

**Kaunas University of Technology
Association of Baltic Materials Societies
Lithuanian Materials Research Society
Research Council of Lithuania**

26th International Baltic Conference

MATERIALS ENGINEERING 2017

October 26-27, 2017

**Kaunas
Lithuania**

PROGRAMME

Local Organizing Committee

Chairperson – Assoc. Prof. R. Bendikienė
Coordinator – Assoc. Prof. A. Čiuplys
Members: Assoc. Prof. E. Fataraitė-Urbonienė
Assoc. Prof. K. Juzėnas
Assoc. Prof. R. Kandrotaitė-Janutienė
Assoc. Prof. L. Kavaliauskienė
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International Scientific Committee

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Prof. J. Kübarsepp (Estonia)
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Assoc. Prof. J. Roučka (Czech Republic)
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Prof. R. Veinthal (Estonia)
Dr. A. Vilkauskas (Lithuania)

Schedule of the Conference

Europa Royale Kaunas Hotel, *Miško Street 11, Kaunas*

		Hall 2-1	Hall 2-2	Lobby
THURSDAY, October 26	8.00-9:00	Registration		
	9:00-10:30	Conference Opening PLENARY SESSION		
	10:30-11:00	Coffee Break		
	11:00-12:30	ENGINEERING MATERIALS AND APPLICATIONS I Session	SURFACE ENGINEERING AND TRIBOLOGY II Session	
	12:30-13:30	Lunch		
	13:30-15:00	ENGINEERING MATERIALS AND APPLICATIONS III Session	ADVANCED TECHNOLOGIES IN MATERIALS SCIENCE IV Session	
	15:00-15:30	Coffee Break		
	15:30-16:00			POSTER SESSION A
	19:00	Conference Dinner		
FRIDAY, October 27	9:00-10:30	ENGINEERING MATERIALS AND APPLICATIONS V Session	SURFACE ENGINEERING AND TRIBOLOGY VI Session	
	10:30-11:00	Coffee Break		
	11:00-11:30			POSTER SESSION B
	11:30-13:00	ENGINEERING MATERIALS AND APPLICATIONS VII Session	ADVANCED TECHNOLOGIES IN MATERIALS SCIENCE VIII Session	
	13:00-14:00	Lunch		
	14:00	Conference Closing		

ORAL PRESENTATIONS

<p>Plenary Session, Hall 2-1 CONFERENCE OPENING Thursday, October 26, 9:00 – 10:30</p>
<p>Conference Opening Chairperson of the conference “Materials Engineering 2017” Assoc. Prof. Regita Bendikienė</p>
<p>Plenary lecture I Kaunas University of Technology, Faculty of Mechanical Engineering and Design, Vice Dean for Research Sen. Res. Dr. Laurencas Raslavičius Faculty of Mechanical Engineering and Design: Research Activities and Perspectives</p>
<p>Plenary lecture II Kaunas University of Technology, Institute of Materials Science, Vice Director Assoc. Prof. Eglė Fataraitė-Urbonienė Scientific and Educational Activities in Institute of Materials Science</p>
<p>Plenary lecture III Kaunas University of Technology, Faculty of Mechanical Engineering and Design, Head of the Department of Production Engineering Assoc. Prof. Kazimieras Juzėnas University and Industry</p>

I Session, Hall 2-1 ENGINEERING MATERIALS AND APPLICATIONS Chairperson – Assoc. Prof. Kazimieras Juzėnas Thursday, October 26, 11:00 – 12:30
Synthesis of Amorphous Calcium Phosphate as a Starting Material for α-Tricalcium Phosphate Zilgma Irbe , Armands Buss, Dagnija Loca, Lasma Malniece Riga Technical University, LATVIA
The Effect of the Carbon Stabilising Elements on the WC Cemented Carbides with Chromium Steel Binder Marek Tarraste , Jakob Kūbarsepp, Kristjan Juhani, Arvo Mere, Mārt Kolnes, Mart Viljus Tallinn University of Technology, ESTONIA
Matrix Bondable Antistatic Additives for Fiber Reinforced Thermosets Gedan-Smolka Michaela , Schubert Katrin, Marks Hagen Leibniz-Institut für Polymerforschung Dresden, GERMANY
Overall Heat Transfer Coefficient of Functionally Graded Hollow Cylinder Ali Ozturk Necmettin Erbakan University, TURKEY

II Session, Hall 2-2 SURFACE ENGINEERING AND TRIBOLOGY Chairperson – Dr. Andrei Surzhenkov Thursday, October 26, 11:00 – 12:30
Evaluation of Residual Stresses in PVD Coatings by means of Strip Substrate Length Variation and Curvature Method of Plate Substrate Harri Lille, Alexander Ryabchikov , Jakub Kōo, Eron Adoberg, Liisa Kurisoo, Priidu Peetsalu, Liina Lind Estonian University of Life Sciences, ESTONIA
Prediction of Abrasive Erosion Impact Wear of Composite Hardfacings Priit Kulu , Andrei Surzhenkov, Riho Tarbe, Fransisco Casesnoves Tallinn University of Technology, ESTONIA
Development of Impact Energy Distribution of Various Abrasives During Continuous Impact/Abrasion Testing Lukas Widder , Markus Varga, Karl Adam, Andreas Kuttner AC2T research GmbH, AUSTRIA
Morphology and Tribological Behaviour of Amorphous and Crystalline Aluminum Oxide Layers Florian Ausserer , Igor Velkavrh, Joël Voyer, Stefan Klien, Alexander Diem, Jürgen Schmidgrigat, Richard Tessadri V-Research GmbH, AUSTRIA

<p>III Session, Hall 2-1</p> <p>ENGINEERING MATERIALS AND APPLICATIONS</p> <p>Chairperson – Dr. Sc. Ing. Remo Merijs Meri</p> <p>Thursday, October 26, 13:30 – 15:00</p>
<p>Studying Temperature Distribution that Occurred during Cold and Hot Rolling of AA5454-O Alloy</p> <p>Sinan Sezek, Bunyamin Aksakal Ataturk University, TURKEY</p>
<p>Local and Systemic Morphofunctional Response of Osteoporotic Rabbits Bone Defect Following Implantation of Strontium Doped Biphasic Ceramic Granules</p> <p>Janis Zarins, Mara Pilmane, Elga Sidhoma, Ilze Salma, Dagnija Loca, Janis Locs Riga Stradins university, LATVIA</p>
<p>The Influence of Microfibrillated Cellulose on the Polymerization Kinetics of Sodium Metasilicate: a 29Si NMR Study</p> <p>Luca Bertolla, Ivo Dlouhý, Radovan Fiala, Jaromir Tousek Institute of Physics of Materials of the Czech Republic, CZECH REPUBLIC</p>
<p>Investigation of Plasma Exposure Time on Content of Bio-Ceramic Additives Incorporated Into 3D Knits</p> <p>Audronė Sankauskaitė, Aušra Abraitienė, Paulė Bekampienė, Julija Baltušnikaitė-Guzaitienė Center for Physical Sciences and Technology, LITHUANIA</p>

<p>IV Session, Hall 2-2</p> <p>ADVANCED TECHNOLOGIES IN MATERIALS SCIENCE</p> <p>Chairperson – Dr. Samy Yousef</p> <p>Thursday, October 26, 13:30 – 15:00</p>
<p>Characteristics and Sinterability of Ceria Stabilized Zirconia Nanoparticles Prepared by Chemical Methods</p> <p>Jānis Grabis, Dzidra Jankoviča, Ints Šteins, Māra Lubāne, Inta Sīpola Riga Technical University, LATVIA</p>
<p>Barium Titanate Nanometric Ceramics Fired by Spark Plasma Sintering with and without Annealing</p> <p>Pavel Ctibor, Jakub Cinert, Josef Sedláček Czech Technical University in Prague, CZECH REPUBLIC</p>
<p>Mechanical Properties of MWCNT Reinforced Nylon-6,6 Nanofiber Mats by Electrospun Method</p> <p>Mürsel Ekrem, Firat Durmuş Necmettin Erbakan University, TURKEY</p>
<p>Variational Approximate and Mixed-Finite Element Solution for Static Analysis of Laminated Composite Plates</p> <p>Emrah Madenci, Atilla Özütok Necmettin Erbakan University, TURKEY</p>

V Session, Hall 2-1 ENGINEERING MATERIALS AND APPLICATIONS Chairperson – Dr. Habil. Jānis Grabis Friday, October 27, 9:00 – 10:30
Sliding Wear of Composite Stainless Steel Hardfacing under Room and Elevated Temperature Andrei Surzhenkov , Janis Baroninš, Mart Viljus, Rainer Traksmaa Tallinn University of Technology, ESTONIA
Comparitive Study of a Neat Epoxy and Unidirectional Carbon/Epoxy Composites Under Tensile and Impact Loading Kakur Naresh , Krishnapillai Shankar, Ramachandran Velmurugan Indian Institute of Technology Madras INDIA
Effect of Fiber Orientation on Carbon/Epoxy and Glass/Epoxy composites subjected to ILSS and Bending Kakur Naresh , Krishnapillai Shankar, Ramachandran Velmurugan Indian Institute of Technology Madras INDIA
Technological Peculiarities of Chromium Carbide-Based Iron Alloy Bonded Cermet Märt Kolnes , Jakob Kübarsepp, Mart Viljus, Rainer Traksmaa, Marek Tarraste Tallinn University of Technology, ESTONIA

VI Session, Hall 2-2 SURFACE ENGINEERING AND TRIBOLOGY Chairperson – Dip.-Ing. Lukas Widder Friday, October 27, 9:00 – 10:30
Correlation between Wear Rate in Sliding Electrical Contact and Hardness of Copper Alloy Lembit Kommel , Janis Baronins Tallinn University of Technology, ESTONIA
Influence of APS Process Parameters on Ceramic Coating in TBC Tadeusz Kubaszek , Marek Góral Rzeszow University of Technology, POLAND
The Influence of Process Parameters on Structure of Ceramic Coatings Deposited by Ps-PVD Method Marek Góral , Tadeusz Kubaszek Rzeszow University of Technology, POLAND
Wear Rate of Nanocrystalline Diamond Coating under High Temperature Sliding Conditions Maxim Yashin , Andrei Bogatov, Vitali Podgursky Tallinn University of Technology, ESTONIA

<p>VII Session, Hall 2-1</p> <p>ENGINEERING MATERIALS AND APPLICATIONS</p> <p>Chairperson – Assoc. Prof. Rasa Kandrotaitė-Janutienė</p> <p>Friday, October 27, 11:30 – 13:00</p>
<p>Acrylonitrile-Butadiene-Styrene Based Composites with Multiwalled Carbon Nanotubes: Manufacturing, Characterization, Applications</p> <p>Remo Merijs Meri, Janis Zicans, Tatjana Ivanova, Guna Vugule, Ingars Reinholds, Zhenija Roja</p> <p>Riga Technical University, LATVIA</p>
<p>The effect of Firing Temperature on the Composition and Microstructure of a Geocement-Based Binder of Sodium-Water Glass</p> <p>Konstantinos Sotiriadis, Sergii Guzii, Ivana Kumpová, Petra Mácová, Alberto Viani</p> <p>Institute of Theoretical and Applied Mechanics AS CR, CZECH REPUBLIC</p>
<p>Optimization of PTAW and SAW parameters for production of abrasive wear resistant composite hardfacings</p> <p>Taavi Simson, Priit Kulu, Andrei Surzhenkov, Antanas Čiuplys</p> <p>Tallinn University of Technology, ESTONIA</p>
<p>Modelling of Induction Heating of Steel Billet for Forging of Crankshaft</p> <p>Rasa Kandrotaitė Janutienė, Darius Mažeika</p> <p>Kaunas University of Technology, LITHUANIA</p>

<p>VIII Session, Hall 2-2</p> <p>ADVANCED TECHNOLOGIES IN MATERIALS SCIENCE</p> <p>Chairperson – Prof. Ludvik Kunz</p> <p>Friday, October 27, 11:30 – 13:00</p>
<p>Fatigue Crack Growth and Threshold Behavior of DMLS Ti6Al4V</p> <p>Radomila Konecna, Ludvik Kunz, Gianni Nicoletto</p> <p>University of Zilina, SLOVAKIA</p>
<p>Recycling and Characterization of Waste Printed Circuit Boards</p> <p>Samy Yousef, Maksym Tatariants, Regita Bendikiene, Gintaras Denafas</p> <p>Kaunas University of Technology, LITHUANIA</p>
<p>Buckling of Eccentrically Loaded Nanobeams</p> <p>Mustafa Arda, Metin Aydogdu</p> <p>Trakya University, TURKEY</p>
<p>Use of Non-Destructive Testing Methods to Assess the Quality of Permanent Joints of Powder Metallurgy Parts Joined by Radial Pressing in a Pulsed Electromagnetic Field</p> <p>Dmitry Rybak, Victor Mironov, Alexey Tatarinov, Pavel Stankevich</p> <p>Riga Technical University, LATVIA</p>

POSTER PRESENTATIONS

POSTERS SESSION A, Lobby Chairperson – Assoc. Prof. Antanas Čiuplys Thursday, October 26, 15:30 – 16:00
Some Exploitation Properties of Wood Plastic Composites Based on Recycled High Density Polyethylene and Plywood Production Residues Janis Kajaks, Karlis Kalnins , Anita Zagorska, Juris Matvejs Riga Technical University, LATVIA
Crude Tall Oil as Raw Material for Rigid Polyurethane Foams with Increased Buoyancy Viesturs Zeltins , Vladimir Yakushin, Ugis Cabulis, Mikelis Kirpluks Latvian State Institute of Wood Chemistry, LATVIA
Investigation of Textile Heating Element Based on Different Knitting Structures Ingrida Padleckienė , Aušra Abraitienė, Laimutė Stygienė, Lolita Jovaišienė, Sigitas Krauledas Center for Physical Sciences and Technology, LITHUANIA
Spark Plasma Sintering of Chromium Carbide Based Cermets Kristjan Juhani , Jüri Pirso, Marek Tarraste, Mart Viljus Tallinn University of Technology, ESTONIA
Two Component Silyl-Terminated Polyether/Epoxy Resin Systems Mechanical, Rheological and Adhesive Properties Ritvars Berzins, Remo Merijs Meri, Janis Zicans Riga Technical University, LATVIA
Nanoparticle Gels Obtained from Hardwood and Softwood Bark for Reinforcing of Paper Marianna Laka , Marite Skute, Sarmite Janceva, Inese Sable, Velta Fridrihsone, Uldis Grinfelds, Linda Vecbiskena, Juris Zoldners Latvian State Institute of Wood Chemistry, LATVIA
Peculiarities of Photovoltage Formation Across P-N Junction Under Illumination of Laser Radiation Steponas Ašmontas, Jonas Gradauskas, Algirdas Sužiedelis, Aldis Šilėnas, Edmundas Širmulis, Vytautas Švedas, Viktoras Vaičiškuskas, Vytautas Vaičiūnas, Ovidijus Žalys , Vitaliy Kostylyov Center for Physical Sciences and Technology, LITHUANIA
The Effect of Plastic Deformation Rate on the Wear Performance of Hardfaced Coatings Regita Bendikienė, Lina Kavaliauskienė Kaunas University of Technology, LITHUANIA

<p>POSTERS SESSION A, Lobby Chairperson – Assoc. Prof. Antanas Čiuplys Thursday, October 26, 15:30 – 16:00</p>
<p>Application of Smart Materials in Structural Elements of Pneumatic Vibroexciters Darius Pauliukaitis, Edmundas Kibirkštis Kaunas University of Technology, LITHUANIA</p>
<p>Evaluation of Wear Rate of Nanocrystalline Diamond Films Using Abbott Curve Andrei Bogatov, Vitali Podgursky Tallinn University of Technology, ESTONIA</p>
<p>The Properties of Mesh Reinforced Nonwoven Composites Aina Bernava, Skaidrite Reihmane, Juris Bitenieks, Remo Merijs Meri Riga Technical University, LATVIA</p>
<p>Influence of Yarn Tensile Properties on Strength and Elasticity of Woven Fabrics with These Yarns Indre Tautkute - Stankuviene, Dovile Redeckiene, Egle Kumpikaite Kaunas University of Technology, LITHUANIA</p>
<p>Radiological Evaluation of Maxillary Sinus Augmentation with Calcium Phosphate Materials and Influence of Titanium Dental Implant Artifacts Laura Neimane, Andrejs Skagers Riga Stradins University, LATVIA</p>
<p>The Interaction Mechanism and Behavior of Mikroencapsulated Phase Change Materials with Fibers of Different Nature Virginija Skurkytė-Papievienė, Paulė Bekampienė, Audronė Sankauskaitė, Aušra Abraitienė Center for Physical Sciences and Technology, LITHUANIA</p>

POSTER PRESENTATIONS

POSTERS SESSION B, Lobby Chairperson – Dr. Darius Mažeika Friday, October 27, 11:00 – 11:30
Synthesis and Photocatalytic Activity of Modified TiO₂ Thin Films Prepared by Spray Pyrolysis Laura Rozenberga-Voska , Jānis Grabis Riga Technical University, LATVIA
Comparative Study of Adhesion Wear for CoCr, TiC-NiMo, WC-Co as Potential FSW Tool Materials Mart Kolnes , Jakob Kübarsepp, Fjodor Sergejev Tallinn University of Technology, ESTONIA
Nanosized ZnO Photocatalysts Doped with Iron Group Metals and Silver Jānis Grabis, Anita Letlena , Aija Krūmiņa Riga Technical University, LATVIA
Investigation on Polymer-Mineral Tanned Leather Properties Anna Nikonova , Lesia Maistrenko, Olga Andreyeva Kyiv National University of Technology and Design, UKRAINE
Anti-Irradiation and Wear Resistance of Polyimide Composites Jingfu Song , Gai Zhao, Qingjun Ding, Jinhao Qiu Nanjing University of Aeronautics and Astronautics, CHINA
Surface Energetic Characteristics of Wood-Polymer Composites, Containing a Valorised Hardwood By-Product Jevgenijs Jaunslavietis, Galia Shulga, Jurijs Ozolins, Brigita Neiberte, Anrijs Verovkins , Sanita Vitolina, Talrits Betkers Latvian State Institute of Wood Chemistry, LATVIA
Characterization and Reuse of a Low-Coast Derivative Iron Hydroxide Adsorbent Halima Ait Mahamed , Hakim Aguedal, Hafida Hentit, Abdallah Aziz, Abdelkader Iddou, Andrei Shishkin, Jean Claude Jumas University of Abdelhamid Ibn Badis-Mostaganem, ALGERIA
Bio-waste Recovery for the Removal of Cr (VI) in Aqueous Solution: Case of the Green Alga <i>Ulva Lactuca</i> Belkacem Bouacherine , Hafida Hentit, Abdallah Aziz, Abdelkader Iddou, Jean Claude Jumas, Andrei Shishkin University of Abdelhamid Ibn Badis-Mostaganem, ALGERIA
New Tanning Agent with Montmorillonite for Leather Manufacturing Marukhlenko Mariya , Mokrousova Olena, Okhmat Olena Kiev National University of Technology and Design, UKRAINE

POSTERS SESSION B, Lobby Chairperson – Dr. Darius Mažeika Friday, October 27, 11:00 – 11:30
Method of Collagen Obtaining from Collagen Containing Raw Materials Mokrousova Olena , Raksha Nataliia, Savchuk Oleksii, Ostapchenko Lydmila, Andreeva Olga Kiev National University of Technology and Design, UKRAINE
Influence of Silver Coated Yarns Distribution on Thermoregulatory Properties of Woven Fabrics Julija Baltušnikaitė-Guzaitienė , Vitalija Rubežienė, Kristina Dubinskaitė, Sandra Varnaitė-Žuravliova Center for Physical Sciences and Technology, LITHUANIA
Influence of Structure Variation on Moisture Management Properties of Double Layer Knitted Fabrics Julija Baltušnikaitė-Guzaitienė , Laimutė Stygienė, Aušra Abraitienė, Sigitas Krauledas Center for Physical Sciences and Technology, LITHUANIA
Processing Technology Development for Organic Clay Suspension System Zane Grigale-Soročina, Mārtiņš Kalniņš, Ingmārs Birks Kinetics Nail Systems, LATVIA
Analysis of Pigment Process and Production Techniques for Use in Nail Polish Systems Zane Grigale-Sorocina, Mārtiņš kalniņš, Ingmārs Birks Kinetics Nail Systems, LATVIA