

**Conference Opening****07:40**

- dr hab. inż. Tomasz Dudziak; mgr inż. Filip Kateusz;  
dr hab. inż. Damian Gąsiorek, prof. PŚ.

**Functional Materials (I) dr inż. Anna Górska-Ratusznik****08:00 - 10:00**

- Controlled Electroless Deposition of Copper for Polymer Surface Functionalization in Core-Shell Discrete Particle; G. Alvarado Munoz,
- Poly(o-aminophenol) imprinting on the Titanium Carbide MXene surface for sensing of Clorsulon: A theoretical study; E. Mohsenzadeh,
- Synthesis and Application of Gold Functionalized MXene for the Colorimetric Sensing of Mercury Ions in Water; S. Ali,
- Optimizing MXene-titania interfacial adhesion via changing substrate wettability; M. Sajid,
- Safety and Process Intensification of 4-Nitrophenol Reduction Using Sodium Borohydride in a Flow Microreactor System; A. Elhadad,
- Alternative reagents in MXenes synthesis; J. Półrolniczak.

**Break (10 minutes)****Functional Materials (II) dr inż. Yuliia Rumiantseva****10:10 - 12:10**

- Bipyrimidine powder for potential applications in integrated photonics on polymer materials for the creation of a broad spectrum; A. Sureshkumar,
- Tuning Magnetic Behavior of CoFe<sub>2</sub>O<sub>4</sub> nanoparticles using Differently Functionalized Surfactants; A.Raveendran,
- Metamaterials in vibration damping engineering; S.Krupnik,
- Low-temperature Optical Photothermal Infrared spectroscopy: signal enhancement and submicron characterization of thermosensitive materials; K.Kadela,
- Lightweight, robust, thermoplastic polyurethane-based sandwich-structured rGO/ Fe<sub>3</sub>O<sub>4</sub>/rGO nanocomposites for efficient electromagnetic interference shielding; N.Wilson,
- Carbon quantum dots as luminophores in LEDs; K.Bucka.

**Break (10 minutes)****Energy Generation and Storage (I) dr inż. Jędrzej Piątek****12:20 - 14:20**

- Molecular Engineering, Synthesis, and Atomistic Structure-Property Relationship of Indoloquinoline-Capped Small Donors for Efficient Organic Solar Cells; M.Javed,
- Electrochemical properties of polyurethane-based electrode binders in aqueous sodium-ion batteries; P. Nemaniuté-Daubarė,
- Impact of End-Capped Acceptor Modification on the Photovoltaic Properties of Phenylsulfonyl Carbazole-Based Materials: A DFT Study; A. Laiba,
- Composition-Dependent Carrier Transport in Pm6:Y6 Non-Fullerene Organic Solar Cell Blends; T.Klepeckas,
- Highly exposed active sites of MOFs-derived N-doped nanoporous carbon decorated with platinum for enhanced energy storage application; A.Khalifa,
- Fluorine-free Binder Materials for Aqueous Potassium-ion Batteries; M. Spiewak.

**Energy Generation and Storage (II) dr Sylvester Masilamani****14:30 - 16:30**

- Controlled in situ exsolution in nanofiber double perovskites enables hollow core-shell nanostructures for high-performance symmetrical solid oxide fuel cells; J.Lach,
- Assessment of  $\text{La}_{2-x}\text{Sr}_x\text{Fe}_{1.4}\text{Ti}_{0.2}\text{Co}_{0.2}\text{Mn}_{0.2}\text{O}_{6-\delta}$  perovskite oxides as high-performance oxygen electrode materials for intermediate temperature solid oxide fuel cells; A.Sultan,
- Durable cathode materials enabled by Perovskite / Ruddlesden-Popper interface engineering for Solid Oxide Electrolysis Cells; Z. Chen,
- SOFC air electrode materials based on a new group of  $\text{SrCo}_{0.7-x}\text{Ta}_{0.1}\text{Mo}_{0.1}\text{Mn}_{0.1}\text{TM}_x\text{O}_{3-\delta}$  (TM: Cu, Ni, Fe) oxides; K.Zielińska,
- From Powders to Nanofibers: Morphology Controlled Exsolution and Electrochemical Activity in SOC Electrodes; M. Gogacz,
- Engineering Synergistic A-Site Deficiency and B-Site Substitution in NdBa-Based Double Perovskites toward High-Performance IT-SOC Electrodes; R. Zafar.

**Break (10 minutes)****Green Technologies dr Joanna Budziaszek****16:40 - 19:00**

- Catalytic activity of new biomass-based Ni@C – type composites for CO<sub>2</sub> methanation; K.Dudek,
- Possibilities of using diatomites in water treatment processes and producing synthetic zeolites based on them; E.Rusinek,
- Fabrication of Cu-Ag bimetallic GDEs via thermal evaporation for CO<sub>2</sub> electroreduction; S. Muzaffar,
- Sustainable Leaching of Lithium-Ion Battery Black Mass with Levulinic Acid: A Deeper Look at Process Efficiency and Kinetics; K.Charzewska,
- Synthesis and Characterization of Magnetic Activated Carbon/Polyaniline Composite for Enhanced Pb (II) Adsorption; M. Youssif,
- Impact of sulfur impurities on copper based catalyst in electrochemical reduction of CO<sub>2</sub> in flow reactor; D.Stanek,
- Magnetic buckwheat hull-Fe<sub>3</sub>O<sub>4</sub> nanocomposite: synthesis, characterization, and biosorption efficiency for Pb(II) and Cd(II) ions in aqueous media; T. Tahir.

**End of the first day of the conference**

**Biomedical Engineering (I) dr Agata Barzowska-Gogola****08:00 - 10:00**

- DFT- guided design of pH-responsive <sup>19</sup>F mri contrast agents; A. Aslam,
- From metal alloys to polymers – advances in personalized implant design; G.Wielgus,
- Porosity Optimization in Biomimetic Bone Models; A.Piątek,
- Medical Silicone In Implantology: Clinical Applications And Material Challenges; A.Auguścik,
- Functionalization of magnesium alloy surface using hybrid PEO/P(L/G/TMC) coatings for orthopedic applications; B.Rynkus,
- Biocompatible tantalum (V) oxide layers on an overelastic substrate: stability analysis under deformation conditions; J.Kolasa.

**Break (10 minutes)****Biomedical Engineering (II) dr inż. Ilona Karpiel****10:10 - 11:50**

- Centella asiatica and deferoxamine as promising biomaterials components enhancing angiogenesis; Z.Pawlak-Likus,
- Optimization of Key Technological Parameters in the Production of Hydrogel-Based Therapeutic Systems; K.Grzela-Fraś,
- Functionalization of glycosaminoglycans as an effective strategy for designing advanced hydrogel biomaterials; W. Gura,
- Multimodal bioimpedance for early detection of pulmonary edema in heart failure; M.Kluza,
- Photocurable Chitosan and Polydopamine-Derived Bioinks: Development, Optimization, and Characterization for 3D/4D Bioprinting; A.Sierakowska-Byczek,

**Break (10 minutes)****Drugs Delivery Systems dr Barbara Pucelik****12:00 - 14:20**

- Polycations for plant protection applications: model membrane studies and biological assessment; M. Binkowska,
- Development of a multifunctional injectable system for cancer treatment; C. Tipa,
- Hydrosolubility and interactions of chitosan oligomers: new computational insights; P. Tărăbuță,
- Impact of emulsion-based fabrication parameters on antibiotic-loaded nanoparticles; A. Sylla,
- Development of Cyclodextrin-Containing Chitosan Nanoparticles for Improved Delivery in Diabetic Foot Infections; J.Czajkowski,
- A Novel Small-Molecule Inhibitor Targeting Biofilm-Associated Resistant Pathogens in Diabetic Foot Infections; A. Blat,
- Novel polymeric nanoformulations for controlled drug delivery in hormone-dependent breast cancer; M. Łucki.

**Advances in Manufacturing (I) dr inż. Grzegorz Skrabalak****08:00 - 10:20**

- SiC reinforcement in DMLS fabricated AlSi10Mg alloy; K.Stravinskas,
- Defining the manufacturing window for support free thin walls in M300 maraging steel via laser powder bed fusion; A.Iwańczak,
- Influence of welding parameters on microhardness distribution in robotic CMT-PMC twin welding of 6082-T6 aluminium; J.Silezin-Tałach,
- Deterministic laser direct writing and Raman-based screening of quantum emitters in hexagonal boron nitride; I.Bibi,
- Unconventional methods of shaping deep holes using electrochemical machining (ECM); J.Szuba,
- Optimization of the Composition and Properties of Foamed Waste-Based Composites for 3D Printing; M.Rudziewicz
- Effect of Laser Power on The Fabrication of Fe-Cr-W Medium Entropy Coatings; F.Madewu.

**Break (10 minutes)****Advances in Manufacturing (II) dr hab. inż. Daniel Toboła****10:30 - 12:30**

- Analysis of the thermal field in a high-temperature melt for BBO crystal growth; G.Janušauskaitė,
- Beyond conventional superalloys: Mo-Si-B alloys for ultra-high temperature applications investigated via sessile drop experiments and Hot-Dipping fabrication; G.Bruzda,
- Manufacturing technology of multi-component AlCoCuFeNi high-entropy alloys using induction melting under semi-industrial conditions; K.Chrzan,
- Effect of Spraying Distance on Mechanical and Corrosion Properties of Fe-Mo-Cr-Y-C-B APS Coatings; I.Kredowska,
- Towards All Solid State K Ion Batteries: FAST/SPS Processed Battery Components; W. Krzyżaniak,
- Handheld laser braze-welding of galvanized steel limitations; G.Jeż.

**Break (10 minutes)****Industry 4.0 dr hab. inż. Dorota Wilk-Kołodziejczyk****12:40 - 14:40**

- Harnessing the power of ChatGPT: transforming evaluation and feedback in education; Z.Sain,
- Production time prediction as part of manufacturing process digitization; J.Krupnik-Worek,
- Graph neural network architecture search via hybrid genetic programming with parallel tempering in computational materials science: a JARVIS dataset case study; M.Krzywda,
- Analysis Of Phase Composition In Compacted Graphite Iron Using ML Techniques; S.Gajoch
- Advances in AI powered human activity recognition and biomarkers measurement based on smartphone onboard sensors; R.Błazej,
- Reinterpreting traditional Iranian wall materials through modern insulation strategies: a simulation driven architectural approach; S.Afshariadzad

**Materials Engineering (I) dr inż. Wojciech Polkowski****14:50 - 16:50**

- Electrodeposition of samarium cobalt alloys from aqueous electrolytes; H.Kamiński,
- Analysis of selected properties of fabricated HEA-Ti<sub>3</sub>SiC<sub>2</sub>-SiC hybrid composites in high pressure and high temperature environment; J.Kwiatkowska
- Synthesis and characterization of W and SiC-based coatings for tritium permeation barriers in fusion breeding blankets; M.Garitano,
- Effect of processing parameters on B2 phase formation and mechanical behavior in Cu<sub>45</sub>Zr<sub>48</sub>Al<sub>7</sub> bulk metallic glass composites; D. Pikulski,
- Forced  $\beta$ -SiC crystallization in pyrolyzed phenylformaldehyde/methylphenylsiloxane composites; F. Kateusz;
- Heat treatment and characterization of novel CoCrNi based medium entropy alloys; T.Mogakane.

**Break (10 minutes)****Materials Engineering (II) dr hab. inż. Tomasz Dudziak****17:00 - 19:00**

- Nano-additive lubrication effects on friction and wear in Sucker Rod Pumps; K. Mammadov,
- Corrosion Mechanisms of alloys under simulated Martian conditions; O. Mayorga Diaz,
- Potential of geopolymers composites as hybrid shields with high impact resistance; J.Piątkowski,
- Effect of silica grade and loading on mechanical response of epoxy matrices; K.Badura,
- Effects of glass and flax fibres in a fly ash-based geopolymer matrix; K.Oliwa,
- The influence of long-term exposure to elevated temperature on the microstructure and mechanical properties of austempered ductile iron (ADI) castings; A.Bitka.

**End of the conference – see you next year!**