



LOCAL MECHANICAL PROPERTIES



LMP 2015

12th International Conference

Program konference / The conference programme

November 04. – 06. 2015, Liberec, Czech Republic

organized by



TECHNICAL UNIVERSITY OF LIBEREC

FACULTY OF MECHANICAL ENGINEERING DEPARTMENT OF
MATERIAL SCIENCE

together with



TECHNICAL UNIVERSITY OF KOSICE

FACULTY OF METALLURGY



**NEW TECHNOLOGIES RESEARCH CENTER UNIVERSITY
OF WEST BOHEMIA**

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Ing. Pavol Zubko, PhD., Technical University of Kosice, SK

Venue

TECHNICAL UNIVERSITY OF LIBEREC

Studentská 1402/2

461 17 Liberec 1

Czech Republic

Technical University of Liberec was founded in 1953 and educates more than 8,000 students. The dominant feature of Liberec is the 1012 m high Ještěd which is listed in the UNESCO.

Plenární sekce / Plenary session

Středa / Wednesday 04.11.2015

10:30 – 12:30 Registrace účastníků, vyvěšování posterů / **Registration of the participants, hanging posters**

11:00 – 12:00 **OBĚD / LUNCH**

12:30 – 12:45 Zahájení konference/**Opening of the conference**

Sekce: Analýza vlastností materiálů

Session: Analysis of the Materials Properties

12:45 – 13:15 *Numerical modeling of residual stresses in materials engineering*
Úvodní přednáška – zvaný přednášející / **Invited Speaker**
Jacek Sawicki, Lodz University of Technology, Institute of Materials Science and Engineering, PL

13:15 – 13:30 *Nanoindentation at elevated temperatures*
Radim Čtvrtlík, Institute of Physics of the Academy of Sciences of the CZ, Joint Laboratory of Optics of Palacký University and Institute of Physics AS CR

13:30 – 13:45 *The possibilities of evaluating the yield strength in the heat affected zones of a weld through indentation*
Petr Hanus, Jan Perner Transport Faculty, University of Pardubice

13:45 – 14:00 *Analysis of local plastic deformation of machined surface*
Maroš Martinkovič, Slovak University of Technology in Bratislava Faculty of Materials Science and Technology

14:00 – 14:15 *Rolling-contact hardening evaluated by indentation*
Eva Schmidová, University of Pardubice

14:15 – 14:30 *The potential of AE sensing in the indentation fracture toughness measurement*
Eva Smazalová, University of West Bohemia, Plzeň

14:30 – 14:45 *Effect of Real Indenter Shape on the Results of Spherical Nanoindentation*
Jaroslav Čech, Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering

14:45 – 15:15 **COFFEE BREAK**

15:15 – 15:45 Komerční přednášky firmy **RMI** / **Commercial lectures**

15:45 – 16:00 *Young's modulus of alumina particles reinforced metal-matrix composite*
Petr Haušild, Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering

16:00 – 16:15 *Evaluation of local deformation values of stampings in comparison with stampings simulation software*
Petr Jaroslav, CTU in Prague, Faculty of Mechanical Engineering, Department of Materials Engineering

16:15 – 16:30 *The attempt of new approach to evaluate surface integrity*
Jiří Malec, PCS spol. s.r.o, Prague

16:30 – 16:45 *Serrated flow of different metallic glasses at nanoindentation*
Mária Huráková, Institute of Experimental Physics, Slovak Academy of Sciences, Košice

16:45 – 17:00	<i>Climatic ageing impact on basis mechanical properties of viscoelastic sealants</i> Jiří Minster , ITAM ASCR, Prague
17:00 – 17:15	<i>Nanoindentation induced deformation anisotropy of advanced ceramics</i> Tamás Csanádi , Institute of Materials research, Slovak Academy of Sciences, Kosice
17:30 – 18:45	VĚČEŘE / DINNER

Čtvrtek / Thursday, 05.11.2015

Sekce: Tenké vrstvy

Session: Thin layers

08:30 – 09:00	<i>Advanced nanocomposite coatings: Present status and trends of next development</i> Zvaný přednášející / Invited speaker Jindřich Musil , Faculty of Applied Science, University of West Bohemia
09:00 – 09:15	<i>The influence of high temperature exposition on the wear of selected HVOF sprayed coatings</i> Šárka Houdková , University of West Bohemia, Plzeň
09:15 – 09:30	<i>Influence of deposition parameters on the properties of nanocomposite coatings prepared by cathodic arc evaporation</i> Miroslav Beger , LISS, a.s., Coating center Platit
09:30 – 09:45	<i>Mechanical properties of Al-Si galvanic coating and its influence on resistance weldability of 22mnb5 steel</i> Marie Kolaříková , CTU in Prague, Faculty of Mechanical Engineering, Department of Manufacturing Technology (<i>přednášet bude Jaroslav Petr</i>)
09:45 – 10:00	<i>Characterization of silicon nitride thin films on glass</i> Lukáš Šimůrka , ŞİŞECAM Science and Technology Center, Turkey
10:00 – 10:15	<i>3D HSMGTM Graphene based Structures for Reversible Sources of Hydrogen Storage</i> Lukasz Kaczmarek , Institute of Materials Science and Engineering, Lodz University of Technology (<i>přednášet bude Tomasz Warga</i>)
10:15 – 10:30	<i>Application of Laser-Ultrasound for Characterization of Plasma-Sprayed Ceramics</i> Martin Koller , Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague
10:30 – 11:00	COFFEE BREAK
11:00 – 11:15	Komerční přednáška firmy ULBRICH / Commercial lecture
11:15 – 11:30	Komerční přednáška firmy ZEISS / Commercial lecture
11:30 – 11:45	<i>Microstructure and mechanical properties of the 2024 aluminium alloy subjected to high-pressure torsion process</i> Marek Klich , Institute of Materials Science and Engineering, Lodz University of Technology (<i>přednášet bude Lukasz Kaczmarek</i>)
11:45 – 12:00	<i>Tribological properties of magnetron sputtered silicon carbonitride</i>

	<i>coatings</i> Jan Tomáščík , Regional Centre of Advanced Technologies and Materials, Joint Laboratory of Optics of Palacký University and Institute of Physics AS CR, Faculty of Science, Palacký University, Olomouc
12:00 – 12:15	<i>Influence of parameters of the coating process on the mechanical and tribological properties of the thin films</i> Totka Bakalova , Institute for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec (<i>přednášet bude Nikolay Petkov</i>)
12:15 – 12:30	<i>Dependence of structure and mechanical properties of Si-DLC coatings on methane content applied in plasma modification of Al-Zn and Al-Cu T6I6 alloys</i> Karol Kyziol , AGH University of Science and Technology, Faculty of Materials Science and Ceramics, Kraków
12:30 – 12:45	<i>Properties of thin oxide films prepared by plasma enhanced aerosol-gel method</i> Sebastian Mischak , Institute of Materials Science and Engineering, Lodz University of Technology
12:45 – 13:00	<i>Mechanical properties and adhesion of new multi-layer absorber coatings for CSP systems</i> Jiří Nohava , Anton Paar, Peseux, Switzerland
13:00 – 14:00	OBĚD / LUNCH
13:30 – 14:30	Registrace účastníků / Registration of the participants
<i>Sekce: Kompozitní materiály</i> <i>Session: Composite Materials</i>	
14:00 – 14:15	<i>Mechanical Properties of Metal-Plastic Composite with Internal Fractal Shape Reinforcing Structure</i> Jiří Šafka , Institute for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec
14:15 – 14:30	<i>Parametric study of concentrated contact of rigid indenter with elastic-plastic material</i> Dušan Zita , IDIADA CZ a.s
14:30 – 14:45	<i>Effect of Recycled Particle Size to Micro-hardness Properties of Styrene Acrylonitrile</i> Vojtěch Šenkeřík , Tomas Bata University in Zlin
14:45 – 15:00	<i>Adhesion additive influence on polyamide nano polymer composites properties</i> Jiří Habr , Technical University of Liberec, Department of Engineering Technology
15:00 – 15:15	<i>Mechanical properties of the mineral cast material at the macro and micro level</i> Norbert Kepczak , Lodz University of Technology, Institute of Machine Tools and Production Engineering
15:15 – 15:30	<i>Analysis of possibilities of testing tensile properties of carbon prepreg composite rods</i> Martina Syrovátková , Institute for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec

15:30 – 16:00	COFFEE BREAK
16:00 – 16:15	<i>Nanoindentation assessed fracture toughness of cement paste</i> Jiří Němčec , Czech Technical University in Prague, Faculty of Civil Engineering
16:15 – 16:30	Komerční přednáška firmy PCS-STRESSTECH / Commercial lecture
16:30 – 16:45	<i>Deep drawing sheet crack analysis</i> Pavel Kejzlar , Institute for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec
16:45 – 17:00	<i>The influence of microstructure, heat-treatment and type of crystal lattice of iron aluminides on coefficient of thermal expansion</i> Martin Švec , Department of Material Science, Technical University of Liberec
17:00 – 17:15	<i>X-ray Diffraction Analysis of Steel with Oxidised Surface Layer</i> Lukáš Zuzánek , Institute for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec
17:15 – 17:30	<i>Study of the Local Mechanical Properties of Magnetron Sputtered Nanolaminate MoBC Coatings</i> Vilma Buršíková , Department of Physical Electronics, Faculty of Science, Masaryk University, Brno
19:30 – 22:00	GALA VEČER / GALA DINNER

Pátek / Friday, 06.11.2015

Sekce: Speciální techniky

Session: Special Techniques

09:00 – 09:15	Komerční přednáška firmy KEYENCE / Commercial lecture
09:15 – 09:30	<i>Measurement of Veiling Glare in Car Windscreen</i> Michal Vik , Technical University of Liberec, LCAM
09:30 – 09:45	<i>Automated assessment of micromechanical properties of metal foams on the cell-wall level</i> Petr Koudelka , Czech Technical University in Prague, Faculty of Transportation Sciences
09:45 – 10:00	<i>In situ Raman and indentation mapping of rat tooth</i> Jaroslav Lukeš , Czech Technical University in Prague, Faculty of Mechanical Engineering, Department of mechanic, biomechanics and mechatronics
10:00 – 10:15	<i>An indentation contact detection problem with hydrophilic membrane of living cell</i> Josef Šepitka , Czech Technical University in Prague, Faculty of Mechanical Engineering, Department of mechanic, biomechanics and mechatronics
10:15 – 10:45	COFFEE BREAK
10:45 – 11:45	<i>Vyhlášení posterové sekce, ukončení konference / Announcement of the results of poster session, closing ceremony</i>

Posterová sekce / Poster session

1. *Wear behaviour of stoichiometric and nonstoichiometric zirconia*
Ján Balko, Institute of Materials Research, Slovak Academy of Science, Kosice

 2. *Biocompatibility of surfaces of TiCN thin films*
Totka Bakalova, Institute for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec

 3. *Mechanical Properties of Irradiated Materials under Thermal Stress*
Martin Bednárík, Tomas Bata University in Zlin

 4. *Influence of hydrogen on local mechanical properties of zirconium alloys*
Olga Bláhová, University of West Bohemia

 5. *Effect of Different Strain History of Steel Sheets on the Mechanical Characteristics of Individual Microstructural Components by Depth Sensing Indentation*
Peter Burik, Faculty of Mechanical Engineering, Department of Material Science, Technical University of Liberec

 6. *Mo-B-C and Ta-B-C nanostructured layers with promising fracture toughness*
Jiří Buršík, Institute of Physics of Materials, Czech Academy of Sciences, Brno

 7. *Local mechanical properties of SiC-TiNbC composite and its constituents*
Martin Fides, Slovak Academy of Sciences, Institute of Materials Research, Kosice

 8. *Impact of innovative cooling system on mechanical properties of moulded parts*
Jiří Habr, Technical university of Liberec, Department of engineering technology

 9. *Failure of Zr-Ni-Al metallic glasses at ultralow temperatures*
Mária Huráková, Institute of Experimental Physics, Slovak Academy of Sciences, Košice

 10. *Structural characteristics of nano/micro fibres made from Poly (L-lactide)*
Eva Macajová, Faculty of Mechanical Engineering, Department of Material Science, Technical University of Liberec

 11. *Tribological properties and the abrasion resistance thin films of chromium nitride*
Václav Málek, Faculty of Mechanical Engineering, Department of Material Science, Technical University of Liberec

 12. *Micro-hardness and morphology of irradiated polyamide*
David Mañas, Tomas Bata University in Zlin

 13. *Determination of individual phase properties in a composite from indentation data*
Jiří Matějček, Institute of Plasma Physics, Prague

 14. *Micromechanical characteristic of hardly deformable magnesium alloys*
Jiří Němeček, Czech Technical University in Prague, Faculty of Civil Engineering

 15. *The Behaviour of Cross-Linking Filled PP to Micro-Indentation Test*
Martin Ovsík, Tomas Bata University in Zlin

 16. *The Effect of Time on the Micro-creep Properties of Radiation Cross-linked Materials*
Martin Řezníček, Tomas Bata University in Zlin

 17. *Indentation fracture toughness of al_2o_3+gpls and si_3n_4+gpls systems*
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Richard Sedlák, Institute of Materials Research, Slovak Academy of Sciences

18. *Micromechanical Properties of Rubber Samples Produced by Non-standards Methods*

Adam Škrobák, Tomas Bata University in Zlin

19. *Total appearance measurements of special-effect finishes of surfaces after real-life tests on composite parts*

Martina Syrovátková, Institute for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec

20. *Polarimetric sensing technique for textile material*

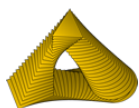
Michal Vik, Technical University of Liberec, LCAM

21. *Measuring techniques for retroreflectivity levels of small signs*

Michal Vik, Technical University of Liberec, LCAM

22. *The impact of the deposition parameters on the mechanical properties of thin carbon layers*

Lukáš Voleský, Institute for Nanomaterials, Advanced Technologies and Innovation, Technical University of Liberec



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