

Hybrid

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**BOOK OF
ABSTRACTS**

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WS2 Posters

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P2-1 (L)	Application of functionalized carbon based nanoparticles (MWCNT and G) with Ag in facial masks and filters for protection of Covid 19 Anita Grozdanov ¹ , Perica Paunovik Faculty of Technology and Metallurgy, University Ss Cyril and Methodius in Skopje, Rugjer Boskovic 16, 1000 Skopje, North Macedonia
P2-2 (L)	Comparison of infrared laser and carbon dioxide snow jet surface cleaning of archive and library collections V. Jandová ¹ , L. Mašková ¹ , P. Vávrová ² , M. Součková ² , R. Fajgar ¹ , J. Smolik ¹ ¹ Institute of Chemical Process Fundamentals of the CAS, Rozvojová 135, Prague, Czech Republic ² National Library of the Czech Republic, Klementinum 190, Prague, Czech Republic
P2-3 (L)	ZnO Nanowire Morphology Control in VLS/PLA Razvan Mihalcea, Mihai Serbanescu, Marius Dumitru and Aurelian Marcu National Institute for Laser Plasma and Radiation Physics, Magurele 077125, Romania
P2-4 (L)	Optical and morphological properties of annealed gold thin films E. Hedl ¹ , V. Blažek-Bregović ¹ , J. Sancho-Parramon ¹ , A. Bergmann ² ¹ Ruđer Bošković Institute, Bijenička 54, 10000 Zagreb, Croatia ² Graz University of Technology, Rechbauerstraße 12, 8010 GRAZ, AUSTRIA
P2-5 (L)	Thin films of tungsten oxide nanoparticles embedded in polyaniline matrix by MAPLE for sensor applications M. Filipescu, A. Palla-Papavlu, V. Ion, A. I. Radu, C. Craciun, A. Bonciu, M. Dinescu National Institute for Laser, Plasma, and Radiation Physics, Laser Department, Romania
P2-6 (L)	Biochemical nanosensors based on modified carbon screen-printed electrodes Anita Grozdanov ¹ , Iva Dimitrievska, Perica Paunovik Faculty of Technology and Metallurgy, University Ss Cyril and Methodius in Skopje, Rugjer Boskovic 16, 1000 Skopje, North Macedonia
P2-7 (L)	Periodate oxidized horseradish peroxidase@ZIF-8 nanocomposite M. Stanišić ¹ , P. Ristić ¹ , V. Đokić ² , A.M. Balaž ³ , R. Prodanović ¹ , T. Todorović ¹ ¹ University of Belgrade – Faculty of Chemistry, Studentski trg 12-16, 11000 Belgrade, Serbia; ² Innovation Center of the Faculty of Technology and Metallurgy, University of Belgrade, Karnegijeva 4, 11000 Belgrade, Serbia; ³ Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, University of Belgrade, Njegoševa 6, 11000 Belgrade, Serbia
P2-8 (L)	Periodate oxidized glucose oxidase@ZIF-8 nanocomposite P. Ristić ¹ , M. Stanišić ¹ , V. Đokić ² , A.M. Balaž ³ , D. Mitić ¹ , R. Prodanović ¹ , T. Todorović ¹ ¹ University of Belgrade – Faculty of Chemistry, Serbia; ² Innovation Center of the Faculty of Technology and Metallurgy, University of Belgrade, Serbia; ³ Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, Serbia
P2-9 (L)	Formation of magnetoliposomes using new series of self-assembling 1,4-dihydropyridine derivatives and maghemite γ-Fe₂O₃ nanoparticles Arkadijs Sobolevs ¹ , Oksana Petrichenko ² , Aiva Plotniece ¹ , Nadiia Pikun ¹ , Karlis Pajuste ¹ , Martins Rucins ¹ ¹ Latvian Institute of Organic Synthesis, 21 Aizkraukles str., Riga, LV-1006, Latvia ² Laboratory of Magnetic Soft Materials, Faculty of Physics, Mathematics and Optometry, University of Latvia, 3 Jelgavas str., LV-1004 Riga, Latvia
P2-10 (L)	Contribution of structure to self-assembling properties of propargyl and pyridinium moieties containing lipid-like cationic 1,4-dihydropyridines N.Pikun ¹ , M.Rucins ¹ , K.Pajuste ¹ , M.Plotniece ² , A.Sobolevs ¹ , A.Plotniece ^{1,2} ¹ Latvian Institute of Organic Synthesis, Aizkraukles str. 21, LV-1006, Riga, Latvia ² Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Riga Stradiņš University, , Latvia
P2-11 (L)	Ab initio Investigation of Cu Nanoparticle Behavior Under High Electric Field Ye Wang ¹ , Andreas Kyritsakis ¹ , Veronika Zadin ¹ Institute of Technology, University of Tartu Nooruse1, 50411 Tartu, Estonia
P2-12 (L)	Monitoring the Dynamic behavior of carbon fibers reinforced polymer industrial composites by DMA technique A. Stimoniaris ¹ , G. Tzionas ³ , S. Douvartzides ^{2,3} , A. Krestou ² and C. Delides ¹ ¹ Department of Chemical Engineering, University of Western Macedonia, Koila, Kozani, Greece ² Department of Mechanical Engineering, University of Western Macedonia, Koila, Kozani, Greece ³ Perseus Racing Team, University of Western Macedonia, Koila, Kozani, Greece
P2-13 (L)	Study of structural properties and phase transitions of Bi₂O₃ films prepared by rf reactive magnetron sputtering Lijian Meng Centre of Innovation in Engineering and Industrial Technology, Instituto Superior de Engenharia do Porto, Instituto Politécnico do Porto, Portugal.
P2-14 (L)	One-pot synthesis of new raspberry-like hierarchical structured nanosilica V. Niculescu ¹ , A. Soare ² , I. Petreanu ³ National Research and Development for Cryogenic and Isotopic Technologies – ICSI Ramnicu Valcea, Romania 4 th Uzinei Street, 240050 Ramnicu Valcea, Valcea, Romania
P2-15 (L)	Sulfidation of air-stable zerovalent iron nanoparticles Vichová V. ^{1,2} , Oborná J. ¹ , Filip J. ¹ ¹ Regional Centre of Advanced Technologies and Materials, Palacký University, Czech Republic ² Department of Experimental Physics, Faculty of Science, Palacký University, CZ-779-00, Olomouc, Czech Republic
P2-16 (L)	Effect of Cu₃N and Cu on the photocatalytic activity of Cu₂O nanoparticles Paredes E.P. ¹ , Wragg D. ² , Rauwel E. ¹ , Rauwel P. ¹ ¹ Institute of Forestry and Engineering Sciences, Estonian University of Life Sciences, Tartu, Estonia ² Department of Chemistry, University of Oslo, Oslo, Norway
P2-17 (L)	Optimization of the nanocatalysts characteristics used for the production of biofuels from renewable sources E. David ¹ , R-M Marinescu ² , A. Armeanu ¹ ¹ National Research Institute for Cryogenic and Isotopic Technologies Romania ² National Institute for Research and Development in Microtechnologies - IMT Bucharest Bucharest
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P2-19 (L)	Influence of synthesis and ambient drying conditions on the porosity of TiO₂ aerogel Jolanta Donėlienė ^{1,2} , Eglė Fataraitė-Urbonienė ^{2,3} , Juras Ulbikas ^{1,2} ¹ Applied Research Institute for Prospective Technologies, Vismaliuku str. 34, LT-10243 Vilnius, Lithuania ² JSC Modern E-Technologies, Vismaliuku str. 34, LT-10243 Vilnius, Lithuania ³ Kaunas University of Technology, K. Donelaičio str. 73, LT-44249 Kaunas, Lithuania

P2-20 (L)	Cesium-based nanomaterials for ultra-light water assessment: synthesis routes and electrochemical behaviour A.M. Iordache ¹ , S.M. Iordache ¹ , E.I. Ionete ² , E. Tanasa ² , V. Barna ² , I.C. Vasiliu ¹ , M. Elisa ¹ , I. Chilibon ¹ , C.E.A. Grigorescu ¹ ¹ National Institute for Research and Development in Optoelectronics-INOE 2000, Optospintronics Department Romania ² National R&D Institute for Cryogenics and Isotopic Technologies – ICSI Rm.Valcea, , Romania. ³ Politehnica University of Bucharest, 313 Splaiul Independenței, Bucharest, Romania. ⁴ University of Bucharest, Faculty of Physics, 405 Atomistilor, 077125, Magurele, Romania
P2-21 (L)	Solution Processing Techniques for the Development of 0D-2D Hybrid Structures-Based Light-driven Nanoscale Devices Maqueira Albo I. ^{1,2} , Curreli N. ¹ , Camellini A. ¹ , Ilka Krieger I. ¹ ¹ Functional Nanosystems, Istituto Italiano di Tecnologia, Via Morego 30, 16163 Genoa, Italy *ivet.maqueira@iit.it ² Physics Department, University of Genoa, Via Dodecaneso 33, 16146 Genoa, Italy
P2-22 (L)	Biodegradable Polymer Composite Based On Recycled Polyurethane And Wood Waste Nanoparticles L. Alexandrescu ¹ , M. Georgescu ¹ , M. Sonmez ¹ , M. D. Stelescu ¹ , M. Nituca ¹ , D. Gurau ¹ ¹ National Research and Development Institute for Textile and Leather - Division Leather and Footwear Research Institute, 93 Ion Minulescu St., sector 3, 031215, Bucharest, Romania
P2-23 (L)	Unsaturated Polyester Resin Hybrid composites of Natural organic Inorganic Fibers with Nano filler Savita Bansode ¹ Praveenan Dayalan ² , Prakash A Mahanwar ³ Department of Polymer & Surface Engineering, Institute of Chemical Technology, Mumbai, Maharashtra, India - 400019;
P2-24 (L)	Hyper-crosslinked cyclomatrix organophosphazenes via imine bonds and a unique mixed 1D-in-2D morphology George Pappas ^{1,2} , Ian Teasdale ² , Lin Chen ³ , Thomas D. Anthopoulos ¹ ¹ KAUST Solar Center, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia ² Institute for Polymer Chemistry, Johannes Kepler University, Linz, Austria ³ School of Metallurgy and Materials, University of Birmingham, Edgbaston, United Kingdom
P2-25 (L)	Effects of electrospinning processing parameters on the morphological characteristics of the developed nanofibrous mats Michalis Georgallas ¹ , Ioanna Savva ¹ , Anastasis Georgiou ¹ , Nikolaos Tzanopoulos ¹ , Katerina Sofocleous ¹ , Loukas Koutsokeras ² , George Constantinides ² , Vasileios M. Drakonakis ¹ ¹ AmaDema - Advanced Materials Design & Manufacturing Ltd, Nicosia, Cyprus ² Cyprus University of Technology (CUT), Limassol, Cyprus
P2-26 (L)	Biocompatibility Assessments of Albumin & Fibrinogen on Conductive Metal Nitride Films T. Odutola ¹ , N. Pliatsikas ¹ , S. Panos ¹ , I. Fekas ¹ , S. Kassavetis ¹ , M. Gioti ¹ , P. Patsalas ¹ ¹ Department of Physics, Aristotle University of Thessaloniki, Thessaloniki, GR-54124, Greece
P2-27 (V)	A Precise Low Temperature Carbon Nanotubes Transfer Technique Chong Wei Tan ¹ , Yu Xiang Lum ¹ , Rongtao Jiang ¹ , Coquet Philippe ² , Beng Kang Tay ^{1,2} ¹ Centre for Micro- and Nano-Electronics (CMNE), School of Electrical and Electronic Engineering, Nanyang Technological University, 50 Nanyang Ave, Singapore 639798, Singapore ² CNRS-NTU-THALES Research Alliances/UMI 3288, Research Techno Plaza, 50 Nanyang Ave, Border X Block, Level 6, Singapore 637553, Singapore
P2-28 (V)	Synthesis laser wavelength influence in CdSe Nanoparticles processed by liquid laser fragmentation P. Maldonado-Altamirano ¹ , L. Martínez-Ara ² , M. Á. Hernández-Pérez ³ , J Santoyo-Salazar ² , J. R. Aguilar-Hernández ¹ , J. Ortiz-López ¹ , M. López-López ² ¹ Escuela Superior de Física y Matemáticas (ESFM), Instituto Politécnico Nacional, Av. IPN s/n, CDMX, México. ² Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (CINVESTAV), CDMX, México. ³ Escuela Superior de Ingeniería Química e Industrias Extractivas (ESIQIE), Instituto Politécnico Nacional, México.
P2-29 (V)	Investigation of porous hot-wire MoS2 thin films for H2 and CO sensing G. Papadimitropoulos ^{1,2} ¹ Institute of Nanoscience and Nanotechnology, NCSR "Demokritos", 153 10 Aghia Paraskevi, Attiki, Greece ² University of West Attica, Faculty of Engineering, Department of Electrical and Electronics Engineering, Aegaleo, Greece
P2-30 (V)	Impact of residence time in spray synthesis of nanopowders prepared from selected organosilicon precursors H. Osip, P.Szymczak, J.F. Janik, C.Czosnek AGH University of Science and Technology, Faculty of Energy and Fuels; Mickiewicza 30, 30-059 Krakow, Poland
P2-31 (V)	Preparation and characterization of novel NiIn2S4/Uio-66 photocatalysts for the efficient degradation of antibiotics in water G. Balkourani ¹ , C. Molochas ¹ , S. Kontou ¹ , Anhu Wang ² , Huagen Lian ² , Fu Chen ² , Xinlong Tian ³ , Shengyu Jing ² , P. Tsiakaras ¹ ¹ Laboratory of Alternative Energy Conversion Systems, Department of Mechanical Engineering, School of Engineering, University of Thessaly, Greece ² China University of Mining and Technology, Xuzhou, 221008, China ³ State Key Laboratory of Marine Resource Utilization in South China Sea, Hainan University China
P2-32 (V)	A double layered SiO2/ZrO2 hybrid sol-gel & plasma sprayed coating for orthopedic implant applications E. Roussi ¹ , I. Kitsou ¹ , M. Papageorgiou ¹ , J. Patrikalos ² , I. Georgiopoulos ² , C. Andreouli ² , A. Tsetsekou ¹ ¹ School of Mining and Metallurgical Engineering, National Technical University of Athens, 157 80 Zografos, Athens, Greece ² MIRTEC S.A., 76 km Athens-Lamia national Road, 32009 Schimatari, Greece
P2-33 (V)	Application of polyaniline/ α-Fe2O3 nanotube composites materials for supercapacitor with improved capacitance J. Lee ^{1,2} , S. Park ^{1,2} , D. Seo ¹ , H. M. Jung ^{1,2} ¹ Department of Applied Chemistry, Kumoh National Institute of Technology, 61 Daehak-ro, Gumi, Republic of Korea ² Department of Energy Engineering Convergence, Kumoh National Institute of Technology, Republic of Korea

Periodate oxidized horseradish peroxidase@ZIF-8 nanocompositeM. Stanišić¹, P. Ristić¹, V. Đokić², A.M. Balazš³, R. Prodanović¹, **T. Todorović¹**¹University of Belgrade – Faculty of Chemistry, Studentski trg 12-16, 11000 Belgrade, Serbia;²Innovation Center of the Faculty of Technology and Metallurgy, University of Belgrade, Serbia;³Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, University of Belgrade, Serbia

Metal-organic frameworks (MOFs) are a class of materials well-known for their high degree of crystallinity and ultrahigh porosity. Modular synthesis from organic linkers and metal nodes allows for precise control of structure, pore size and chemical functionality of MOFs. Recently, MOFs have been explored for their potential to form novel biocomposites with proteins by a process termed biomimetic mineralization. These novel MOF biocomposites show great promise for application to industrial biocatalysis where strategies for enhancing enzyme stability are of significant interest. The protective capacity and applications of biomimetically mineralized biomacromolecule zeolitic imidazolate framework (ZIF-8) composites are likely dependent on the charge of the biomolecule and the topology of the mineralized ZIF-8 coating. Herein, we identify conditions to reliably yield the porous periodate oxidized horseradish peroxidase@ZIF-8 sodalite topology biocomposite in preference to other more dense phases.

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Periodate oxidized glucose oxidase@ZIF-8 nanocomposite**P. Ristić¹**, M. Stanišić¹, V. Đokić², A.M. Balazš³, D. Mitić¹, R. Prodanović¹, T. Todorović¹¹University of Belgrade – Faculty of Chemistry, Studentski trg 12-16, 11000 Belgrade, Serbia;²Innovation Center of the Faculty of Technology and Metallurgy, University of Belgrade Serbia;³Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, University of Belgrade, Serbia

The durability of enzymes in harsh conditions can be enhanced by immobilization within metal-organic frameworks (MOFs) via a process called biomimetic mineralisation. Zeolitic imidazolate framework-8 (ZIF-8) is widely used as a protective coating to encapsulate proteins. The formation of nucleation centres and further biocomposite particle growth is entirely governed by the pure electrostatic interactions between the protein's surface and positively charged Zn(II) metal ions. It was previously shown that enhancing these electrostatic interactions by a chemical modification of surface amino acid residues can lead to a rapid biocomposite formation. However, a chemical modification of carbohydrate components by periodate oxidation for glycoproteins can serve as an alternative strategy. In the present study, an industrially important enzyme glucose oxidase (GOx) was selected as a model system. Periodate oxidation of GOx by 2.5 mM sodium periodate increased negative charge on the enzyme molecule. Biomineralization experiments with oxidized GOx resulted in higher specific activity, effectiveness factor, and higher thermostability of the ZIF-8 biocomposites.

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