

Invited lectures (IL):

- J. Hoskovec, **P. Čapková**: *Nanostructured materials for solid state hydrogen storage* 23
- P. Praus**: *Graphitic carbon nitride: what is not talked about* 24

Oral presentations (OP):

- S. Abrahamczyk**, O. Sakreida, A. Bachmatiuk, M. H. Rummeli: *Electron Beam Direct Writing of Graphene: Mechanisms, Materials, and Prospects for Nanoelectronics* 25
- H. Akbulut**, G. S. Martynkova, E. Göktepe, M. Mutlu, H. B. Yücel, M. Tarım, S. H. Algül, M. Uysal: *Effect of laser power on friction and wear performance of 316L stainless steel-based composite coating manufactured by laser cladding on brake disc* 26
- A. Antończyk**, K. Čech Barabaszová, S. Holešová, J. Kupková: *The influence of temperature on the parameters of spherical aluminosilicates* 27
- P. Běčák**, J. Seidlerová, R. Gabor, M. Tokarčíková: *Potential use of albumin stabilized metallic and trimetallic nanoclusters* 28
- K. Głowacka**, M. Mazur, K. Wiktorska: *Polymer particles fabrication via the dewetting phenomenon* 29
- D. Havaladar**, J. Walter, Z. Starý, L. Cvrček, R. Gabor, M. Tokarčíková, J. Kupková, Z. Jeníková: *Optimising UHMWPE/BaTiO₃ nanocomposites for biomedical applications: role of surface functionalisation in enhancing performance* 30
- L. Mačák**, O. Velgosová: *Preparation of polymer nanocomposites with silver nanoparticles* ...31
- A. Taratuta**, J. Lisoń-Kubica, J. Kolasa: *Modification of biological surface activity of biomedical alloys using ultra-thin ALD layers* 32

Poster presentations (PP):

- K. Čech Barabaszová**, L. Plesník, S. Holešová, O. Kosorin : *Innovative technology for PVDF nanocomposite materials preparation* 33
- B. Cetinkaya**, T. Cetinkaya, S. Usta, G. S. Martynková, H. Akbulut: *Influence of Process Parameters on Graphene-Reinforced Galvanized Coatings for Pearlitic Steel Wire* 34
- M. Davidová**, J. Tokarský, L. Kulhánková, S. Vallová, L. Řeháčková, M. Ritz, M. Kormunda: *Synthesis of Graphite and Multi-layer Graphene from a Low Molecular Weight Carbon Precursor* 35
- J. Kupková**, G. Kratošová, K. Čech Barabaszová, G. Simha Martynková: *Cordierite ceramic foams decorated with Ag nanoparticles* 36
- L. Mačák**, O. Velgosová: *Preparation of polymer nanocomposites with silver nanoparticles* ...37
- S. Nakatsuka**, A. Bakandritsos, R. Zbořil: *Design strategy of Amine Functionalized Graphene for Catalytic Applications* 38

Topic 2 – Materials and Technology for Environment

Invited lectures (IL):

- I. Ghosh:** *Photoredox Catalysis with One or Two Photons & an Electron Transfer.....*41
- R. Kosydar, M. Ponjavic, M. Guzik, J. Nikodinovic-Runic, J. Gurgul, D. Duraczynska:**
*Pd-nanoparticles supported on bacterial nanocellulose as a catalyst for the hydrogenation of polyfunctional reagents containing C=O and C=C bonds.....*42

Oral presentations (OP):

- S. H. Coban, A. Akbulut Uludag, T. Cetinkaya, M. Tokur, G. S. Martynková, H. Akbulut:**
*Comparative life cycle assessment of cathode synthesis methods for sodium-ion batteries*43
- K. Goldsztajn, M. Godzierz, J. Jaworska, K. Jelonek, K. Nowińska, A. Taratuta, A. Orłowska, W. Kajzer, R. Major, J. Szewczenko:** *The potential of using biodegradable polymer coatings as carriers of substances supporting bone tissue regeneration processes 45*
- Z. Rybková, K. Malachová, T. Stachurová, D. Plachá, K. Škrlová, J. Zágora, S. Holešová, K. Čech Barabaszová:** *Evaluation of antimicrobial and biocompatible properties of nanocomposites 46*
- V. Valovičová, S. Dolinská, L. Vaculíková, E. Plevová, I. Znamenáčková:** *MnO₂-coated smectites: Structural and sorption insights 47*
- O. Velgosová, L. Mačák:** *Green synthesis of gold nanoparticles 48*

Poster presentations (PP):

- J. H. Advani, A. Bakandritsos, R. Zboril:** *Engineering Iron Dimers at the Atomic Scale for Tunable Biomass Oxidation in Water 49*
- T. Ghosh, A. Mohammad, S. M. Mobin, A. Bakandritsos, R. Zbořil:** *Cobalt containing Cerium Oxide as a Multifunctional Nanocatalyst for various Selective organic transformations 50*
- M. Gregor, L. Cvrček, J. Walter:** *Ruthenium based electrodes for electrooxidation of organic pollutants from industrial wastewater.....51*
- S. Holešová, K. Čech Barabaszová, Z. Rybková, K. Malachová:** *Biodegradable polycaprolactone/clay nanocomposites for biotechnological applications 52*
- A. Chojnowska, G. Dercz, M. Kapkowski:** *Noble metal nanoparticles supported on multicomponent metal alloys as catalysts for organic reactions 53*
- M. Férová, J. Kalina:** *Phytoremediation potential of plant stems: adsorption of azo dyes 54*
- W. Kieres, S. Kudłacik-Kramarczyk, M. Krzan:** *Medical applications of saponin-based emulsions: from drug delivery to immunotherapy 55*
- S. Kudłacik-Kramarczyk, A. Przybyłowicz, W. Kieres, M. Krzan:** *Natural organo-gels as a platform for anaesthetic drugs: from synthesis to application 56*

K. Malachová, Z. Rybková, O. Dlabaja, K. S. Holešová, Čech Barabaszová: <i>Genotoxicity detection of nanoparticles and nanocomposite ZnO by the Comet assay</i>	57
A. Manayil Parambil, R. Zboril, P. Rajamani: <i>Harnessing Carbon Dots for a Sustainable Environment</i>	58
G. Mikesková, J. Seidlerová, R. Gabor: <i>Plant phytotoxic responses of nanoparticles</i>	59
G.S. More, R. Srivasatava, A. Bakandritsos, R. Zbořil: <i>Synergistic Pd-Ni Alloy on H-NbOx: Boosting Hydrogenation of Lignin Derivatives to Cyclic Hydrocarbons and Alcohols</i>	60
A. Paříková, L. Ondráčková, L. Mašková, T. Trávníčková, J. Havlica, V. Ždímal: <i>Hygroscopic growth of submicrometer aerosols for targeted pulmonary deposition</i>	61
P. Ryšánek, J. Henych, M. Šťastný, Z. Němečková, S. Adamec, M. Kormunda, S. Kamínková, K. Hamalová, J. Tolasz, P. Janoš: <i>Electrospun PA6 Nanofibers Bearing the CeO₂ Dephosphorylation Catalyst</i>	62
M. Syrový, P. Čapková, P. Ryšánek, J. Jarolímková, O. Benada: <i>One-step preparation of nanofibrous material based on polyacrylonitrile and cellulose acetate for CO₂ capture</i>	63
J. Zágora, D. Plachá, M. Fernández-García: <i>Highly Efficient Antimicrobial Coating Based on Polylactide Prepared via Supercritical Fluid Technology</i>	64

Topic 3 – Materials for Energy Harvesting and Storage

Invited lectures (IL):

H. Akbulut, G. S. Martynkova, M. Köse, S. Tan, H. Algül, M. Uysal: <i>Fabrication of high-performance graphene oxide-reinforced Ni-P composite coatings via ultrasonic-assisted pulse electrodeposition</i>	66
A. Bakandritsos: <i>Low-dimensional functional materials for energy security</i>	67
S. Ponnada, J. Kupkova, G. Kratosova, L. Halagacka, G.S. Martynkova: <i>Advancing Li-S Batteries: Two-Dimensional (2D) Heterostructures for Enhanced Performance and Longevity</i>	68
T. Cetinkaya, S. Usta, M. Tokur, B. Cetinkaya, M. Celik, G. S. Martynková, H. Akbulut: <i>The Future of Batteries and Supercapacitors: Unlocking the Power of 2D Materials</i>	69

Oral presentations (OP):

S. Pasarakonda: <i>Graphitic carbon nitride as Green electrocatalyst for highly selective overall Water splitting</i>	70
L. Plesník, K. Čech Barabaszová, G. Simha Martynková: <i>Effect of water electrolyte on properties of nanocomposite PVDF and PVDF-CTFE membranes</i>	71
S. Usta, B. Çetinkaya, M. Tokur, H. Akbulut, T. Çetinkaya: <i>Enhanced solid electrolyte interface by innovative producing method: Screen-printed LATP solid electrolyte</i>	72
S. Usta, M. Tokur, H. Akbulut, T. Çetinkaya: <i>Optimizing printable LFP electrode ink formulations: Binder and viscosity effects on printing quality and electrode performance</i>	73

Poster presentations (PP):

- B. Cetinkaya**, D. Sursal, B. Batu, O. Delikanli, S. Usta, M. Tokur, T. Cetinkaya, H. Akbulut: *Electrochemical Investigation of Hard Carbon Anode and Na(Ni_{1/3}Fe_{1/3}Mn_{1/3})O₂ Cathode using Different Electrolyte with FEC Additives for Na-Ion Batteries* 74
- V. Kubáň**, G. S. Martynková, S. K. Sathish, M. Hundáková, J. Kupková: *Porous carbon in energy storage* 75
- B. Mishra**, BP Tripathi, Y. Zhou, R. Zbořil: *Single atom ruthenium decorated on MOF-derived porous carbon for overall water splitting* 76
- S. Paul**, A. Bakandritsos, R. Zbořil: *Cu(I)/Cu(II) Single Atoms Over N-Doped Graphene Acid for Electrocatalytic Nitrate Reduction to Ammonia* 77
- S. K. Sathish**, G. S. Martynkova, V. Kuban, J. Kupkova, M. Hundakova: *Clay minerals and porous carbon for battery applications* 78
- M. Šindler**; G. Simha Martynková: *Heat treated phosphate ceramics in battery applications* .79
- S. Tekin**, G.S. Marytnková: *Modified polyolefine separators for safe Li-batteries* 80
- J. Výtisk**, G. Kratošová, J. Kupková, S. Honus, G. Simha Martynková: *Li-Ion battery separators and the importance of their life cycle assessment for smarter design and recycling strategies* 81

Topic 4 –Instrumentation-Driven Design and Characterization of Materials

Invited lectures (IL):

- M. Foldyna**: *Silicon nanowire devices and optical methods to characterize them* 83

Oral presentations (OP):

- M. Dudák**: *Comparing Analytical Techniques for (Nano)Particle and Molecular Size and Concentration Measurements* 84
- M. Férová**, K. Čech Barabaszová: *NMR relaxometry to characterize the interlayer spaces of the vermiculite nanostructured materials* 85
- L. Halagačka**, M. Lesňák, D. Jursa, Z. Gelnárová, K. Postava: *Design and characterization of biochips for surface plasmon resonance ellipsometry* 86
- O. J. Hejtman**, T. Fördös, M. Dems: *Semiconductor spin-lasers with periodic gratings for ultrafast applications*.....87
- M. Klimiček**: *Advancing Microscopy: Introducing Bruker's New FTIR and Raman Solutions*.....90
- M. Krzan**, M. Jamroży, S. Kudłacik-Kramarczyk, W. Kieres, L. Vaculikova, E. Plevova, M. Nattich-Rak, W. Płaziński, P. Warszyński, B. Braunschweig: *The effect of interfacial hydrogen bonding and electrostatic interactions on the surface properties and foam stability in saponin mixtures* 89
- J. Liu**, K. Postava: *Broadband optical function detection from THz to Ultraviolet range* 90
- K. Šec**, A. Cernescu: *Infrared Nanoscopy / nano-FTIR Spectroscopy Fundamentals and Practical Aspects* 91

R. Silber , M. Gaerner, K. Postava, J. Hamrle, T. Kuschel: <i>Magneto-Optic Kerr Effects of Higher Orders in Magnetization in Structural Analysis of Heusler Alloys, Twinning Detection in Cubic Crystal Structures and Vectorial Magnetometry</i>	93
J. Toběrný , T. Kohut, J. Liu, K. Postava: <i>Design and fabrication of metastructures for terahertz applications</i>	94
M. Tokarčíková , R. Gabor, Petr Běčák, J. Seidlerová: <i>Micro-arc oxidation for thin layer preparation</i>	95

Poster presentations (PP):

J. Molek , J. Tokarský: <i>Computational determination of preferred out-of-plane orientation of heteroepitaxial films</i>	96
O. Kowalska, N. Piergies, P. Niemiec, M. Wasilewska, D. Duraczyńska, E. Plevová, L. Vaculíková, Z. Adamczyk, M. Oćwieja : <i>The Electrokinetic and spectroscopic characteristic of novel conjugates of neuroleptics with gold nanoparticles</i>	97
Z. Pěgřimočová , M. Ritz: <i>Determination of major mineral content in sedimentary rocks by Raman spectroscopy</i>	98
J. Walter , L. Cvrček, M. Buřil, M. Gregor, J. Kupková: <i>Influence of process parameters on the structure and properties of chromium oxide films deposited by reactive high power impulse magnetron sputtering</i>	99