolved interfacial fracture mechanics in a Si-WTi-Cu multilayer system

Speaker

Mr Markus Alfreider

18:00

Friday 17 September

09:50

D3_Micro- and Nano-mechanics - Characterization and Modelling: D3_6 Machine Learning and Modelling

Session | Location: Room 11

09:50–10:30

Determining material parameters from indentation data by machine-learning enhanced inverse methods (Keynote)

Speaker

Prof. Alexander Hartmaier

10:30–10:50

Combining finite element simulations and indentation experiments trained with machine learning algorithms to interpret mechanical behaviour

Speaker

Mr Claus O. W. Trost

10:50–11:10

Influence of pre-existing defects on hardness measurement in atomistic simulations

Speaker

Mr Ashish Chauniyal

11:10–11:30

Correlative Microstructural - Micromechanical Measurements; Lessons from Machine Learning

Speaker

Dr Ude Hangen

11:30

11:50

D3_Micro- and Nano-mechanics - Characterization and Modelling: D3_7 Methods and Modelling

Session | Location: Room 11

11:50–12:10

El-numodis, a new tool to model dislocation versus surface interactions: application to nanoparticle mechanics

Speaker

Mr Javier Antonio Gonzalez Joa

12:10–12:30

Hertz Contact Mechanics across an Interface

Speaker

Mr Kian Tadayon

12:30–12:50

Micromechanical tests on Dual-Damascene structures for the characterization of interfacial properties in microelectronics

Speaker

Mr Wieland Heyn

12:50–13:10

Comparison between long-term nanoindentation creep testing under constant load and constant pressure**Speaker**

Dr Thomas Chudoba

13:10–13:30

When more is less: the effect of grain boundaries on mechanical properties of metal nanoparticles**Speaker**

Dr Jonathan Amodeo

13:30

14:40

**D3_Micro- and Nano-mechanics - Characterization and Modelling:
D3_8_Correlative Methods****Session** | **Location:** Room 11

14:40–15:00

In situ X-ray nanodiffraction and modelling reveal the evolution of stress fields during crack growth and arrest in a brittle-ductile CrN-Cr double-clamped cantilever**Speaker**

Dr Michael Meindlhumer

15:00–15:20

Studying the relative influence of grain size and temperature on the local strain distribution in titanium using High-Resolution Digital Image Correlation**Speaker**

Dr Alberto Orozco-Caballero

15:20–15:40

Size and shape dependent elasticity of metal nanowires: Correlative in situ nanomechanical study inside the SEM with subsequent TEM cross-section analysis**Speaker**

Lilian Vogl

15:40–16:00

Correlative in situ light and electron microscopy study of the deformation behavior of highly aligned nanowire arrays under compressive loading**Speaker**

Marco Moninger

16:00–16:20

Micro-scale indentation testing on active microelectronic devices to determine the piezoresistive coefficients of transistor channels**Speaker**

Mr Simon Schlipf

16:20

16:40

D3_Micro- and Nano-mechanics - Characterization and Modelling: D3_9_In-Situ Testing

Session | **Location:** Room 11

16:40–17:00

In situ observation of dislocation evolution in cerium oxides nanocubes in an environmental TEM

Speaker

Prof. Karine Masenelli-Varlot

17:00–17:20

In-situ laboratory X-ray microscopy to image crack propagation with high resolution

Speaker

Kristina Kutukova

17:20–17:40

Length-scale-controlled Brittle-Ductile Transition inducing toughening of Silicon

Speaker

Dr Inas Issa

17:40–18:00

In-situ and 3D HR-EBSD techniques to investigate deformation twinning mechanisms in Mg.

Speaker

Mr Nicolo Della Ventura

18:00–18:20

Pushing the limits of SEM-DIC: resolving microstructure-correlated strain fields at the nanoscale

Speaker

Mr Tijmen Vermeij

18:20