

MATERIALS RESEARCH SOCIETY OF SERBIA
INSTITUTE OF TECHNICAL SCIENCES OF SASA

Programme and the Book of Abstracts

**SEVENTEENTH YOUNG RESEARCHERS' CONFERENCE
MATERIALS SCIENCE AND ENGINEERING**

Belgrade, December 5–7, 2018

Materials Research Society of Serbia

<http://www.mrs-serbia.org.rs/index.php/young-researchers-conference>

**SEVENTEENTH YOUNG RESEARCHERS' CONFERENCE
MATERIALS SCIENCE AND ENGINEERING**

December 5-7, 2018, Belgrade, Serbia

Program and the Book of Abstracts

**Materials Research Society of Serbia
&
Institute of Technical Sciences of SASA**

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Aim of the Conference

Main aim of the conference is to enable young researchers (post-graduate, master or doctoral student, or a PhD holder younger than 35) working in the field of materials science and engineering, to meet their colleagues and exchange experiences about their research.

Topics

Biomaterials
Environmental science
Materials for high-technology applications
Nanostructured materials
New synthesis and processing methods
Theoretical modelling of materials

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Results of the Conference

Beside printed «Program and the Book of Abstracts», which is disseminated to all conference participants, selected and awarded peer-reviewed papers will be published in journal “Tehnika – Novi Materijali”. The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony. Part of the award is free-of-charge conference fee at YUCOMAT 2019.

Sponsors



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Programme
Seventeenth Young Researchers Conference
Materials Science and Engineering

Wednesday, December 5, 2018

09.00 – 09.30 Opening Ceremony

09.30 – 11.30 1st Session – Biomaterials I

Chairpersons: Prof. Dr. Bojana Obradović and Milena Radenković

09.30 – 09.45 Subcutaneous tissue reaction to collagen-based membranes of different origin

Milena Radenković¹, Sanja Stojanović^{1,2}, Jelena Živković^{1,2}, Vladimir Cvetković³, Žarko Mitić⁴, Shahram Ghanaati⁵, Stevo Najman^{1,2}

¹University of Niš, Faculty of Medicine, Scientific Research Center for Biomedicine, Department for Cell and Tissue Engineering, 18000 Niš, Serbia, ²University of Niš, Faculty of Medicine, Department of Biology and Human Genetics, 18000 Niš, Serbia, ³University of Niš, Faculty of Sciences and Mathematics, Department of Biology and Ecology, 18000 Niš, Serbia, ⁴University of Niš, Faculty of Medicine, Department of Pharmacy, 18000 Niš, Serbia, ⁵Medical Center Goethe-University Frankfurt am Main, Department for Oral, Cranio-Maxillofacial and Facial Plastic Surgery, FORM-lab, 60590 Frankfurt am Main, Germany

09.45 – 10.00 Antibiotic loaded bioactive orthopedic implant coating

Milena Stevanović¹, Ana Janković¹, Marija Došić², Maja Vukašinović-Sekulić¹, Vesna Kojić³, Vesna Mišković-Stanković¹

¹Faculty of Technology and Metallurgy, Karnegijeva 4, Belgrade, Serbia, ²Institute for Technology of Nuclear and Other Mineral Raw Materials, Bulevar Franš d'Eperea 86, Belgrade, Serbia, ³Oncology Institute of Vojvodina, Faculty of Medicine, University of Novi Sad, Put Dr Goldmana 4, Sremska Kamenica, Serbia

10.00 – 10.15 Production of composite hydrogels based on poly(vinyl alcohol) and β -tricalcium-phosphate for potential applications in bone tissue implants

Natalija Stojanović, Jasmina Stojkowska, Đorđe Veljović, Bojana Obradović

Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

10.15 – 10.30 Characterization of porous alginate hydrogels with bioactive hydroxyapatite precursor particles for bone tissue engineering

Jovana Skenderija, Nataša Tomašević, Jasmina Stojkowska, Đorđe Veljović, Bojana Obradović

Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

10.30 – 10.45 Development and optimization of the production procedure of biphasic scaffolds for osteochondral tissue engineering

Mia Radonjić, Jovana Zvicer, Bojana Obradović

Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

10.45 – 11.00 Functional characterization of biphasic implants based on gellan gum and bioactive glass for osteochondral tissue engineering

Ilijana Kovrlija, Jovana Zvicer, Bojana Obradović

Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

11.00 – 11.15 Processing of dental inserts based on nanostructured magnesium doped calcium-hydroxyapatite and their application as dental substitutes

Tamara Matić, Maja Ležaja Zebić, Giuma Ayoub, Vesna Miletić, Rada Petrović, Đorđe Veljović, Đorđe Janačković

¹University of Belgrade, Faculty of Technology and Metallurgy, Inorganic Chemical Technology, Karnegijeva 4, 11120 Belgrade, Serbia, ²University of Belgrade, School of Dental Medicine, DentalNet Research Group, Rankeova 4, Belgrade, Serbia

11.15 – 11.30 Temperature changes during light curing of conventional and “bulk-fill” dental composites

Jovana N. Stasić, Vesna Miletić

University of Belgrade, School of Dental Medicine, DentalNet Research Group, Rankeova 4, 11000 Belgrade, RS

11.30 – 11.45 Break

11.45 – 13.45 2nd Session – Biomaterials II

Chairpersons: Dr. Magdalena Stevanović and Dr. Tatiana Demina

11.45 – 12.00 Biodegradable microparticles as a scaffolds for cell therapy

Nenad Filipović,¹ Giuseppe Digilio,² Valeria Catanzaro,² Federico Capuana,³ Sergio Padovan,⁴ Juan C. Cutrin,³ Fabio Carniato,² Stefano Porta,³ Cristina Grange,⁵ Magdalena Stevanović¹

¹Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Knez Mihailova 35/IV, 11000 Belgrade, Serbia, ²Department of Science and Technologic Innovation, Università del Piemonte Orientale 11 “Amedeo Avogadro”, Viale T. Michel 11, I-15121 Alessandria, Italy, ³Department of Molecular Biotechnology and Health Science & Center for Molecular Imaging, University of Turin, Via Nizza 52, 10126 Torino, Italy, ⁴Institute for Biostructures and Bioimages (CNR) c/o Molecular Biotechnology Center Via Nizza 52, 10126 Torino, Italy, ⁵Department of Medical Sciences, University of Turin, Via Nizza 52, 10126 Torino, Italy

12.00 – 12.15 Structural analysis of antiradical activities of catecholamines

Jelica Ilić¹, Dušan Dimić², Jasmina Dimitrić Marković²

¹*University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Department of Catalysis and Chemical Engineering, Njegoševa 12, Belgrade, Serbia,* ²*University of Belgrade, Faculty of Physical Chemistry, Studentski trg 12/16, 11000 Belgrade, Serbia*

12.15 – 12.30 Synthesis and controlled drug release of poly(N-isopropylacrylamide) based thermosensitive hydrogels and encapsulation with paracetamol

Dunja Arsenijević¹, Anamarija Nikoletić^{1,2}

¹*Petnica Science Center, Serbia,* ²*Faculty of Chemistry, University of Belgrade, Serbia*

12.30 – 12.45 Synthesis and characterization of genipin-crosslinked chitosan hydrogels

Ana Stanojević¹, Đurđa Vukajlović², Julie Parker², Katarina Novaković²

¹*University of Belgrade, Faculty of Physical Chemistry, Belgrade, Serbia,* ²*Newcastle University, School of Engineering, Newcastle Upon Tyne, United Kingdom*

12.45 – 13.00 Production optimization of nanocomposite microfibre hydrogels based on alginate, honey and silver nanoparticles

Milan Pavlović, Jasmina Stojkowska, Bojana Obradović

University of Belgrade, Faculty of Technology and Metallurgy, Department of Chemical Engineering, Belgrade, Serbia

13.00 – 13.15 Silver/poly(vinyl alcohol)/chitosan and silver/poly(vinyl alcohol)/chitosan/graphene hydrogels – electrochemical synthesis, silver release and antibacterial properties

Katarina Nešović¹, Ana Janković¹, Maja Vukašinović-Sekulić¹, Aleksandra Perić-Grujić¹, Vesna Kojić², Vesna Mišković-Stanković¹

¹*University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia,*

²*University of Novi Sad, Faculty of Medicine, Oncology Institute of Vojvodina, Sremska Kamenica, Srbija*

13.15 – 13.30 Chitosan-g-oligolactide copolymers for regenerative medicine

Tatiana S. Demina^{1,2}, Ksenia N. Bardakova¹, Christian Grandfils³, Tatiana A. Akopova², Peter S. Timashev²

¹*Institute for Regenerative Medicine, Sechenov University, Moscow, Russia,* ²*Enikolopov Institute of Synthetic Polymer Materials RAS, Moscow, Russia,* ³*Interfaculty Research Centre on Biomaterials (CEIB), University of Liège, Liege, Belgium*

13.30 – 13.45 Characteristic of titanium dioxide - chitosan - hyaluronic acid systems interactions with DPPG membrane

Agata Gozdecka, Agnieszka E. Wiącek, Małgorzata Jurak

Maria Curie-Skłodowska University, Faculty of Chemistry, Department of Interfacial Phenomena, Lublin, Poland

13.45 – 14.45 Lunch break

14.45 – 16.45 3rd Session – Biomaterials III

Chairpersons: Dr. Đorđe Veljović and Klaudia Woźniak

14.45 – 15.00 The investigation of structural and morphological properties of starch coated Ni-Zn-ferrites

Marija Šuljagić¹, Dejan Jeremić², Ljubica Anđelković³, Predrag J. Vulić⁴, Aleksandar S. Nikolić¹

¹Faculty of Chemistry, University of Belgrade, Studentski Trg 12–16, 11000 Belgrade, RS,

²Innovation Center of the Faculty of Chemistry, University of Belgrade, Studentski Trg 12–16, 11000 Belgrade, RS, ³Department of Chemistry, IChTM, University of Belgrade,

Studentski Trg 12–16, 11000 Belgrade, RS, ⁴Faculty of Mining and Geology, University of Belgrade, Djušina 7, 11000 Belgrade, RS

15.00 – 15.15 Novel pH sensitive degradable zwitterionic hydrogels based on poly(β -amino esters)

Vuk Filipović¹, Lidija Đokić², Jasmina Nikodinović Runić², Dejan Godevac¹, Simonida Tomić³

¹University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Belgrade, Serbia,

²University of Belgrade, Institute of Molecular Genetics and Genetic Engineering,

³University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia

15.15 – 15.30 Smart biocompatible and biodegradable hydrogel matrices based on natural and synthetic polymers

Marija M. Babić¹, Vuk V. Filipović², Simonida Lj. Tomić¹

¹University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia,

²University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Belgrade, Serbia

15.30 – 15.45 Fibroblasts' proliferation on collagen-based membranes of different origin – *in vitro* study

Sanja Stojanović^{1,2}, Milica Tomić², Žarko Mitić³, Stevo Najman^{1,2}

¹University of Niš, Faculty of Medicine, Department of Biology and Human Genetics, 18000 Niš, Serbia, ²University of Niš, Faculty of Medicine, Scientific Research Center for

Biomedicine, Department for Cell and Tissue Engineering, 18000 Niš, Serbia

³University of Niš, Faculty of Medicine, Department of Pharmacy, 18000 Niš, Serbia

15.45 – 16.00 Studies on properties of lipid – peptide films on a polymer support

Klaudia Woźniak, Małgorzata Jurak, Agnieszka Ewa Wiącek, Kacper Przykaza
Department of Physical Chemistry-Interfacial Phenomena, Faculty of Chemistry, Maria Curie-Skłodowska University, 20-031 Lublin, Poland

16.00 – 16.15 Wetting properties of plasma activated and biocoated PEEK surfaces

Kacper Przykaza, Klaudia Woźniak, Agata Gozdecka, Małgorzata Jurak, Agnieszka Ewa Wiącek

Department of Physical Chemistry-Interfacial Phenomena, Faculty of Chemistry, University of Maria Curie-Skłodowska, Maria Curie-Skłodowska Sq. 3, 20-031 Lublin, Poland

16.15 – 16.30 Synthesis and characterization of bioactive glass doped with lithium and strontium ions

Jovana Dimitrijević¹, Đorđe Veljović¹, Rada Petrović¹, Željko Radovanović¹, Smilja Marković², Jelena Rogan¹, Aleksandra Dapčević¹, Suzana Dimitrijević Branković¹, Vesna Kojić³, Đorđe Janačković¹

¹Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia, ²Institute of Technical Sciences of SASA, Belgrade, Serbia, ³Oncology Institute of Vojvodina, Sremska Kamenica, Serbia

16.30 – 16.45 Phase, morphological and statistical analysis of urinary stones from Serbian patients

Miljana Mirković,¹ Anja Dosen,¹ Branko Matović,¹ Suzana Erić,² Predrag Vulić,² Aleksandra Rosić²

¹Department of Material Science, Vinča Institute of Nuclear Sciences, University of Belgrade, Serbia, ²Department of Mineralogy and Crystallography, Faculty of Mining and Geology, University of Belgrade, Serbia

16.45 – 17.00 Break

**17.00 – 18.30 4th Session – Theoretical Modeling of Materials
Chairpersons: Prof. Dr. Igor Pašti and Ana Dobrota**

17.00 – 17.15 Design of novel oxygen reduction reaction electrocatalysts guided by systematic study of atomic adsorption on graphene through the Periodic Table of Elements

Igor A. Pašti,¹ Aleksandar Z. Jovanović,¹ Ana S. Dobrota,¹ Nemanja M. Gavrilov,¹ Börje Johansson,^{2,3} Natalia V. Skorodumova,^{2,3} Slavko V. Mentus,^{1,4}

¹University of Belgrade, Faculty of Physical Chemistry, Belgrade, RS, ²Uppsala University, Department of Physics and Astronomy, Uppsala, SE, ³KTH - Royal Institute of Technology, School of Industrial Engineering and Management, Department of Materials Science and Engineering, Stockholm, SE, ⁴Serbian Academy of Sciences and Arts, Belgrade, RS

17.15 – 17.30 DFT investigation of monoatomic catalysts supported by graphene substrates

Aleksandar Z. Jovanović, Igor A. Pašti

University of Belgrade, Faculty of Physical Chemistry, Studentski trg 12-16, 11158 Belgrade, Serbia

17.30 – 17.45 Doped graphene as an electrode material in novel metal-ion batteries: the importance of the oxidation level

Ana S. Dobrota,¹ Igor A. Pašti,^{1,2} Natalia V. Skorodumova^{2,3}

¹University of Belgrade, Faculty of Physical Chemistry, Belgrade, Serbia, ²KTH Royal Institute of Technology, Department of Materials Science and Engineering, School of Industrial Engineering and Management, Stockholm, Sweden, ³Uppsala University, Department of Physics and Astronomy, Uppsala, Sweden

17.45 – 18.00 Structural properties and antisite defect formation in monoclinic $\text{Li}_2\text{FeSiO}_4$ – a DFT aspect

Dragana D. Vasić Aničijević¹, Vladan J. Aničijević², Miloš D. Milović³

¹Vinča Institute of Nuclear Sciences, University of Belgrade, Mike Alasa 12-14, Belgrade, Serbia, ²Faculty of Physical Chemistry, University of Belgrade, Studentski trg 12-16, Belgrade, Serbia, ³Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, 11 000 Belgrade, Serbia

18.00 – 18.15 Investigation of wave propagation in single crystals of heat-resistant nickel alloys

Elena Vladimirovna Tuch¹, Ekaterina Aleksandrovna Strebkova²

¹Institute of Strength Physics and Materials Science SB RAS, 2/4 Akademichesky Ave., Tomsk, 634055, Russia, ²National research Tomsk State University, 36 Lenina St., Tomsk, 634000, Russia

18.15 – 18.30 The effect of disorder on the density of electronic states of two-layer AB graphene

Nadezhda Bobenko,¹ Valery Egorushkin,¹ Nataliya Melnikova,² Alexander Ponomarev,¹ Leonid Barkalov,⁴ Anna Belosludseva^{1,3}

¹Institute of Strength Physics and Materials Science, Siberian Branch of the Russian Academy of Sciences, Tomsk, Russia, ²National Research Tomsk State University, the V.D. Kuznetsov Siberian Physical Technical Institute, Tomsk, Russia, ³Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia, ⁴Saint-Petersburg National Research University of Information Technologies, Mechanics and Optics, St. Petersburg, Russia

Thursday, December 6, 2018

09.00 – 11.15 5th Session – New Synthesis and Processing Methods I

Chairpersons: Dr. Smilja Marković and Željko V. Janičijević

09.00 – 09.15 Comparative properties of composite poly(lactic-co-glycolic acid)/poly(acrylic acid) implants synthesized using ultraviolet and gamma irradiation

Željko V. Janičijević^{1,2}, Ivica T. Vujčić³, Miloš Lj. Vujisić¹, Filip D. Radovanović²

¹University of Belgrade, School of Electrical Engineering, Bulevar kralja Aleksandra 73, 11120 Belgrade, Serbia, ²Institute of Technical Sciences of the Serbian Academy of Sciences and Arts, Knez Mihailova 35/IV, 11000 Belgrade, Serbia, ³University of Belgrade, Vinča Institute of Nuclear Sciences, Mike Petrovića Alasa 12-14, 11351 Vinča, Belgrade, Serbia

09.15 – 09.30 Determination of the effective diffusivity coefficients of naringin esters

Anđela M. Paunović¹, Ana D. Milivojević², Marija M. Čorović³

¹University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia, ²University of Belgrade, Innovation Center, Faculty of Technology and Metallurgy, Belgrade, Serbia, ³University of Belgrade, Faculty of Technology and Metallurgy, Department of Biochemical Engineering and Biotechnology, Belgrade, Serbia

09.30 – 09.45 Enzymatic synthesis of naringin esters using natural oils as acyl donors

Teodora Arsenijević¹, Ana D. Milivojević², Marija M. Čorović³

¹University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia, ²University of Belgrade, Innovation Center, Faculty of Technology and Metallurgy, Belgrade, Serbia, ³University of Belgrade, Faculty of Technology and Metallurgy, Department of Biochemical Engineering and Biotechnology, Belgrade, Serbia

09.45 – 10.00 Tellurite glasses: potential transparent radiation shielding materials

Ali Erçin Ersundu, Miray Çelikbilek Ersundu, Volkan Akıllı, Orhan Kıbrıslı

Yildiz Technical University, Faculty of Chemical and Metallurgical Engineering, Department of Metallurgical and Materials Engineering, Istanbul, 34220, Turkey

10.00 – 10.15 Solvothermal synthesis of kaolinite nanoscrolls

András Kovács, Éva Kristófné Makó

University of Pannonia, Faculty of Engineering, Institute of Materials Engineering, Veszprém, Hungary

10.15 – 10.30 The influence of the chemical modifications on the AC specific electrical conductivity of the jute woven fabrics

Aleksandra M. Ivanovska¹, Dragana D. Cerović^{2,3}, Koviļjka A. Asanović¹, Mirjana M. Kostić¹

¹University of Belgrade, Faculty of Technology and Metallurgy, Department of Textile Engineering, Belgrade, Serbia, ²University of Belgrade, Faculty of Physics, Belgrade, Serbia, ³The College of Textile Design, Technology and Management, Belgrade, Serbia

10.30 – 10.45 Potential application of pharmaceutical waste: oxaprozin as corrosion inhibitor on aluminium alloy AA2024

Stefan Đokić¹, Bojan Božić², Branimir Grgur¹, Jelena Bajat¹

¹Faculty of Technology and Metallurgy, Karnegijeva 4, 11120 Belgrade, Serbia, ²Institute of Physiology and Biochemistry, Faculty of Biology, University of Belgrade, Studentski trg 16, 11000 Belgrade, Serbia

10.45 – 11.00 Investigation of the effect of different surface preparation on X42CR13 prior to PVD coating on wear resistance

Shiraz Ahmed Siddiqui, Andrea Szilágyiné Biró, Maria Berkes Maros

University of Miskolc, Hungary, Institute of Materials Science & Technology

11.00 – 11.15 Investigation of nanomechanical properties of chemically tempered glasses

Ahmet Caner Kayaalp^{1,2}, Berkel Kayacan^{1,2}, Nahide Özben², Lukas Simurka², İlkey Sökmen², Ali Erçin Ersundu¹, Miray Çelikbilek Ersundu¹

¹Yildiz Technical University, Department of Metallurgical and Materials Engineering, Faculty of Chemical and Metallurgical Engineering, Istanbul, 34220, Turkey, ²Şişecam Science and Technology Center, Şişecam Str. No:2 Çayırova, Kocaeli, Turkey

11.15 – 11.30 Break

**11.30 – 13.30 6th Session – New Synthesis and Processing Methods II
Chairpersons: Dr. Nadica Abazović and Ardak Karagulanova**

11.30 – 11.45 Production of alkali activated cements using a new industrial waste source

Ida Balczár, Tamás Korim

University of Pannonia, Faculty of Engineering, Institute of Materials Engineering, Veszprém, Hungary

11.45 – 12.00 Synthesize graphene foam as anode materials for lithium ion batteries

Bahareh Bakhtiari, Rokhsareh Bakhtiari, Alp Yurum, Selmiye Alkan Gursel

Sabancı University Nanotechnology Research and Application Center (SUNUM), Tuzla, Istanbul, Turkey 34956

12.00 – 12.15 Technological restrictions at 3D printing with Zortrax M200 3D printer

Emanuel B. Scutaru¹, Georgiana Vetrice¹, Ivan Knežević², Mircea V. Drăgoi¹, Valentin M. Stamate¹

¹*Department of Manufacturing Engineering, Faculty of Technological Engineering and Industrial Management, Transilvania University of Braşov, Braşov, Romania,* ²*Department of Mechanical Engineering, Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia*

12.15 – 12.30 Alkali activated cement foams as catalyst supports

Adrienn Boros, Tamás Korim, Ida Balczár

University of Pannonia, Faculty of Engineering, Institute of Materials Engineering, Veszprém, Hungary

12.30 – 12.45 Possibilities of destruction of hazardous waste piralen

Oliver Dimitrijević, Miodrag Šmelcerović

Higher Medical School of Professional studies "HIPOKRAT", Bujanovac, Serbia

12.45 – 13.00 Deposition of bioactive coatings onto polylactide materials: comparison of methods

Tatiana S. Demina^{1,2}

¹*Enikolopov Institute of Synthetic Polymer Materials RAS, Moscow, Russia,* ²*Institute for Regenerative Medicine, Sechenov University, Moscow, Russia*

13.00 – 13.15 The study of the applicability of flotation agents based on derivatives of oxane for an enrichment of fine coal particles

Ardak Karagulanova¹, Dmitriy Shekhirev², Zhanibek Asylhanov³, Sergey Kalugin³, Olesya Tyumentseva¹, Tlek Ketegenov¹

¹*Al-Farabi Kazakh National University, Scientific Technology Park, Almaty, Kazakhstan,* ²*National university of science and technology MISIS, SRI for New Chemical Technologies and Materials*

13.15 – 13.30 Hydrogenation of exhaust resource storage of explosives nitroaromatic series with the purpose of their utilization

Alexey V. Safonov, Maxim V. Kuznetsov

All-Russian Research Institute on Problems of Civil Defense and Emergencies of Emergency Control Ministry of Russia (EMERCOM), Moscow, Russian Federation

13.30 – 14.30 Lunch break

14.30 – 16.45 7th Session – Materials for High-technology Application I
Chairpersons: Dr. Vuk Radmilović and Dr. Deepak Venkateshvaran

14.30 – 15.00 Thermoelectrics and spintronics of organic semiconductors

Deepak Venkateshvaran¹, Shu-Jen Wang¹, Martin Statz¹, Riccardo Di Pietro², Henning Sirringhaus¹

¹*Cavendish Laboratory, University of Cambridge, JJ Thomson Avenue, Cambridge, CB3 0HE, United Kingdom,* ²*Hitachi Cambridge Laboratory, JJ Thomson Avenue, Cambridge, CB3 0HE, United Kingdom*

15.00 – 15.15 Welded silver nanowires as transparent electrodes in optoelectronics

Vuk V. Radmilović¹, Peter Ercius², Colin Ophus², Erdmann Spiecker³, Velimir R. Radmilović⁴

¹*University of Belgrade, Faculty of Technology and Metallurgy, Innovation Center, Belgrade, Serbia,* ²*University of California, Molecular Foundry, National Center for Electron Microscopy, Berkeley, USA,* ³*Friedrich Alexander University, Department of Materials Science and Engineering, Institute for Micro- and Nanostructure Research, Erlangen, Germany,* ⁴*Serbian Academy of Sciences and Arts, Belgrade, Serbia*

15.15 – 15.30 Processing and characterization of Bi_{0.5}Na_{0.5}TiO₃ piezoelectric ceramics

Aleksandra Milojković¹, Andrea Nesterović¹, Jelena Vukmirović¹, Elvira Đurđić², Branimir Bajac³, Marija Milanović¹, Vladimir V. Srdić¹

¹*Faculty of Technology, University of Novi Sad, Serbia,* ²*Faculty of Sciences, University of Novi Sad, Serbia,* ³*BioSense Institute, Novi Sad, Serbia*

15.30 – 15.45 X-ray spectra and electronic structure of the Ca₃Ga₂Ge₃O₁₂ compound

Volodymyr Truba, Ivan Shcherba

Lviv National University of Ivan Franko, Faculty of Physics, Lviv, Ukraine

15.45 – 16.00 Synthesis and characterization of Na_{0.4}MnO₂ as cathode material for aqueous sodium-ion batteries

Lazar Rakočević¹, Mirjana Novaković², Jelena Potočnik², Dragana Jugović³, Ivana Stojković Simatović¹

¹*University of Belgrade, Faculty of Physical Chemistry, Belgrade, Serbia,* ²*University of Belgrade, Vinča Institute of Nuclear Sciences, Serbia,* ³*Institute of Technical Sciences of SASA, Belgrade, Serbia*

16.00 – 16.15 Application of microwave curing on in-situ cement and concrete manufacture

Yasemin Akyol, Sezen Donmez, Kosar Hassannezhad, Mehmet Ali Gulgun

Department of Material Sciences and Nano-Engineering, Faculty of Engineering and Natural Sciences, Sabanci University, Istanbul, Turkey 34956

16.15 – 16.30 Rheology and compatibility study of partly cured binders for plastic explosives

Ivan D. Dimitrijević, Danica M. Simić, Bojana Z. Fidanovski, Saša J. Brzić

Military Technical Institute, Belgrade, RS

16.30 – 16.45 Low temperature micromechanical properties of polystyrene

Hanna V. Rusakova, L.S. Fomenko, S.V. Lubenets

*B. Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine,
Kharkiv, Ukraine, UA*

16.45 – 17.00 Break

17.00 – 18.15 8th Session – Materials for High-technology Application II Chairpersons: Dr. Lidija Mančić and Kristina Božinović

17.00 – 17.15 The influence of CrAlN coating chemical composition on detachment forces during HPDC

Dragan Kukuruzović¹, Lazar Kovačević¹, Pal Terek¹, Branko Škorić¹, Aleksandar Miletić¹, Peter Panjan², Miha Čekada²

¹*University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia,* ²*Jozef Stefan Institute, Ljubljana, Slovenia*

17.15 – 17.30 Investigation of structural and thermal properties of the Sn-Bi alloys

Kristina Božinović, Miljan Marković, Milana Milanović, Zoran Mladenović, Bojan Zdravković, Saša Đorđević, Nenad Jankucić

Technical Faculty in Bor, Department of Metallurgical Engineering, University of Belgrade, Vojske Jugoslavije 12, 19210 Bor, Serbia

17.30 – 17.45 Determination of fraction of scattered X-radiation on the radiotherapy device ELEKTA using (γ ,n) nuclear reactions

Anđela Mitrović, Marko Daković

University of Belgrade, Faculty of Physical Chemistry, Belgrade, Serbia

17.45 – 18.00 Surface characterization of wear resistant calender composite coatings

Miklós Jakab¹, Balázs Jakab²

¹*University of Pannonia, Institute of Materials Engineering, Veszprem, Hungary,* ²*AC2T research GmbH, Wiener Neustadt, Austria*

18.00 – 18.15 Characterization of Yb:YAG laser welding AZ61 magnesium alloys

Seddik Ouallam^{1,2,3}, J.-E. Masse², L. Barrallier², M. L. Djeghlal³, F. Peyre⁴, F. Guittonneau², L. Kaba¹, Z. Boutaghou¹

¹*Research Center in Industrials Technologie CRTI P.O.Box64, Cheraga, 16014– Algiers, Algeria,* ²*Laboratoire MSMP, Arts et Métiers ParisTech, 2 Cours des Arts et Métiers13617, Aix-en-Provence, France,* ³*Ecole Nationale Polytechnique, Avenue Hacen Badi, El Harrach – Alger, Algérie,* ⁴*Laboratoire PIMM, Arts et Métiers ParisTech-Paris, France*

Friday, December 7, 2018

09.00 – 10.45 9th Session – Nanostructured Materials I

Chairpersons: Dr. Dragana Jugović and Mila Krstajić Pajić

09.00 – 09.15 The ensemble effect in PtAu nanocatalysts

Mila N. Krstajić Pajić¹, Sanja I. Stevanović², Vuk V. Radmilović³, Velimir R. Radmilović^{1,4}, Snežana Lj. Gojković¹, Vladislava M. Jovanović²

¹University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia,

²University of Belgrade, Institute for Chemistry, Technology and Metallurgy, Department of Electrochemistry, Belgrade, Serbia, ³Innovation Center of the Faculty of Technology and Metallurgy, Belgrade, Serbia, ⁴Serbian Academy of Sciences and Arts

09.15 – 09.30 The consolidation process and microstructure analysis of synthesized diamonds within fractal nature analysis

Sandra Veljković¹, Vojislav V. Mitić^{1,2}, Goran Lazović³, Vesna Paunović¹, Markus Mohr⁴, Hans Fecht⁴

¹University of Niš, Faculty of Electronic Engineering, Niš, Serbia, ²Institute of Technical

Sciences of SASA, Belgrade, Serbia, ³University of Belgrade, Faculty of Mechanical Engineering, Belgrade, Serbia, ⁴Institute of Functional Nanosystems FNS, Ulm University, Germany

09.30 – 09.45 Enhanced electrocatalytic activity for methanol oxidation of polycrystalline platinum modified by iridium

Thomas S.A. Wakelin¹, Milutin Lj. Smiljanić², Zlatko Lj. Rakočević², Svetlana B. Štrbac¹

¹ICTM-Institute of Electrochemistry, University of Belgrade, Serbia

²INS Vinča, Laboratory of Atomic Physics, University of Belgrade, Serbia

09.45 – 10.00 Electrospun hybrids of carbon nanofibers with mixed metal oxide nanoparticles as high-performance battery-type supercapacitors

Daniel M. Mijailović¹, Uroš Č. Lačnjevac², Vuk V. Radmilović¹, Dušica B. Stojanović³, Velimir R. Radmilović^{3,4}, Vladimir D. Jović², Petar S. Uskoković³

¹University of Belgrade, Innovation Center, Faculty of Technology and Metallurgy,

Karnegijeva 4, 11120, Belgrade, Serbia, ²University of Belgrade, Institute for Multidisciplinary Research, Kneza Višeslava 1, 11030 Belgrade, Serbia, ³University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11120, Belgrade, Serbia,

⁴Serbian Academy of Sciences and Arts, Knez Mihailova 35, 11000 Belgrade, Serbia

10.00 – 10.15 Influence of ultrasound on morphology and anticorrosive properties of electrodeposited Zn-Co-CeO₂ nanocomposite coatings

Marija Ridošić¹, Eva Garcia Lecina², Asier Salicio Paz², Ljiljana Živković³, Jelena Bajat⁴

¹University of East Sarajevo, Faculty of Technology, Zvornik, Bosnia and Herzegovina,

²CIDETEC Surface Engineering, San Sebastian, Spain, ³University of Belgrade, The Vinča

Istitute for Nuclear Sciences, Belgrade, Serbia, ⁴University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia

10.15 – 10.30 Nano/microcontainers for corrosion protection of a copper/gold galvanic couple

Diogo E Almeida S¹, Isabel C S C Sousa¹, Fátima G C Montemor², Mário G S Ferreira¹
¹*Department of Materials Engineering and Ceramics/CICECO, University of Aveiro, Portugal,* ²*Instituto Superior Técnico, University of Lisbon, Portugal*

10.30 – 10.45 Phase composition of technologically-modified MgAl₂O₄ nanoceramics

Halyna Klym, Yuriy Kostiv, Ivanna Vasylychshyn
Lviv Polytechnic National University, 12 Bandera str., Lviv, 79013, Ukraine

10.45 – 11.00 Break

11.00 – 12.30 10th Session – Nanostructured Materials II

Chairpersons: Prof. Dr. Ivana Stojković Simatović and Maria Uzelac

11.00 – 11.15 Effects of electron acceptors and radical scavengers on the kinetics of photodegradation of ceftriaxone under simulated solar irradiation

Biljana F. Abramović, Maria M. Uzelac
University of Novi Sad, Faculty of Sciences, Department of Chemistry, Biochemistry and Environmental Protection, Trg D. Obradovića 3, 21000 Novi Sad, Serbia

11.15 – 11.30 Structural, morphological and optical characteristics of ZnO particles synthesized in the presence of surfactants CTAB and Pluronic F-127

Sanita Ahmetović¹, Stevan Stojadinović², Vladislav Rac³, Srečo Škapin⁴, Ivana Stojković Simatović¹, Smilja Marković⁵
¹*Faculty of Physical Chemistry, University of Belgrade, Studentski Trg 12, Belgrade, Serbia,* ²*University of Belgrade, Faculty of Physics, Belgrade, Serbia, University of Belgrade,* ³*Faculty of Agriculture, Belgrade, Serbia,* ⁴*Jožef Stefan Institute, Ljubljana, Slovenia,* ⁵*Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, 11000 Belgrade, Serbia*

11.30 – 11.45 TiO₂/Ag nanoparticles modified cotton fabric and its application to photocatalysis

Milica V. Milošević, Marija B. Radoičić, Zoran V. Šaponjić
Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia

11.45 – 12.00 Surface optical phonon – Plasmon interaction in nanodimensional CdTe thin films

Jelena Mitrić¹, N. Paunović¹, M. Mitrić², B. Vasić¹, U. Ralević¹, J. Trajčić¹, M. Romčević¹, W. D. Dobrowolski³, I. S. Yahia⁴, N. Romčević¹

¹University of Belgrade, Institute of Physics Belgrade, Belgrade, RS, ²University of Belgrade, Institute Vinča, Belgrade, RS, ³Polish Academy of Science, Institute of Physics, Warsaw, PL, ⁴King Khalid University, Faculty of Science, Department of Physics, Abha, SA

12.00 – 12.15 *In vitro* testing of genotoxic and apoptotic potential of two synthesized nanomaterials by DNA fragmentation assay

Sanja Stojanović^{1,2}, Lazar Bajić², Vladimir Cvetković³, Nenad Ignjatović⁴, Stevo Najman^{1,2}
¹University of Niš, Faculty of Medicine, Department of Biology and Human Genetics, 18000 Niš, Serbia, ²University of Niš, Faculty of Medicine, Scientific Research Center for Biomedicine, Department for Cell and Tissue Engineering, 18000 Niš, Serbia, ³University of Niš, Faculty of Sciences and Mathematics, Department of Biology and Ecology, 18000 Niš, Serbia, ⁴Institute of Technical Sciences of the Serbian Academy of Science and Arts, 11000 Belgrade, Serbia

12.15 – 12.30 Raman Spectroscopy Study on phase transition in CrI₃ single crystals

Sanja Đurđić¹, Andrijana Šolajić¹, Jelena Pešić¹, Maja Šćepanović¹, Y. Liu², Andreas Baum^{3,4}, Čeda Petrović², Nenad Lazarević¹, Zoran V. Popović^{1,5}
¹Institute of Physics, Pregrevica 118, Belgrade, Serbia, ²Brookhaven National Laboratory, Upton, New York 11973-5000, USA, ³Walther Meissner Institut, Bayerische Akademie der Wissenschaften, 85748 Garching, Germany, ⁴Fakultät für Physik E23, Technische Universität München, 85748 Garching, Germany, ⁵Serbian Academy of Sciences and Arts, Knez Mihailova 35, 11000 Belgrade, Serbia

12.30 – 13.45 Lunch break

13.45 – 15.15 11th Session – Nanostructured Materials III

Chairpersons: Dr. Smilja Marković and Dr. Maria Čebela

13.45 – 14.00 Influence of Ho doping on magnetic properties of bismuth ferrite nanopowders

Maria Čebela^{1,2}, Pavla Šenjug¹, Filip Torić¹, Željko Skoko¹, Teodoro Klaser¹, Damir Pajić¹
¹Department of Physics, Faculty of Science, University of Zagreb, Bijenička c. 32, HR-10000 Zagreb, Croatia, ²Institute for Nuclear sciences, Centre of Excellence-CextremeLab "Vinča", University of Belgrade, 11000 Belgrade, Serbia

14.00 – 14.15 Microstructural changes of (Ti_{1-x}M_x)C (M=Cr and W) solid solutions induced by mechanical alloying

Mohsen Mhadhbi¹, Houyem Abderrazak¹, Mohamed Khitouni²
¹Laboratory of Useful Materials, National Institute of Research and Physical-chemical Analysis, Technopol of Sidi Thabet, 2020 Sidi Thabet, Tunisia, ²Laboratory of Inorganic Chemistry, 99/UR/12-22, Sciences Faculty of Sfax, Sfax 3018, Tunisia

14.15 – 14.30 Macro and micro wettability of hydrophobic rough surface

Konrad Terpiłowski¹, Olena Goncharuk², Salvador Pérez – Huertas¹, Maciej Nastaj³

¹*Department of Physical Chemistry-Interfacial Phenomena, Faculty of Chemistry, Maria Curie-Skłodowska University, sq. Maria Curie-Skłodowska 3, 20-031 Lublin, Poland,*
²*O.O.Chuiko Institute of Surface Chemistry, National Academy of Sciences of Ukraine, st. Generala Naumova 17, 03164 Kyiv, Ukraine,* ³*Department of Milk Technology and Hydrocolloids, University of Life Sciences in Lublin, st. Skromna 8, 20-704 Lublin, Poland*

14.30 – 14.45 Spectrophotometric and thermal properties of poly(vinyl butyral) and epoxy protective coatings with nanostructures of WS₂

Danica Simić, Aleksandra Samolov, Bojana Fidanovski, Ljubica Totovski
Military Technical Institute, Ratka Resanovića 1, 11030 Belgrade, Serbia

14.45 – 15.00 Unstable plastic deformation of ultrafine-grained magnesium alloy AZ31 at low temperature

Pavel A. Zabrodin

B. Verkin Institute for Low Temperature Physics and Engineering of NAS of Ukraine, 47 Nauky Ave., Kharkiv, 61103, Ukraine

15.00 – 15.15 Optical detection of ultra-trace level of aqueous uranyl ions by magnetically functionalized cadmium sulphide quantum dots fluoroprobe

Ambika Kumar¹, Deepika Dimri²

¹*Department of Chemistry, Bhagalpur National College Bhagalpur, India,* ²*School of Environment & Natural Resources, Doon University Dehradun, India*

15.15 – 15.30 Break

15.30 – 17.00 12th Session – Environmental Materials I

Chairpersons: Dr. Jasmina Dostanić and Pozhhan Mokhtari

15.30 – 15.45 Customizing nanotubular titania for photocatalytic activity

Jelena Vujančević¹, Anđelika Bjelajac², Jovana Ćirković³, Vera P. Pavlović⁴, Endre Horváth⁵, László Forró⁵, Đorđe Janačković⁶, Vladimir B. Pavlović¹

¹*Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, 11000 Belgrade, Serbia,*
²*University of Belgrade, Innovation Center of Faculty of the Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Serbia,* ³*University of Belgrade, Institute for Multidisciplinary Research, Kneza Višeslava 1, 11000 Belgrade, Serbia,* ⁴*University of Belgrade, Faculty of Mechanical Engineering, Kraljice Marije 16, 11000 Belgrade, Serbia,*
⁵*Ecole Polytechnique Fédérale de Lausanne, Laboratory of Physics of Complex Matter (LPMC), CH-1015 Lausanne, Switzerland,* ⁶*University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, 11000 Belgrade, Serbia*

15.45 – 16.00 Synthesis and characterisation of ZnO synthesized by glycine-nitrate combustion process

Milena P. Dojčinović¹, Smilja Marković², S. Stojadinović³, V. Rac⁴, Ivona Janković-Častvan⁵, Ivana Stojković Simatović⁶

¹*Institute for Multidisciplinary research, Univecity of Belgrade, Serbia,* ²*Institute of Technical Sciences of the Serbian Academy of Science and Arts, Belgrade, Serbia,* ³*University of Belgrade, Faculty of Physics, Belgrade, Serbia,* ⁴*University of Belgrade, Faculty of Agriculture, Belgrade, Serbia,* ⁵*University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia,* ⁶*Faculty of Physical Chemistry, University of Belgrade, Serbia.*

16.00 – 16.15 Kinetics and modeling of sorption behavior of chitosan-based hydrogel

José Joaquim Bandeira Almeida Rodrigues de Oliveira, Pantaporn Sittplangkoon, Ksenija Milošević, Marija Lučić Škorić, Melina Kalagasidis Krušić

¹*Federal University of Sergipe, Department of Chemical Engineering, São Cristóvão, Brazil,*

²*Chulalongkorn University, Interdisciplinary Program in Environmental Science, Bangkok, Thailand,*

³*University of Belgrade, Faculty of Technology and Metallurgy, Belgrade, Serbia,*

⁴*University of Belgrade, Innovation Center of the Faculty of Technology and Metallurgy, Belgrade, Serbia*

16.15 – 16.30 The application of calcined clay materials from waste mine overburden as cement substitution

Pozhhan Mokhtari, Sorour Semsari Parapari, Noyan Ozkan, Mehmet Ali Gulgun

Department of Material Sciences and Nano-Engineering, Faculty of Engineering and Natural Sciences, Sabanci University, Istanbul, Turkey 34956

16.30 – 16.45 Electrochemical behaviour of carbon steel C15 in the presence of aloe vera gel

Milica Bošković, Vesna Grekulović, Mirjana Rajčić Vujasinović, Aleksandra Mitovski, Uroš Stamenković

University of Belgrade, Technical Faculty in Bor, Bor, Serbia

16.45 – 17.00 Sorption of Pb²⁺ ions from wastewater by Paulownia leaves and their hydrochar

Marija R. Koprivica, Jelena T. Petrović, Marija S. Petrović, Marija L. Mihajlović, Jelena V. Milojković, Marija M. Kojić, Mirjana D. Stojanović

Institute for Technology of Nuclear and Other Mineral Raw Materials, 86 Franchet d'Esperey St., 11000 Belgrade, Serbia

17.00 – 17.15 Break

17.15 – 18.30 13th Session – Environmental Materials II

Chairpersons: Dr. Veljko Đokić and Aleksandra Kulić Mandić

17.15 – 17.30 Adsorption study of cadmium ions on modified kaolinite by some amino acids

Nataša Mladenović¹, Marija Ivanović², Ljiljana Kljajević², Jelena Gulicovski², Snežana Nenadović², Katarina Trivunac¹

¹*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia,*

²*Laboratory for Materials Sciences, Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia*

17.30 – 17.45 Optimization of biocomposite composition for efficient adsorption of nickel (II) ions

Durica Katnić¹, Milan Milivojević², Aleksandar Marinković², Mirjana Kostić², Jelena Georgijević¹, Milena Pijović¹

¹*Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia,* ²*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*

17.45 – 18.00 Assessment of the applicability of raw and calcined seashells for the treatment of industrial wastewater

Marija S. Egerić, Ivana D. Smičiklas, Mihajlo D. Jović, Marija Z. Šljivić-Ivanović
University of Belgrade, Vinča Institute of Nuclear Sciences, P.O. Box 522, 11000 Belgrade, Serbia

18.00 – 18.15 Iron-impregnated paper mill sludge as Fenton process catalyst

Aleksandra Kulić Mandić, Milena Bečelić-Tomin, Đurđa Kerkez, Gordana Pucar Milidrag, Božo Dalmacija

University of Novi Sad, Faculty of Sciences, Department of Chemistry, Biochemistry and Environmental Protection, Trg Dositeja Obradovića 3, 21000 Novi Sad, Republic of Serbia

18.15 – 18.30 Influence of the type of polyacrylamide ionic group on the accumulation of chromium(VI) ions in the montmorillonite-aqueous solution system

Małgorzata Wiśniewska¹, Gracja Fijałkowska¹, Katarzyna Szewczuk-Karpisz²

¹*Department of Radiochemistry and Colloids Chemistry, Faculty of Chemistry, Maria Curie-Skłodowska University, Maria Curie-Skłodowska Sq. 3, 20-031 Lublin, Poland,* ²*Department of Physical Chemistry of Porous Materials, Institute of Agrophysics Polish Academy of Sciences, Doświadczalna 4 Street, 20-290 Lublin, Poland*

18.40 Closing Ceremony

11-4

**Spectrophotometric and thermal properties of poly(vinyl butyral)
and epoxy protective coatings with nanostructures of WS₂**

Danica Simić, Aleksandra Samolov, Bojana Fidanovski, Ljubica Totovski
Military Technical Institute, Ratka Resanovića 1, 11030 Belgrade, Serbia

PVB is a flexible but tough polymer of excellent optical clarity and transparency, and due to that it has a wide application in different coatings and in laminated glass industry. Epoxy resin has good mechanical resistance and it is also applied in coatings, but also as a binder in composites. In this research a possibility was examined to improve thermal resistance and spectrophotometric properties of thin film coatings of PVB and epoxy modified with addition of 10 wt.% of PVB, by addition of small concentrations of tungsten disulfide nanotubes and nanoparticles.

Coatings were applied on glass plates by solvent-casting technique: PVB and epoxy/PVB were dissolved in ethanol in which previously nanostructures were deagglomerated and dispersed using ultrasonic probe. Inorganic fullerene-like nanoparticles of tungsten disulphide (IF-WS₂) were added in concentration 1 wt.% and nanotubes (INT-WS₂) in concentration 0.3 wt.%.

Dispersion of tungsten disulfide nanostructures was observed using scanning electron microscope. Thermal resistance was examined by differential scanning calorimetry. The following spectrophotometric properties were examined: diffuse reflection and transmission, using spectrophotometer Shimadzu UV 3600 with an integrating sphere and UV Probe programme package, and specular gloss, using glossmeter Elcometer 480, under angles 20°, 60° and 85°. Observed results have indicated that new composite coatings with nanostructures have enhanced thermal resistance and camouflage properties for potential military applications.

Keywords: thin film coatings, poly(vinyl butyral), tungsten disulfide, nanostructures, thermal resistance, spectrophotometric properties.