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Nanomechanical Testing in Materials Research
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Proceedings

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Nanomechanical Testing in Materials Research and Development VIII

Sandra Korte-Kerzel

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Program

Nanomechanical Testing in Materials Research and Development VIII

**October 2-7, 2022
Le Méridien Lav Split
Split, Croatia**

Conference Chair

**Sandra Korte-Kerzel
RWTH Aachen University, Germany**



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October 9 – 15, 2005

Crete, Greece

Conference Chairs:

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Carl McHargue, University of Tennessee, USA

Nanomechanical Testing in Materials Research & Development II

October 11 - 16, 2009

Barga, Italy

Conference Chair:

Mathias Göken, University Erlangen-Nurnberg, Germany

Nanomechanical Testing in Materials Research & Development III

October 9 – 14, 2011

Lanzarote, Canary Islands, Spain

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Nanomechanical Testing in Materials Research & Development IV

October 6 - 11, 2013

Albufeira, Portugal

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Nanomechanical Testing in Materials Research & Development V

October 4-9, 2015

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Conference Chair:

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Nanomechanical Testing in Materials Research & Development VI

October 1-6, 2017

Dubrovnik, Croatia

Conference Chair:

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September 29 – October 4, 2019

Torremolinos/Malaga, Spain

Conference Chair:

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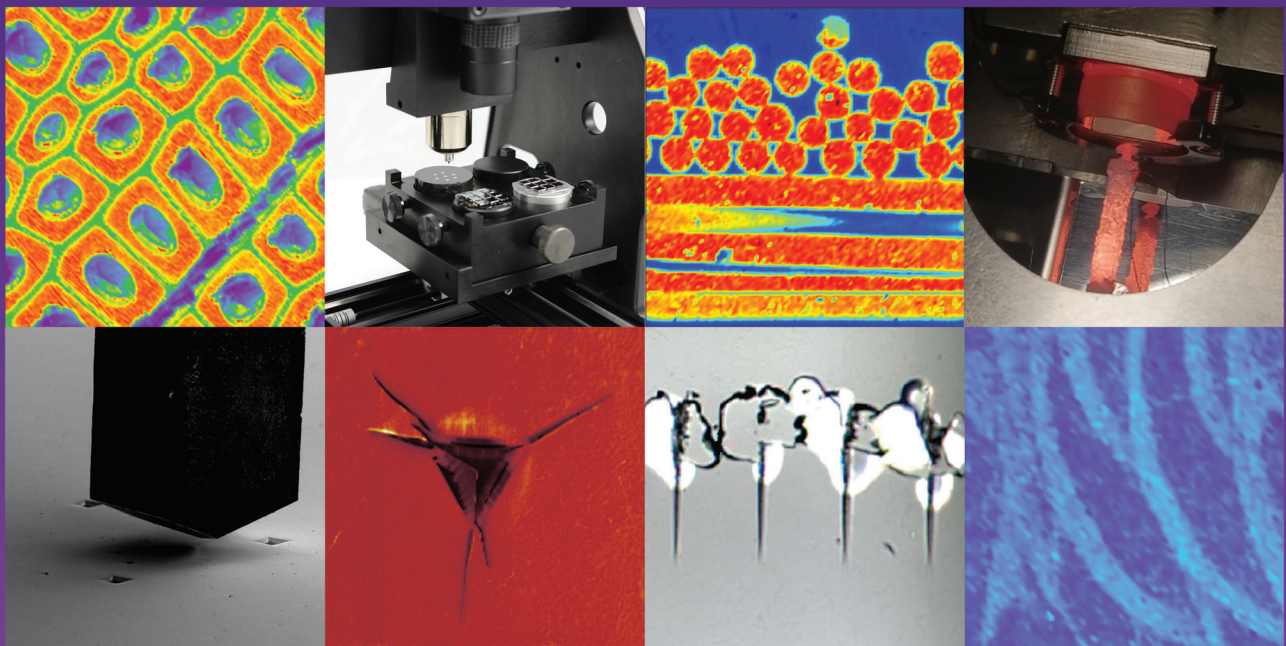
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Dr. Warren Oliver presents "Measurement of Hardness and Elastic Modulus by Depth Sensing Indentation: improvements to the Technique Based on Continuous Stiffness Measurement"
Poster Session



Dr. Yujie Meng presents "Exploring Accurate Structure, Composition and Mechanical Properties of η Carbides in High Tungsten Iron-based Alloy: High-throughput Mapping and DFT Calculations"
Poster Session





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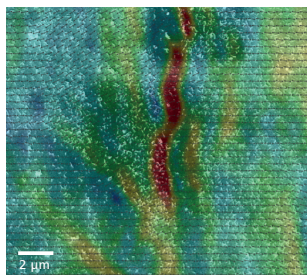
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Seeing beyond

Locations and Notes

- *Technical sessions will be in Grand Dalmatia and poster sessions will be in Mestrovic.*
- *The ECI on site office will be in the Lastovo Room.*
- *Please wear your mask except when giving a presentation or actively eating or drinking. Please maintain physical distancing as much as possible.*
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- *Emergency Contact Information: Because of privacy concerns, ECI does not collect or maintain emergency contact information for conference participants. If you would like to have this information available in case of emergency, please use the reverse side of your name badge.*

Sunday, October 2, 2022

- 09:30 – 10:00 Check-in for Optional Tutorial Session (**Lastovo – conference office**)
- 10:00 – 13:00 **Tutorial Sessions (parallel)**
- Analyzing dislocations in the TEM**
Marc Legros, CEMES-CNRS, France
- Studying rate and temperature dependence in nanomechanics**
Verena Maier-Kiener, Montanuniversitat Leoben, Austria
- Processing and analyzing micrographs with artificial intelligence**
Setareh Medghalchi, RWTH Aachen University, Germany
- 13:00 – 14:00 Lunch (on your own)
- 15:00 – 16:30 Check-in for Conference (**Lastovo – conference office**)
- Session I: Nanomechanics under extreme conditions**
Chair: Sandra Korte-Kerzel, RWTH Aachen University, Germany
- 16:30 – 16:40 **Conference Welcome**
Sandra Korte-Kerzel, RWTH Aachen University, Germany
Larry Kabacoff, ECI Technical Liaison
- 16:40 – 17:20 **Progress in the development of high strain rate nanoindentation testing**
George Pharr, Texas A&M University, USA
- 17:20 – 17:50 **In situ micromechanics during hydrogen charging: Effect of diffusible hydrogen on BBC Fe-based alloys and hydrogen protection through hydrogen barrier coatings**
Maria Jazmin Duarte Correa, MPIE, Germany
- 17:50 – 18:10 **In situ deformation observation via EBSD and EDS during high temperature tensile testing**
Sebastian Krauss, Carl Zeiss Microscopy GmbH, Germany
- 18:10 – 18:30 **In-situ nanomechanical testing at elevated humidities**
Igor Zlotnikov, B CUBE, Germany
- 18:30 – 21:30 Opening Reception and Dinner (**Gooshter Beach Club**)

Monday, October 3, 2022

07:30 – 09:00 Breakfast buffet

Session II: Crystal plasticity

Chair: Marco Sebastiani, Roma TRE University, Italy

09:00 – 09:40

Keynote

On the contribution of nanomechanical testing to the study of Earth mantle deformations

Patrick Cordier, University of Lille, France

09:40 – 10:00

Orientation-dependent plastic deformability in micropillar compression of oxide ceramics

Hiroshi Masuda, University of Tokyo, Japan

10:00 – 10:30

Solid solution hardening effects on structural evolution and mechanical properties of nanostructured high entropy alloys

Karsten Durst, Technical University of Darmstadt, Germany

10:30 – 10:50

Plastic deformation of microsamples: Intermittent dislocation avalanches and their acoustic emission

David Ugi, Eötvös Lorand University, Hungary

10:50 – 11:30

Coffee Break

11:30 – 12:00

Plasticity of the C_{15} - $CaAl_2$ Laves phase at room temperature

Carl F. Kusche, RWTH Aachen, Germany

12:00 – 12:20

On the mechanistic origin of the enhanced strength and ductility in rare earth-based Mg alloys

Henry Ovri, Helmholtz Zentrum Hereon, Germany

12:20 – 12:50

Orientation, temperature and strain rate effects in deformation twinning of magnesium

Xavier Maeder, EMPA, Switzerland

13:00 – 14:30

Lunch

14:30 – 16:30

Networking / Time for *ad hoc* discussions

Session II: Crystal plasticity (continued)

Chair: Ralph Spolenak, ETH Zurich, Switzerland

16:30 – 16:50

Deformation twinning in Cr_2AlC MAX phase single crystals: A nanomechanical testing study

Christophe Tromas, Université de Poitiers, France

16:50 – 17:10

Micromechanical study of a precipitation-hardened dual phase high-entropy alloy

Szilvia Kalacska, University of St.-Etienne, France

17:10 – 17:30

Miniaturization effects on the tensile behavior of multicrystalline and polychristalline nickel-based superalloy: Influence of grain size, free surface and precipitation state

Damien Texier, Institut Clément Ader, France

Monday, October 3, 2022 (continued)

- | | |
|---------------|---|
| 17:30 – 17:50 | Dislocation mechanisms of toughening in Cu-graphene nanolayered composite
Subin Lee, KIT, Germany |
| 17:50 – 18:10 | Short Coffee Break |
| 18:10 – 18:30 | Plasticity of topologically close-packed phases in the Fe-Ta(-Al) system
Christina Gasper, RWTH Aachen, Germany |
| 18:30 – 18:50 | Imaging modalities of mechanical microscopy
Jeffrey M. Wheeler, FemtoTools AG, Switzerland |
| 19:00 – 20:00 | Poster Preview I |
| 20:00 – 21:30 | Dinner |
| 21:30 – 23:00 | Poster Session I with social period |

Tuesday, October 4, 2022

- 07:30 – 08:30 Breakfast buffet
- Session III: Fracture**
Chair: Gerhard Dehm, MPIE, Germany
- 08:30 – 09:00 **Tailoring thin-film mechanical fragmentation properties of hybrid atomic/molecular-layer-deposited materials**
Ivo Utke, EMPA, Switzerland
- 09:00 – 09:20 **Micro-scale damage tolerance studies in ferroelectric barium titanate thin films**
Nidhin George Mathews, Indian Institute of Technology, Bombay, India
- 09:20 – 09:40 **Fracture properties of CrN hard coatings: Influence of the microstructure, alloying elements, and coating architecture**
Rainer Hahn, TU Wien, Austria
- 09:40 – 10:00 **Micro-mechanical approach of the intergranular stress corrosion cracking of austenitic stainless steels in PWR environment**
Rachma Azihari, CEA Sarclay, France
- 10:00 – 10:20 **Size effects in fracture mechanics: A detailed investigation on crack growth at the micro- and mesoscale**
Jutta Luksch, Saarland University, Germany
- 10:20 – 11:00 Coffee Break
- 11:00 – 11:30 **Environmental reliability and crack propagation resistance of 3d-printed ALD-coated nano-ceramics**
Marco Sebastiani, Roma TRE University, Italy
- 11:30 – 11:50 **Fracture behaviour of Ti/TiN multilayer thin film modeling and experimental validation**
Ashwini Kumar Mishra, Indian Institute of Technology, Bombay, India
- 11:50 – 12:10 **Grain size tailoring of tungsten copper nanocomposites to affect local fracture characteristics**
Klemens Schmuck, Montanuniversität Leoben, Austria
- 12:10 – 12:30 **Dislocation-based competition of plasticity and cracking in oxides: Understanding and application**
Xufei Fang, Technical University of Darmstadt, Germany
- 12:35 – 13:30 Lunch
- 13:45 Meet up at the front lobby of the hotel for the excursion.
- Buses leave promptly at 13:50**
- 13:50 – 18:00 Excursion

Tuesday, October 4, 2022 (continued)

Session IV: Biological Materials

Chair: Christian Motz, Saarland University, Germany

18:45 – 19:25

Keynote

Nanomechanical characterisation of polymer nanotubes for application as 'soft' mechanical interfaces for biology

Sohini Kar-Narayan, University of Cambridge, United Kingdom

19:25 – 19:55

Strong, stiff & auxetic - Lessons learned from a fascinating biological material

Daniel Kiener, Montanuniversität Leoben, Austria

20:15 – 22:00

Dinner

Wednesday, October 5, 2022

07:30 – 09:00 Breakfast buffet

Session V: Novel sample geometries and methodical advances

Chair: Johann Michler, EMPA Thun, Switzerland

09:00 – 09:30 **Optomechanics of small-scale structures**
Ralph Spolenak, ETH Zürich, Switzerland

09:30 – 09:50 **Two photon lithography for synthesis of fracture mechanical specimen**
Alexander Jelinek, Montanuniversität Leoben, Austria

09:50 – 10:20 **High-temperature scanning indentation: A new technique to assess microstructural changes along thermal ramping**
Gabrielle Tiphene, École centrale de Lyon, France

10:20 – 10:40 **From microlattices to 3d microprinting of multiphase micro-components: Resolution limits and mechanical properties under extreme conditions**
Johann Michler, EMPA Thun, Switzerland

10:40 – 11:00 **Additive micromanufacturing and dynamic characterization of copper microlattices**
Rajaprakash Ramachandramoorthy, MPIE, Germany

11:00 – 11:30 Coffee Break

Session VI: In-situ nanomechanical testing

Chair: Maria Jazmin Duarte Correa, Max-Planck-Institut für Eisenforschung GmbH, Germany

11:30 – 12:00 **In situ 3D mapping of local stress and crystal defect structures during micro-mechanical testing by n3D-XRD-CT**
Thomas Edwards, EMPA Thun, Switzerland

12:00 – 12:20 **Deformation mechanism of cerium oxide nanocubes - an in situ transmission electron microscopy study**
Karine Masenelli-Varlot, University of Lyon, France

12:20 – 12:40 **Deformation mechanisms of hierarchically structured 2D single-crystal materials revealed by real-time high-resolution in-situ nanomechanical testing**
Tyler Dolmetsch, Florida International University, USA

12:40 – 14:30 Lunch

14:30 – 16:30 Networking / Time for *ad hoc* discussions

Session VII: New Methods & Analyses

Chair: Gaurav Mohanty, Tampere University, Finland

16:30 – 17:00 **Challenges in the phase identification of steels using unsupervised clustering of nanoindentation data**
Gerhard Dehm, MPIE, Germany

Wednesday, October 5, 2022 (continued)

- 17:00 – 17:20 **Nanoindentation Surface Free Energy measurement over functionalized surfaces and structured substrates**
Edoardo Rossi, Roma TRE University, Italy
- 17:20 – 17:40 **A mathematical framework for high strain rate nanoindentation testing**
Warren Oliver, KLA, USA
- 17:40 – 18:00 Short Coffee Break
- 18:00 – 18:20 **Correcting for substrate elasticity contributions in depth-sensing indentation of embedded particles**
Alejandra Slagter, EPFL, Switzerland
- 18:20 – 18:40 **Mechanics of elastic contact with an interface between adjacent materials**
Kian Tadayon, TU Dresden, Germany
- 18:40 – 19:00 **In-situ monitoring of the contact area during indentation creep testing**
Ude Hangen, Bruker BNS, United States
- 19:00 – 20:00 **Poster Preview II**
- 20:00 – 21:30 Dinner
- 21:30 – 23:00 **Poster Session II with social period**

Thursday, October 6, 2022

07:30 – 09:00 Breakfast buffet

Session VIII: Nanomechanics under Complex Stress States

Chair: George Pharr, Texas A&M University, USA

09:00 – 09:20 **Plasticity in nanoscale friction: Static and dynamic**
John Pethica, Trinity College Dublin, Ireland

09:20 – 09:40 **Brittle to ductile transition in metal/oxide nanolaminates on flexible substrates under uniaxial and biaxial tension**
Barbara Putz, EMPA Thun, Switzerland

09:40 – 10:00 **A new method to measure shear surface mechanical properties**
Gaylord Guillonneau, University of Lyon, France

10:00 – 10:20 **Micro-shear of silicon: Elastic strain analysis using digital image correlation**
Carmen Maria Lauener, ETH Zürich, Switzerland

10:20 – 10:50 Coffee Break

Session IX: Grain Boundaries and Phase Transformations

Chair: Verena Maier-Kiener, Montanuniversität Leoben, Austria

10:50 – 11:20 **On grain boundary migration of a high-angle-grain boundary – Effect of shear stress and energy jump-driving force in micro-bicrystals**
Christian Motz, Saarland University, Germany

11:20 – 11:40 **Phase transformations and local deformation mechanisms - A case study on Cu 20 m.% Sn**
Lea Lumper, Montanuniversität Leoben, Austria

11:40 – 12:00 **Role of grain boundary on the deformation of micropillars**
Manmath Dash, University of Birmingham, United Kingdom

12:00 – 12:20 **The ductility of thin freestanding metallic films investigated by in-situ TEM / AFM nanomechanical testing**
Benoit Merle, University of Kassel, Germany

12:20 – 12:40 **Size-dependent coherent twin boundary strength contribution in Cu micropillars**
Reza Hosseinabadi, MPIE, Germany

12:40 – 14:30 Lunch

14:30 – 15:30 Networking / Time for *ad hoc* discussions

Thursday, October 6, 2022 (continued)

Session X: Amorphous Materials

Chairs: Karsten Durst, Technical University of Darmstadt, Germany

- 15:30 – 16:00 **Uncovering exceptional micro-scale plasticity accommodation mechanisms in amorphous aluminum oxide through experimental and simulation results**
Gaurav Mohanty, Tampere University, Finland
- 16:00 – 16:20 **Electron beam induced softening of fused silica**
Sebastian Bruns, Technical University of Darmstadt, Germany
- 16:20 – 16:40 **Temperature-dependent dynamic plasticity of micro-scale fused silica**
Remo Widmer, Alemnis AG, Switzerland
- 16:40 – 17:00 **Fracture propagation in glassy polymers: From nanometer to centimeter**
Bruno Bresson, ESPCI ParisTech, France
- 17:00 – 17:20 Short Coffee Break
- 17:20 – 17:50 **Evidence of electron-irradiation activated creep in amorphous olivine at room temperature**
Guillaume Kermouche, Ecole des Mines de Saint-Etienne, France
- 17:50 – 18:10 **Full-field strain around propagating shear bands and von mises criteria for metallic glasses**
Oleksandr Glushko, Montanuniversität Leoben, Austria
- 18:10 – 18:30 **Plastic flow and structural heterogeneities in silicate glasses - A high throughput investigation**
Etienne Barthel, ESPCi Paris / Sorbonne University, France
- 18:30 – 18:50 **Densification of polymer glass film under combined high pressure and shear flow revealed via scanning X-ray microscopy**
Graham Cross, Trinity College Dublin, Ireland
- 19:30 – 21:30 Conference Banquet (**7 Palms Restaurant**)

Friday, October 7, 2022

- 07:30 – 09:00 Breakfast and Departures

Poster Presentations

- 1 **MecaNano – European network for mechanics of matter at the nano-scale**
Benoit Merle, University of Kassel, Germany
- 2 **The effect of size, crystal orientation and temperature on the deformation of cast microwires**
Luciano Borasi, EPFL, Switzerland
- 3 **Temperature-dependance evaluation on deformation processes in the Alloy 718 using high-resolution digital image correlation**
Damien Texier, Institut Clément Ader - UMR CNRS 5312, France
- 4 **Nanoindentation strain rate jump test-based prediction of fracture and the brittle to ductile transition in tungsten**
Kevin Schmalbach, University of Minnesota, USA
- 5 **The calibration of nanoindenters revisited**
Thomas Chudoba, ASMEC GmbH, Germany
- 6 **Experimental and numerical investigations of nanoindentation properties at the sub-grain level in Ni-based and Ti-based polycrystalline alloys**
Damien Texier, Institut Clément Ader - UMR CNRS 5312, France
- 7 **Micromechanical characterisation of protein crystals and filamentous microorganisms**
Achim Overbeck, Technische Universität Braunschweig, Institute for Particle Technology, Germany
- 8 **Indentation unloading phase transformations in silicon: A new perspective**
Gerald Josef Kamillo Schaffar, Montanuniversität Leoben, Austria
- 9 **Fast fabrication of micropillar arrays using a combination of laser and FIB for micromechanical compression tests**
Fang Zhou, ZEISS Research Microscopy Solutions, Carl Zeiss Microscopy GmbH, Germany
- 10 **Nanoindentation material testing using SMART and SMART CUBES**
Dennis Bedorf, SURFACE, Germany
- 11 **WITHDRAWN**
- 12 **A novel indentation size effect analysis to quantify material damage for safer nuclear structural health monitoring**
Rohit Sharma, Coventry University, United Kingdom
- 13 **Nanoindentation-based strength measurements of spherical polymeric micro-samples**
Edoardo Rossi, Università degli Studi Roma Tre, Italy
- 14 **A simple method for pile-up correction by high-speed nanoindentation combined with optical profilometry**
Marco Sebastiani, Università degli studi Roma Tre, Italy
- 15 **On the effects of microstructural orientation on fracture toughness in (V,Al)-nitride and -oxynitride thin films**
Markus Reiner Schoof, RWTH Aachen University, Germany
- 16 **WITHDRAWN**

- 17 **Thermal activation of plasticity in BCC materials investigated by cryo-micropillar compression**
Carl F. Kusche, RWTH Aachen University, Germany
- 18 **Exploring accurate structure, composition and mechanical properties of η carbides in high tungsten iron-based alloy: High-throughput mapping and DFT calculations**
Yujie Meng, KLA, USA
- 19 **Microstructural and mechanical characterization of yarns made from carbon nanotubes for the instrumentation of particle beams at CERN**
Ana Teresa Perez Fontenla, CERN, Switzerland
- 20 **Continuous measurement of strain rate sensitivity – A novel nanoindentation method**
Hendrik Holz, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
- 21 **Micropillar compression of anisotropic Al₂O₃-based eutectic composite**
Yuta Aoki, The University of Tokyo, Japan
- 22 **Dislocation and grain boundary interaction in oxides: Slip transmission or cracking?**
Kuan Ding, TU Darmstadt, Germany
- 23 **Alloy discovery via combinatorial and high-throughput synthesis and mechanical characterization**
Adie Alwen, University of Southern California, USA
- 24 **Nano mechanical and microstructural investigation of damage mechanisms in copper wire bonds**
Liz Karanja, Centre d'Élaboration de Matériaux et d'Etudes Structurales, France
- 25 **Spherical indentation study on incipient plasticity of medium-/high-entropy alloys**
A-Hyun Jeon, Hanyang University, South Korea
- 26 **About the measurement of restoration kinetics in metals using the HTSI method**
Gabrielle Tiphene, Ecole Centrale de Lyon, France
- 27 **Effect of hydrogen on the nanomechanical behavior of dual-phase nanocrystalline high-entropy alloy**
Zhe Gao, Hanyang University, South Korea
- 28 **Nanoparticle stabilized thin film metallic glasses**
Emese Huszar, Empa, Switzerland
- 29 **Shear-coupling migration of grain boundaries in UFG Al**
Marc Legros, CEMES-CNRS, France
- 30 **Effects of radiation damage on the critical resolved shear stresses in zirconium alloys for nuclear applications**
James Gibson, University of Oxford, United Kingdom
- 31 **Intrinsic room temperature ductilisation of lean rare-earth free ternary Mg alloys**
Wassilios Johannes Delis, RWTH Aachen University, Germany
- 32 **Using small-scale mechanics to probe the origins of segregation-induced strengthening**
Mohammed Kamran Bhat, Max-Planck-Institut für Eisenforschung GmbH, Germany

- 33 **Nanoindentation creep testing using the constant contact pressure method**
Marcel Sos, Technical University Darmstadt, Germany
- 34 **Mechanical properties and fracture behavior of TiB₂+z thin films**
Anna Hirle, CDL-SEC at TU Wien, Austria
- 35 **Comparison of mechanical properties of titanium processed by ECAP: Macro vs. micro**
Jan Maňák, Institute of Physics of the Czech Academy of Sciences, Czech Republic
- 36 **High strain rates micromechanical behavior of materials: A coupled experimental and numerical approach**
Benedicte Adogou, Ecole des mines de Saint-Etienne, LGF UMR 5307 CNRS, France
- 37 **Localization of plastic strain in alloy 718 using digital image correlation**
Malo Jullien, Institut Clément Ader - UMR CNRS 5312, CEMES-CNRS, France
- 38 **Mechanical properties and deformation mechanisms of manganese sulphide inclusions**
Maximilian A. Wollenweber, RWTH Aachen University, Germany
- 39 **Mechanical behaviors of agglomerated ceramic powders for cold spraying applications**
Sergio Sao Joao, Mines Saint-Etienne, LGF UMR5307 CNRS, France
- 40 **Development of a custom high strain rate nanoindenter for small scale mechanical characterization over a wide range of strain rates**
Stefan Zeiler, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
- 41 **Investigating adhesion of polyimide in semiconductor devices with cross-sectional nanoindentation**
Moritz Hartleb, KAI Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Austria
- 42 **Local mechanical response in the vicinity of single grain boundary in YSZ measured by nanoindentation**
Ryo Nakamura, The University of Tokyo, Japan
- 43 **Nanomechanical behavior of biodegradable metallic glass for transient electrodes**
Seung-Kyun Kang, Seoul National University, South Korea
- 44 **Three-dimensional characterization of damage in dual phase steels with deep learning**
Setareh Medghalchi, RWTH Aachen University, Germany
- 45 **Slip and deformation behavior in intermetallic Cobalt-Samarium phases**
Tobias Stollenwerk, RWTH Aachen University, Germany
- 46 **Nanoindentation induced reversible plasticity detected by acoustic emission**
Jaroslav Cech, Czech Technical University in Prague, Czech Republic
- 47 **Hydrogen induced hardening effect and the diffusion behavior in bcc Fe-Cr alloys by in situ nanoindentation**
Maria Jazmin Duarte Correa, Max-Planck-Institut für Eisenforschung, Germany
- 48 **Quantitative measurement of stress vs. strain in supported thin films by the layer compression test**
Aaron D. Sinnott, Trinity College Dublin, Ireland
- 49 **Microshear mechanical properties measurements on tribolayers**
Fadlallah Abouhadid, Ecole Centrale de Lyon, France

- 50 **How do H/E and H3/E2 control coating system wear? - Insights gained from elevated temperature nanoindentation, scratch and impact tests**
Ben D. Beake, Micro Materials Ltd, United Kingdom
- 51 **Fatigue behavior of gold thin films at elevated temperatures studied by bulge testing**
Anna Krapf, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
- 52 **Development of protocols to quantify the twinning stress of a CoCrFeMnNi high entropy alloy**
Camila Aguiar Teixeira, Karlsruhe Institute of Technology, Germany
- 53 **Measurement of hardness and elastic modulus by depth sensing indentation: Improvements to the technique based on continuous stiffness measurement**
Warren C. Oliver, KLA, USA
- 54 **Plasticity of the CaAl₂ phase and its change with Mg addition at room temperature**
Martina Freund, RWTH Aachen University, Institut für Metallkunde und Materialphysik, Germany
- 55 **In-situ micromechanical testing of Su-8 polymer at high strain rates using indentation and micropillar compression**
Rahul Cherukuri, Tampere University, Finland
- 56 **High strain rate testing of ultra fine grained aluminium at micro and macro length scales**
Aloshious Lambai, Tampere University, Finland
- 57 **A geometry for quantitative analysis of interface fracture at the micron scale**
Eloho Okotete, Karlsruhe Institute of Technology, Germany
- 58 **Mechanical behavior of optimized optical nanomultilayers**
Danielle White, University of Southern California, USA
- 59 **Development of novel indentation-based stress relaxation tests to study transient plasticity in metals**
Suprit Purushottam Bhusare, University of Tampere, Finland
- 60 **Unveiling the mechanisms of motion of synchro-Shockley dislocations in Laves phases**
Zhuocheng Xie, RWTH Aachen University, Germany
- 61 **The restructuring of grain boundaries at the surfaces of meals**
John J. Boland, Trinity College Dublin, Ireland

Engineering Conferences International

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To serve the engineering/scientific community with international, interdisciplinary, leading edge engineering research conferences

ECI Purposes

The advancement of engineering arts and sciences by providing a forum for the discussion of advances in the field of science and engineering for the good of mankind by identification and administration of international interdisciplinary conferences

To work with engineering, scientific and social science societies and the interested general public to jointly sponsor conferences and to take other actions that will foster complementary programming.

To initiate conferences that will have a significant impact on engineering education, research practice and/or development.

ECI Encouragement of New Conference Topics

The ECI Conferences Committee invites you to suggest topics and leaders for additional conferences and encourages you to submit a proposal for an ECI conference.

Ideally, proposals should be submitted from 18 to 24 months in advance of the conference although the staff can work on a shorter timeline.

The traditional format for an ECI conference is registration Sunday afternoon with technical sessions held each morning and evening through Thursday or Friday noon. Afternoons are used for informal gatherings, poster sessions, field trips, subgroup meetings and relaxation. This format has served well to build important professional networks in many areas.

ECI welcomes proposals for shorter conferences and for conferences which span weekends in order to reduce the number of working days participants are away from their offices.

ECI Works With You

ECI works with conference chairs in two complementary ways. First, an experienced member of the Conferences Committee acts as your technical liaison from the proposal stage through the conference itself. He or she is always available to consult with you on any conference issue.

Second, after your proposal has been approved by the Conferences Committee, the ECI staff will assume responsibility for the administration of the conference.

Your primary responsibilities will be recruiting the organizing committee, developing the technical program and securing third-party funding necessary to support the travel of key speakers.

The responsibilities of ECI's "full service" staff include -- but are not limited to -- the following:

- Recommend, negotiate, contract and make substantial deposits for housing, meals, meeting space, A/V equipment and tours.
- Maintain web sites for the conference and for submission of abstracts.
- Publicize via electronic and print media.
- Administer all finances including grants, contributions and purchase orders. (ECI makes grant funds available as soon as a grant is approved.) There is no need for chairs to set up a conference bank account or file tax returns for their conference.
- Process all applications and registrations.
- Produce bound program/abstracts book.
- Contract for the publication of print or electronic proceedings, if any.
- Provide on-site staff during the conference.

For more information, please contact the ECI Director at Barbara@engconfintl.org