Program

Nanomechanical Testing in Materials Research and Development VII

September 29 – October 4, 2019

Melia Costa Del Sol
Torremolinos/Malaga, Spain

Conference Chair
Jon Molina-Aldareguia
IMDEA Materials Institute, Spain

Engineering Conferences International
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October 9 – 15, 2005
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George M. Pharr, University of Tennessee, USA
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Nanomechanical Testing in Materials Research & Development II
October 11 - 16, 2009
Barga, Italy
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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
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Nanomechanical Testing in Materials Research & Development V
October 4-9, 2015
Albufeira, Portugal
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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**Sunday, September 29, 2019**

09:30 – 10:00  
Check-in for Optional Tutorial Session (Reception Lobby-Conference Center)

10:00 – 13:00  
**Tutorial Session** (Salon Málaga – Level -1)

**Experimental fracture mechanics at the micron scale: Fundamentals, challenges and pitfalls**  
Christoph Kirchlechner, MPIE, Germany

**Nanoscale residual stress and adhesion assessment**  
Edoardo Bemporad, Università degli studi Roma Tre, Italy

13:00 – 14:00  
Lunch (on your own)

15:00 – 16:30  
Check-in for Conference (Reception Lobby – Conference Center)

16:30 – 16:40  
Conference Welcome  
Conference Chair: Jon Molina-Aldaregua  
ECI Technical Liaison: Larry Kabacoff

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**Room locations and notes**

- General Sessions will be held in the (Salon Málaga – Level -1)
- Poster Sessions will be in the Salon Torremolinos.
- The opening reception will be at the Central Pool  
The cocktail dinner will be on the Roof.
- Meals will be in the Buffet Restaurant. Coffee breaks will be in the Salon Torremolinos.
- Audio, still photo and video recording by any device (e.g., cameras, cell phones, laptops, PDAs, watches) is strictly prohibited during the technical sessions, unless the author and ECI have granted prior permission.
- Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).
- Speakers – Please leave discussion time as previously directed by your session chair.
- Please do not smoke at any conference functions.
- Turn your mobile telephones to vibrate or off during technical sessions.
- Please write your name on your program so that it can be returned to you if lost or misplaced.
- After the conference, ECI will send an updated participant list to all participants. Please check your listing now and if it needs updating, you may correct it at any time by logging into your ECI account.
- 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, September 29, 2019 (continued)

**Session I: In-Situ Micro and Nanomechanical Testing**
Chair: Jon Molina-Aldareguia, IMDEA Materials Institute, Spain

16:40 – 17:20  **Opening lecture**
New electron microscopy techniques for determination of local structural features during plastic deformation
Andrew Minor, University of California Berkeley, USA

17:20 – 17:50  **(Highlight) Recent progresses in in-situ and 3D HR-EBSD techniques to assess deformation mechanism of materials at small scale**
Xavier Maeder, EMPA, Switzerland

17:50 – 18:10  **TEM in-situ deformation of magnesium-ytrrium alloys**
Yu-Lung Chiu, University of Birmingham, United Kingdom

18:10 – 18:30  **In situ nanoindentation of Au crystals imaged by Bragg coherent X-ray diffraction**
Thomas Cornelius, CNRS, France

18:30 – 18:50  **TEM observation and in situ compression tests of transition alumina prepared by high pressure compaction at room temperature**
Karine Masenelli-Varlot, University of Lyon, INSA-Lyon, MATEIS, France

19:00 - 20:00  Welcome Reception (Central Pool)

20:00 - 21:30  Dinner (Roof)
Monday, September 30, 2019

07:30 – 09:00     Breakfast buffet

**Session II: Plasticity at Small Scales I**
Chairs: Gerhard Dehm, Max Planck Institute for Iron Research, Germany
        Javier Llorca, IMDEA Materials Institute, Spain

09:00 – 09:40     Keynote
_Determination of precipitate strengthening in Al-Cu alloys through micropillar compression: Experiments and multiscale simulations_
Javier Llorca, IMDEA Materials Institute, Spain

09:40 – 10:10     (Highlight) Effect of sample size and grain boundaries on dislocation structures and damage evolution in small-scale samples: A micro-fatigue investigation
Christian Motz, Saarland University, Germany

10:10 – 10:40     (Highlight) The influence of 3-D interfacial structure and morphology on the mechanical behavior of nanocomposites
Nathan Mara, University of Minnesota, USA

10:40 – 11:00     On microstructural constraints for slip transfer in nanotwinned silver
Maya Katapadi Kini, MPIE, Germany

11:00 – 11:30     Coffee Break

11:30 – 12:00     (Highlight) Twin boundaries: Obstacles for or sources of dislocations?
Christoph Kirchlechner, MPIE, Germany

12:00 – 12:30     (Highlight) Probing grain boundary relaxation in ultra-fine grained tantalum by micromechanical spectroscopy in an SEM
Daniel Kiener, Montanuniversität Leoben, Austria

12:30 – 12:50     Grain-scale investigation of the anisotropy of PLC-type plastic instability
Henry Ovri, Helmholtz Zentrum Geesthacht, Germany

13:00 – 14:30     Lunch

14:30 – 16:30     Networking / Time for _ad hoc_ discussions

**Session III: Plasticity at Small Scales II**
Chair:  Marc Legros, CNRS, France

16:30 – 17:10     Keynote
_Nano-mechanical behavior of bcc irons characterized through nanoindentation and TEM In-situ straining_
Takahito Ohmura, Kyushu University, Japan

17:10 – 17:30     Nanomechanical testing of bcc micropillars – power laws and lattice resistance correlations
Brian Derby, University of Manchester, United Kingdom

17:30 – 17:50     Size effect in polymer-supported ultrathin metallic glass films
Oleksandr Glushko, Erich Schmid Institute, Austria
Monday, September 30, 2019 (continued)

17:50 – 18:10  Suppressing damage in dual phase steel: Insights from micromechanics
Chunhua Tian, MPIE, Germany

18:10 – 18:30  Compression of gold sub-micron crystallites: Method and experiments
Marc Verdier, CNRS, France

18:30 – 18:50  Direct observation of dislocation plasticity in FeCrCoMnNi high-entropy alloys
Subin Lee, MPIE, Germany

19:00 – 20:00  Poster Preview I
Poster Chairs: Benoit Merle (University Erlangen-Nürnberg, Germany) and Verena Maier-Kiener (Montanuniversität Leoben, Austria)

20:00 – 21:30  Dinner

21:30 – 23:00  Poster Session I
Tuesday, October 1, 2019

07:30 – 08:30 Breakfast buffet

**Session IV: Hard Materials**
Chair: Johann Michler, EMPA, Switzerland

08:30 – 09:00 *(Highlight)* Dislocations in Laves phases – Phantastical beasts and how to understand them
Sandra Korte-Kerzel, RWTH Aachen University, Germany

09:00 – 09:30 *(Highlight)* Nanomechanical testing study of the elementary deformation mechanisms in the Ti$_2$AlN and Cr$_2$AlC MAX phases
Christophe Tromas, Institut Pprime - Université de Poitiers, France

09:30 – 09:50 Superelasticity of ThCr$_2$Si$_2$-structured intermetallic compounds at the micrometer scale
Seok-Woo Lee, University of Connecticut, USA

09:50 – 10:10 Small-scale mechanical response of cemented carbides: Correlation between mechanical properties and microstructure
Joan Josep Roa, Universidad Politecnica de Cataluña, Spain

10:10 – 10:30 Nanomechanical behavior of individual phases and size effect in WC-Co by means of high temperature nanoindentation and electron microscopy: A study from ambient to high temperature
Francois De Luca, National Physical Laboratory, United Kingdom

10:30 – 11:00 Coffee break

**Session V: Fracture and Fatigue at Small Scales**
Chair: Daniel Kiener, Montanuniversität Leoben, Austria

11:00 – 11:30 *(Highlight)* Fracture toughness determination of arc-PVD and HiPIMS hard coatings by micro-cantilever and pillar splitting tests
Johannes Ast, Innovation Centre of Nanotechnology and Correlative Microscopy, Germany

11:30 – 11:50 The fracture behavior of Cr$_2$AIC coatings
Bernhard Völker, RWTH Aachen University, Germany

11:50 – 12:10 Strain Evolution around corrosion pits under fatigue loading using digital image correlation
Robert Akid, University of Manchester, United Kingdom

12:10 – 12:30 Mechanical characterization of a tribolayer created by high temperature fretting wear in a ceramic/metal alloy contact
Gaylord Guillonneau, Université de Lyon, France

12:50 – 13:00 Meet up at the front lobby of the hotel for the excursion.

**Buses leave promptly at 13:00**
Tuesday, October 1, 2019 (continued)

13:00 – 18:30  Excursion – Lunch boxes on bus

Guided tour of Malaga*, ending with drinks/snacks at El Palmeral Restaurant and transfer back to hotel

*When the group arrives in Malaga, the guides will divide the group into smaller groups of 25. Some groups will start at the Museo Picasso and others at the Alcazaba. At 16:30, all groups will arrive at the El Palmeral Restaurant where they will enjoy a cocktail and a variety of canapés. The buses returning the group to the hotel will be waiting at the pick-up point (to be announced) to return the group to the conference hotel.

Session VI: High Throughput Testing
Chair: Karsten Durst, Technische Universität Darmstadt, Germany

18:45 – 19:15  (Highlight) Deformation and fracture mechanisms in nanocomposite and nanolaminate thin films revealed through combinatorial design and nanomechanical testing
Johann Michler, EMPA, Switzerland

19:15 – 19:45  (Highlight) Mechanical phase mapping of meteorites: Combining EDX and nanoindentation
Jeffrey Wheeler, ETH Zurich, Switzerland

19:45 – 20:05  Nanoindentation: A powerful tool to explore the wide chemical space of high entropy alloys
Mathilde Laurent-Brocq, Université Paris-Est (UPE), France

20:15 – 22:00  Dinner


Wednesday, October 2, 2019

07:30 – 09:00  Breakfast buffet

Session VII: In Operando/Extreme Conditions
Chairs: Mathias Göken, University Erlangen-Nurnberg, Germany
       David Armstrong, University Of Oxford, United Kingdom

09:00 – 09:30  (Highlight) Effects of temperature and irradiation damage on fracture around nanoindents
David Armstrong, University Of Oxford, United Kingdom

09:30 – 09:50  Micropillar compression study of Fe-irradiated 304L steel
Marc Legros, CNRS, France

09:50 – 10:10  Localized mechanical properties of SiC-SiC fiber composites in extreme environments – a micromechanical study
Yevhen Zayachuk, University of Oxford, United Kingdom

10:10 – 10:30  Evaluation of the environmental degradation of interphases in Ceramic Matrix Composites (CMCs) via in-situ SEM micromechanical testing
Oriol Gavalda Diaz, Imperial College London, United Kingdom

10:30 – 10:50  Elevated temperature nanoindentation and in-situ SEM mechanical testing of uranium fuels
David Frazer, Los Alamos National Laboratory, USA

10:50 – 11:20  Coffee break

11:20 – 11:50  (Highlight) Measuring nanoindentation hardness at high sustained strain-rates
Benoit Merle, University Erlangen-Nürnberg (FAU), Germany

11:50 – 12:20  (Highlight) Impact of temperature and hydrogen on the nanomechanical properties of a highly deformed high entropy alloy
Verena Maier-Kiener, Montanuniversität Leoben, Austria

12:20 – 12:40  Studying deformation mechanisms of nanocrystalline nickel by thermal activation analysis at subambient temperatures and high strain rates
Johann Jakob Schwiedrzik, EMPA, Switzerland

12:40 – 13:00  Hydrogen-microstructure interactions by novel back-side hydrogen charging during in situ nanoindentation
Jazmin Maria Duarte Correa, MPIE, Germany

13:00 – 14:30  Lunch

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

Session VIII: Novel Methodologies
Chair: George Pharr, Texas A&M University, USA

16:30 – 17:00  (Highlight) A new nanoindentation creep technique using constant contact pressure
Karsten Durst, Technische Universität Darmstadt, Germany
Wednesday, October 2, 2019 (continued)

17:00 – 17:20  **Indentation creep testing of superalloys**  
Mathias Göken, University Erlangen-Nurnberg, Germany

17:20 – 17:40  **Measurement of the creep behavior of thin ZrNi metallic glass films – a comparison between nanoindentation relaxation, nanoindentation creep and lab-on-chips experiments**  
Guillaume Kermouche, CNRS, France

17:40 – 18:00  **Direct observation of yield in films by flat punch indentation**  
John Pethica, Trinity College Dublin, Ireland

18:00 – 18:20  **Measurement of hardness and elastic modulus by depth sensing indentation: Further advances in understanding and refinements in methodology**  
Sudharshan Phani Pardhasaradhi, International Advanced Research Centre for Powder Metallurgy and New Materials, India

18:20 – 18:40  **A new approach to evaluate residual stress using instrumented indentation testing at nano scale**  
Dongil Kwon, Seoul National University, South Korea

19:00 – 20:00  **Poster Preview II**  
Poster Chairs: Benoit Merle (University Erlangen-Nürnberg, Germany) and Verena Maier-Kiener (Montanuniversität Leoben, Austria)

20:00 – 21:30  Dinner

21:30 – 23:00  **Poster Session II**
**Thursday, October 3, 2019**

07:30 – 09:00  Breakfast

**Session IX: Biological Materials**  
Chair: Sandra Korte-Kerzel, RWTH Aachen University, Germany

09:00 – 09:40  **Keynote**  
*Passive and active mechanics of Banksia seed pods*  
Michaela Eder, Max-Planck-Institute of Colloids and Interfaces, Germany

09:40 – 10:10  **(Highlight) Small scale fracture of bone to understand the effect of fibrillar organization on toughness**  
Finn Giuliani, Imperial College London, United Kingdom

10:10 – 10:30  **Microtensile properties and failure mechanisms of bone on the lamellar level**  
Daniele Casari, EMPA Thun, Switzerland

10:30 – 10:50  **Correlation of ultra-fine real-geometry FEM models of diatoms derived from nano-X-ray tomography with in-situ nanomechanical testing**  
André Clausner, Fraunhofer IKTS, Germany

10:50 – 11:20  Coffee break

**Session X: Novel Instrumentation**  
Chair: Jeffrey Wheeler, ETH Zurich, Switzerland

11:20 – 11:40  **High strain rate plasticity in microscale glass**  
Rajaparaksh Ramachandramoorthy, EMPA, Switzerland

11:40 – 12:00  **High-resolution strain-mapping during in-situ nanoindentation of CVD thin films**  
Gudrun Lotze, MAX IV Laboratory, Sweden

12:00 – 12:20  **Correlative in situ total and elastic strain mapping on micromechanical test pieces by DIC and HR-EBSD**  
Thomas E.J. Edwards, EMPA, Switzerland

12:20 – 12:40  **In-situ microcompression high cycle fatigue tests: Up to 1 kHz frequencies and 10 million oscillation cycles**  
Gaurav Mohanty, Tampere University, Finland

12:40 – 13:00  **Surface acoustic wave spectroscopy versus nanoindentation: Potentials and limits for coating characterization**  
Martin Zawischa, Fraunhofer Institute for Material and Beam Technology IWS, Germany

13:00 – 14:30  Lunch

14:30 – 16:30  Networking / Time for *ad hoc* discussions
Thursday, October 3, 2019 (continued)

**Session XI: Novel Applications**
Chairs: Jon Molina-Aldareguia, IMDEA Materials Institute, Spain
      Ralph Spolenak, ETH Zurich, Switzerland

16:30 – 17:00  *(Highlight)* Multi-metal electrohydrodynamic redox 3d printing at the submicron scale: Microstructure – geometrical gradients – chemical gradients and the resulting mechanical properties
Ralph Spolenak, ETH Zurich, Switzerland

17:00 – 17:20  Understanding fracture in laser additive manufactured bulk metallic glass through small-scale mechanical measurement
James P. Best, CSIRO, Australia

17:20 – 17:40  Micromechanical testing at high strain rates and varying temperatures of 3D-printed polymer structures
Nadia Rohbeck, EMPA, Switzerland

17:40 – 18:00  Small scale mechanical testing of nanoporous tungsten tailored by reverse phase dissolution
Mingyue Zhao, Montanuniversität Leoben, Austria

18:00 – 18:20  Refreshments

18:20 – 18:50  *(Highlight)* Mechanical and electrical failure of transparent nanowire Electrodes
Erdmann Spiecker, Institute of Micro- and Nanostructure Research & Center for Nanoanalysis and Electron Microscopy (CENEM), Germany

18:50 – 19:10  Nanomechanical characterization of high pressure torsion processed HfNbTaTiZr high entropy alloy
Petr Haušild, Czech Technical University in Prague, Czech Republic

19:10 – 19:30  Electroplastic deformation studies of an Al-Cu eutectic alloy using nanoindentation
Doreen Andre, Institute of Physical Metallurgy and Metal Physics, Germany

19:30 – 19:50  Characterization of particle distribution in a black carbon-filled elastomer via nanoindentation
Paul Baral, LTDS, France

20:30 – 22:30  Conference Dinner
Friday, October 4, 2019

07:30 – 09:00    Breakfast and Departures
Posters

Nanomechanical Testing in Materials Research and Development VII

September 29 – October 4, 2019

Melia Costa Del Sol
Torremolinos/Malaga, Spain

Engineering Conferences International
Poster Presentations

Monday, September 30, 2019

M1 Local fatigue characterisation of ARB processed copper sheets by dynamic micropillar compression
Sebastian Krauß, Friedrich-Alexander-University Erlangen-Nürnberg (FAU), Germany

M2 Effect of lamellar orientation and width on the strength and operating deformation mechanisms of fully lamellar TiAl alloys determined by micropillar compression
Cristina Gutiérrez-García, Imdea Materials, Spain

M3 Nanomechanical behavior of optically optimized AlN/SiO2 and AlN/Ag nanomultilayers
Chelsea Appleget, University of Southern California, USA

M4 Investigating thermally activated deformation mechanisms by high temperature nanoindentation – A Study on W-Re alloys
Johann Kappacher, Montanuniversitaet Leoben, Austria

M5 Mechanical characterisation of the protective Al2O3 scale in Cr2AIc MAX phases
James S.K-L. Gibson, RWTH Aachen University, Germany

M6 Nanomechanical testing for crystal plasticity constitutive framework identification at high strain rates
Simon Breumier, Ecole des Mines de Saint-Etienne, France

M7 Measurement of enhanced ductility in nanolayered ceramics via micro-compression testing and digital image correlation
Julia T. Pürstl, University of Cambridge, United Kingdom

M8 In-situ deformation monitoring of thin electrochemically deposited copper lines during thermo-mechanical pulsing
Manuel Kleinbichler, Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Austria

M9 Tension-compression strength asymmetry of bone extracellular matrix
Daniele Casari, EMPA Thun, Switzerland

M10 3D-Laue micro diffraction to characterize fatigue damage in bi-crystalline micro cantilevers
Jean-Baptiste Molin, Max-Planck-Institut für Eisenforschung GmbH, Germany

M11 Strength and hardness enhancement and slip behaviour of high-entropy carbide grains during micro-compression and nanoindentation
Tamás Csanádi, Slovak Academy of Sciences, Slovakia

M12 In situ ultrafine force measurement with nanowire based cantilevers in SEM
Erdmann Spiecker, Friedrich-Alexander University Erlangen-Nuremberg, Germany

M13 Nanoindentation testing conditions - Controlling temperature and humidity?
Wolfgang Stein, SURFACE, Germany

M14 Effect of impurity doping on mechanical performance and microstructure in ultra-fine grained tungsten processed by HPT
Michael Wurmshuber, Montanuniversitaet Leoben, Austria
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<td>Probing the limits of strength in diamonds: From single- and nano-crystalline to diamond-like-carbon (DLC)</td>
<td>Ming Chen, Laboratory for Nanometallurgy, ETH Zurich, Switzerland</td>
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<td>M16</td>
<td>In-situ TEM straining experiments in Cantor's alloy at room and LN2 temperatures</td>
<td>Daniela Oliveros, CEMES-CNRS, France</td>
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<td>M17</td>
<td>Small scale fracture of multi metal carbide coatings</td>
<td>Hariprasad Gopalan, MPIE, Düsseldorf, Germany</td>
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<td>M18</td>
<td>Micro-mechanical testing of ceramic matrix composites; Extraction of critical interface properties and impact on composite optimization</td>
<td>Joey Kabel, University of California, Berkeley, USA</td>
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<td>M19</td>
<td>Deep-learning assisted damage observations on the microscale – A new viewpoint on microstructural deformation, fracture and decohesion processes</td>
<td>Carl F. Kusche, RWTH Aachen, Germany</td>
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<td>M20</td>
<td>A fully integrated in-situ solution for materials testing in SEM</td>
<td>Fang Zhou, Carl Zeiss Microscopy GmbH, Germany</td>
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<td>M21</td>
<td>In-situ bending tests of penta-twinned Ag NWs and their structure analyses</td>
<td>Hu Zhao, University of Manchester, United Kingdom</td>
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<td>M22</td>
<td>Machine learning based characterization of nanoindentation induced acoustic events</td>
<td>Antanas Daugela, Nanometronix LLC, USA</td>
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<td>M23</td>
<td>Micromechanical characterization of single-crystalline niobium at low temperature</td>
<td>Gyuho Song, University of Connecticut, USA</td>
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<td>M24</td>
<td>Subcritical crack growth in freestanding silicon nitride and silicon dioxide thin films using residual stress-induced crack on-chip testing technique</td>
<td>Sahar Jaddi, Université catholique de Louvain, Belgium</td>
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<td>M25</td>
<td>Tensile behavior of amorphous alumina thin films deposited by plasma enhanced atomic layer deposition (PEALD)</td>
<td>Jeong-Hyun Woo, UNIST, South Korea</td>
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<td>M26</td>
<td>Characterization of mechanically alloyed FeAlSi intermetallic powders</td>
<td>Jaroslav Čech, Czech Technical University in Prague, Czech Republic</td>
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<td>M27</td>
<td>Improved burst pressure of LPCVD Si3N4 membranes by nanometer thick compressive adlayers</td>
<td>Airat Shafikov, University of Twente, Netherlands</td>
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<td>M28</td>
<td>Enhanced strength and ductility of multilayers made by Electrolytic Additive Manufacturing</td>
<td>Naresh Radaliyagoda, Coventry University, United Kingdom</td>
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<td>M29</td>
<td>Nanoindentation properties of shock-compressed single crystal Magnesium</td>
<td>Tyler J. Flanagan, University of Connecticut, USA</td>
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<td>M30</td>
<td>Nanomechanical testing of freestanding polymer thin films</td>
<td>Nathan R. Velez, University of California, Berkeley, USA</td>
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M31 Increase in stretchability of thermally grown silicon dioxide film
Na-Hyang Kim, UNIST, South Korea

M32 Micro-mechanical testing by fibre pushout of the BN interlayer in SiCf/SiC composites for aero-propulsion
Robin De Meyere, University of Oxford, United Kingdom

M33 Advanced adhesion evaluation for brittle coating materials using the scratch test method
Martin Zawischa, Fraunhofer Institute for Material and Beam Technology IWS, Germany

M34 Micromechanisms of compressive failure of fibre reinforced polymers
Finn Giuliani, Imperial College London, United Kingdom

M35 Significance of the interconnectivity of intermetallic Laves phases on the mechanical behavior of Mg-Al-Ca alloys
Muhammad Zubair, Institut für Metallkunde und Metallphysik (IMM), RWTH Aachen, Germany

M36 Evaluation of tensile properties using instrumented indentation technique for small scale testing
Jongho Won, Seoul National University, South Korea

M37 Measuring the fracture energy of WC grain boundaries
Max Emmanuel, Imperial College London, United Kingdom

M38 Wear mechanism of olivine at the small-scale: An in situ TEM study
Ude Hangen, Bruker, Germany

M39 On the use of nano-indentation for tensile property correlation of ferrous metals
Ana Ruiz Moreno, Joint Research Centre. European Commission, Netherlands

M40 Addressing the impact of fracture during indentation of molecular crystals
Alexandra C. Burch, Purdue University, USA

M41 Gallium-free micromechanical sample preparation from ECAPed alluminium
Hana Tesařová, Tescan Orsay Holding, Czech Republic
**Wednesday, October 2, 2019**

W1 **The influence of pre-deformation on the fracture toughness of chromium, studied by microcantilever bending**
Stefan Gabel, Friedrich-Alexander University Erlangen-Nuremberg, Germany

W2 **Deformation and failure of microscale mechanical metamaterials**
Chantal Miriam Kurpiers, Karlsruhe Institute of Technology, Germany

W3 **In situ fragmentation analysis of ALD-PVD multilayers on flexible substrates**
Barbara Putz, EMPA Thun, Switzerland

W4 **Exploring the mechanical character of molybdenum grain boundaries via nanoindentation and three-point-bending**
Severin Jakob, Montanuniversitaet Leoben, Austria

W5 **Investigation of a high angle grain boundary in Fe2.4wt.%Si BCC micropillars**
Martin Heller, Institute of Metallurgy and Metal Physics RWTH Aachen, Germany

W6 **Multi-mechanical in situ testing for automotive industry DLC/interlayer/M2-Steel coatings**
Sergio Sao Joao, Mines Saint-Etienne, LGF UMR5307 CNRS, France

W7 **Role of film microstructure on interface stability: in-situ and ex-situ investigations**
Alice Lassnig, Erich Schmid Institute of Materials Science, Austria

W8 **High frequency acoustic emission monitoring in nano-impact of bulk ceramics**
Ben D. Beake, Micro Materials Ltd, United Kingdom

W9 **Microscale fracture of chromia scales**
Anand H. S. Iyer, Chalmers University of Technology, Sweden

W10 **Ni-P: Microstructure and micro-compression**
Chaowei Du, Max-Planck-Institut für Eisenforschung GmbH, Germany

W11 **Influence of transition metals on the solid solution strengthening and creep behavior of Nickel studied by ultra-high temperature nanoindentation testing**
Christian Minnert, Technische Universität Darmstadt, Germany

W12 **Microstructure and high temperature mechanical properties of hard TaSiN coatings**
Miguel A. Monclus, IMDEA Materials Institute, Spain

W13 **Influence of alloying elements on the mechanical properties, especially fracture toughness, of the WB2-z base system**
Rainer Hahn, CDL-SEC, Technische Universität Wien, Austria

W14 **Stress-strain curves and derived mechanical parameters of P91 steel from spherical nanoindentation at a range of temperatures**
Ana Ruiz Moreno, Joint Research Centre. European Commission, Netherlands

W15 **Grain boundary-based plasticity mechanisms in nanostructured metals**
Romain Gautier, CEMES-CNRS, France

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Wieland Heyn, Fraunhofer IKTS, Germany
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