UDK 66:54(05) CODEN HMIDA 8 ISSN 0367–598X

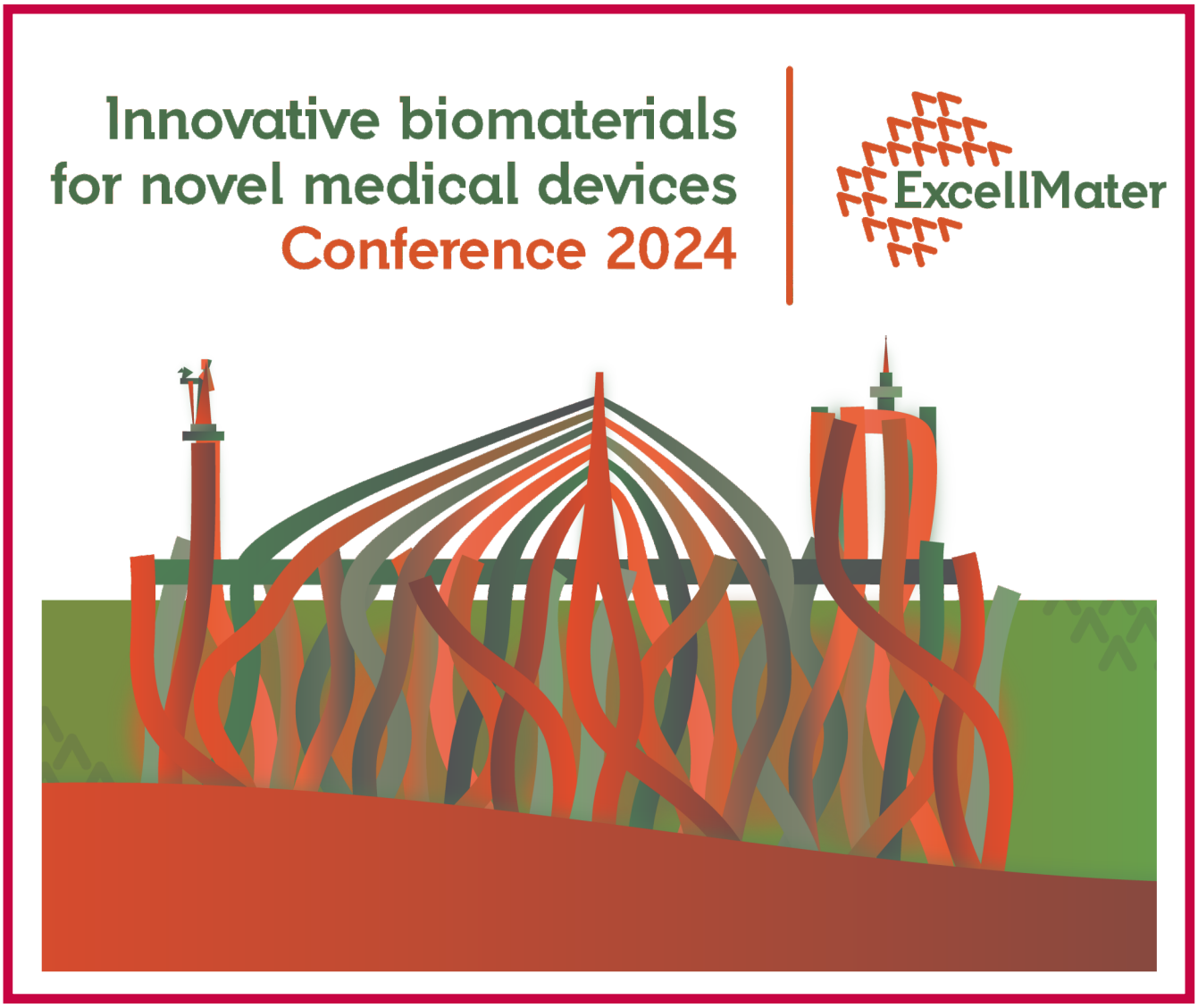
1s Hemijska industrija

Vol. 78

Časopis Saveza hemijskih inženjera Srbije

Chemical Industry

Supplementary Issue
ExcellMater Conference 2024 Abstracts



BEOGRAD, MART 2024.

HMIDA 8, 78(1s) 1-79 (2024)

Aktivnosti Saveza hemijskih inženjera Srbije pomažu:

**MINISTARSTVO NAUKE,
TEHNOLOŠKOG RAZVOJA
I INOVACIJA
REPUBLIKE SRBIJE**

Tehnološko-metalurški fakultet
Univerziteta u Beogradu

Prirodno-matematički fakultet
Univerziteta u Novom Sadu

Institut za tehnologiju nuklearnih i
drugih mineralnih sirovina, Beograd

Tehnološki fakultet
Univerziteta u Novom Sadu

Institut za hemiju, tehnologiju i metalurgiju
Univerziteta u Beogradu

Fakultet tehničkih nauka
Univerziteta u Novom Sadu

Tehnološki fakultet
Univerziteta u Nišu, Leskovac

Fakultet tehničkih nauka
Univerziteta u Prištini
Kosovska Mitrovica

Institut IMS, Beograd

DCP HEMIGAL
Leskovac

Barič

Elixir Prahovo

Chemical Industry
Химическая промышленность

Hemijska industrija

Časopis Saveza hemijskih inženjera Srbije
Journal of the Association of Chemical Engineers of Serbia
Журнал Союза химических инженеров Сербии

VOL. 78 **Beograd, mart 2024.** **Broj 1s**

Izdavač
Savez hemijskih inženjera Srbije
Beograd, Kneza Miloša 9/I

Glavni urednik
Bojana Obradović

Zamenica glavnog i odgovornog urednika
Emila Živković

Pomoćnik glavnog i odgovornog urednika
Ivana Drvenica

Urednici
Jelena Bajat, Dejan Bezbradica, Ivana Banković-Ilić, Dušan Mijin, Marija Nikolić, Đorđe Veljović, Tatjana Volkov-Husović

Članovi uredništva
Nikolaj Ostrovski, Milorad Cakić, Željko Čupić, Miodrag Lazić, Slobodan Petrović, Milovan Purenović, Aleksandar Spasić, Dragoslav Stoiljković, Radmila Šećerov-Sokolović, Slobodan Šerbanović, Nikola Nikačević, Svetomir Milojević

Članovi uredništva iz inostranstva
Dragomir Bukur (SAD), Jiri Hanika (Češka Republika), Valerij Meshalkin (Rusija), Ljubiša Radović (SAD), Constantinos Vayenas (Grčka)

Likovno-grafičko rešenje naslovne strane
Milan Jovanović

Redakcija
11000 Beograd, Kneza Miloša 9/I
Tel/fax: 011/3240-018
E-pošta: shi@ache.org.rs
www.ache.org.rs

Izlazi kvartalno, rukopisi se ne vraćaju

Za izdavača: Ivana T. Drvenica

Sekretar redakcije: Slavica Desnica

Izdavanje časopisa pomaže
Republika Srbija, Ministarstvo nauke, tehnološkog razvoja i inovacija

Uplata pretplate i oglasnog prostora vrši se na tekući račun Saveza hemijskih inženjera Srbije, Beograd, broj 205-2172-71, Komercijalna banka a.d., Beograd

Menadžer časopisa i kompjuterska priprema
Aleksandar Dekanski

Štampa
Razvojno-istraživački centar grafičkog inženjerstva, Tehnološko-metalurški fakultet, Univerzitet u Beogradu, Karnegijeva 4, 11000 Beograd

Indeksiranje
Radovi koji se publikuju u časopisu *Hemijska Industrija* ideksiraju se preko *Thompson Reuters Scietific®* servisa *Science Citation Index - Expanded™* i *Journal Citation Report (JCR)*

Guest Editor:
Ana Janković
Department of Physical Chemistry and Electrochemistry
Faculty of Technology and Metallurgy, University of Belgrade Belgrade, Serbia

SADRŽAJ/CONTENTS

Editorial

ExcellMater Conference 2024: Innovative biomaterials for novel medical devices
Bojana Obradović 1

Tissue engineering and i*n vitro* tissue and organ culture models

Translational studies of engineered human tissues
Gordana Vunjak-Novakovic 3

Regenerative engineering: designing grafts, processes and signals
Ivan Martin 4

Cartilage bioreactors: where we are and where we are going!
Mauro Alini 5

***Ex vivo* testing of biomaterials for intervertebral disc repair using organ culture bioreactors**
Sibylle Grad 6

Engineering of multicellular systems by hydrodynamic waves
Tiziano Serra 7

Sound based assembly of spatially organized porous constructs
Greta Cocchi, Riccardo Tognato, Lorenzo Moroni, Tiziano Serra 8

Development of an *in vitro* branched vasculature using bioprinting technique in combination with sacrificial materials
Natalija Stojanovic, Nadja Hansen, Horst Fischer 9

Unraveling the transcriptome profile of pulsed electromagnetic field stimulation in bone regeneration using an *in vitro* investigation platform
Farah Daou, Rana Zarean Hafdaran, Beatrice Masante, Stefano Gabetti, Giovanni Putame, Eleonora Zenobi, Federico Mochi, Cristina Bignardi, Federica Dell'Atti, Francesco Favero, Costantino Del Gaudio, Diana Massai, Andrea Cochis, Lia Rimondini 10

Whey protein isolate: a versatile dairy-derived hydrogel for bone and vascular tissue engineering and antimicrobial applications
Timothy E. L. Douglas 11

Innervation of the musculoskeletal system in physiological and pathological conditions: Insights from organ-on-a-chip models
Meriem Lamghari 12

Extracellular vesicles derived from mesenchymal stem/stromal cells derived from dental pulp of exfoliated teeth induce osteogenic differentiation

SADRŽAJ nastavak
CONTENTS Continued

Marija Milivojević, Maja Kosanović, Marina Bekić, Miodrag Čolić, Đorđe Janaćković, Sergej Tomić 13

Examination of the effects of X-ray phase contrast imaging dose on DNA in mesenchymal stem cells by comet assay
Lada Živković, Biljana Spremo Potparević, Vladan Bajić, Jovan Brankov, Wei Zhou, Eric Brey 14

β-glucan-enriched fraction from mosaic puffball induces inflammation in an *in vitro* 3D bovine chondrocytes model
Predrag Petrović, Eda Çiftçi, Zhen Li, Sibylle Grad 15

Composite based on resveratrol and selenium as an antioxidative component in tissue engineering
Nina Tomić, Dragana Mitić Ćulafić, Nenad Filipović, Tea Ganić, Maja Kuzmanović, Magdalena M. Stevanović 16

Cancer research

Chemotherapy and novel proton radiotherapy in spatially advanced multicellular models of pancreatic cancer: On the design of platform for enabling low cost animal free preclinical treatment testing
Eirini G. Velliou 17

Bioengineering for creating biomimetic microenvironments: bioreactors and biomaterials
Jasmina Stojkovska, Jovana Zvicer, Jelena Petrovic, Ivana Banićević, Mia Milošević, Bojana Obradović 18

A 3D in vitro cell culture model based on perfused bone-like scaffolds for healthy and pathological bone research
Ivana Banićević, Mia Milošević, Jelena Petrović, Ksenia Menshikh, Milena Milivojević, Milena Stevanović, Radmila Janković, Andrea Cochis, Elena Della Bella, Martin Stoddart, Lia Rimondini, Jasmina Stojkovska, Bojana Obradović 19

Doxorubicin and quercetin combined effect on SAOS-2 cells grown in 2D and 3D model systems
Luka Bojić, Jelena Pejić, Jasmina Stojkovska, Milena Stevanović, Aleksandra Medić, Isidora Petrović, Milena Milivojević 20

Adaptable alginate-based microfibers for 3D *in vitro* cultures of cancer cells: an anticancer drug testing model
Jelena Petrović, Elżbieta Pańczyszyn, Marco Corazzari, Ivana Banićević, Milena Milivojević, Luka Bojić, Milena Stevanović, Miodrag Dragoj, Milica Pešić, Radmila Janković, Bojana Obradović, Jasmina Stojkovska 21

Biomimetic tumor engineering to enhance drug discovery – BioengineeredTumor
Bojana Obradović, Jasmina Stojkovska, Jovana Zvicer, Milena Milivojević, Radmila Janković, Miodrag Dragoj, Ivan Jančič 22

Human amniotic membrane homogenate: A novel biomaterial-based strategy to impede migration and invasion of bladder cancer cells
Aleksandar Janev, Taja Železnik Ramuta, Urška Dragin Jerman, Hristina Obradović, Maja Čemažar, Mateja Erdani Kreft 23

Polymer gels and composites for biomedical applications

Designing biopolymer scaffolds and oral mucoadhesive films for controlled drug delivery
Petar Uskoković, Anđela Radisavljević, Marija Jovanović, Dušica Stojanović, Vesna Radojević 24

Evaluation of crosslinked gelatin-polyvinylpyrrolidone scaffold for application in drug delivery and tissue engineering
Marija Jovanović, Miloš Petrović, Dušica Stojanović, Nataša Nataša Radulović, Danijel Pantelić, Vesna Radojević, Petar Uskoković 25

Electrospun poly(ε-caprolactone) nanofiber mats with gallic acid and glucosamine sulfate for cartilage repair
Anđela Radisavljević, Dušica Stojanović, Huan Meng, Zhen Li, Sibylle Grad, Petar Uskoković 26

SADRŽAJ nastavak
CONTENTS Continued

Environmentally friendly hydrogels for medical and pharmaceutical applications
Melina Kalagasidis Krušić, Marija Lučić Škorić, Stoja Milovanović, Vesna Panić, Maja Marković 27
Biocharacterization of hydrogels based on poly(methacrylic acid) prepared by eco-friendly method
Maja D. Marković, Milica M. Svetozarević, Huan Meng, Zhen LI, Sibylle Grad, Vesna Panić, Melina T. Kalagasidis Krušić 28
Citric acid-crosslinked gelatin/hydroxypropyl methylcellulose hydrogels for biomedical applications
Vukašin Ugrinović, Maja Marković, Predrag Petrović, Đorđe Veljović 29
Development of cornstarch aerogels with high porosity and their impregnation with natural bioactive compounds
Stoja Milovanović, Jelena Pajnik, Darka Marković, Ivona Janković - Častvan, Ivana Lukić 30
Peculiarities of alginate gellation triggered by calcium ions in the presence of hydroxyapatite particles
Katarina Dimić-Mišić, Ivana Banićević, Bojana Obradović, Michael Gasik 31

Biomaterials for orthopedic and dental applications
Regulatory science for biomaterials: are we doing right things right?
Michael Gasik 32
3D printing of composites containing copper-incorporated mesoporous bioactive glass induce different cell responses depending on cell type and donor
Vera Guduric, Richard F. Richter, Anja Lode, Michael Gelinsky 33
The effect of surface ion-doping on the bioactive glass cytocompatibility and antibacterial performance
Mari Lallukka, Amel Houaoui, Ziba Najmi, Marta Miola, Andrea Cochis, Jonathan Massera, Lia Rimondini, Enrica Verné 34
Multifunctional Sr,Mg doped mesoporous bioactive glass nanoparticles
Tamara Matić, Farah Daou, Andrea Cochis, Nemanja Barać, Vukasin Ugrinović, Lia Rimondini, Đorđe Veljović 35
Development of luminescent bioactive glass for multimodal diagnostic imaging
Rauany Cristina Lopes Francisco, Ivana Dinić, Ljiljana Veselinović, Nina Tomić, Marina Vuković, Eliane Trovatti, Lidija Mančić 36
The current trend in innovative bioactive materials for dental and orthopedic applications
Đorđe Veljović, Đorđe Janaćković, Rada Petrović, Željko Radovanović, Vukašin Ugrinović, Tamara Matić, Marija Milivojević 37
Effects of different doped hydroxyapatite-based materials on healing of critical size calvaria bone defects in rats
Nikola Busarać, Irena Kasalović, Suzana Živanović, Tamara Matić, Đorđe Veljović, Biljana Ljujić, Miloš Papić 38
Sr/Mg – doped bioceramic scaffolds for biomedical application
Tamara Matić, Farah Daou, Alessandro C. Scalia, Andrea Cochis, Lia Rimondini, Đorđe Veljović 39
Characterisation of strontium-substituted hydroxyapatite as potential biomedical material
Marija Đošić, Jelena Nikolić, Jovica Stojanović, Nikola Vuković, Marija Marković, Veljko Savić, Vladimir Topalović 40
Novel enriched hydrogel nano-hap induced osteogenic differentiation of SCAP
Dijana Mitić, Miloš Lazarević, Jelena Milašin, Vukoman Jokanović 41

SADRŽAJ nastavak
CONTENTS Continued

Anodization/anaphoretic deposition of composite zein/hydroxyapatite coatings on titanium substrate
Katarina Đ. Božić, Miroslav M. Pavlović, Vesna V. Kojić, Đorđe Veljović, Marijana R. Pantović Pavlović 42

Influence of bone substitute PerOssal® on bone marrrow mesenchymal stem cells
Hristina Obradović, Sebastian Häusner, Drenka Trivanović, Milena Živanović, Duško Spasovski, Marietta Herrmann, Aleksandra Jauković 43

Electrochemical behavior of metallic implants in inflammatory conditions
Aydin Bordbar Khiabani, Michael Gasik 44

Determination of metal ion levels in circulation in patients with joint replacement
Lucie Válková, Jan Emmer, Jan Kuta, Monika Pávková Goldbergová 45

Corrosion behavior of PEO coatings with Mn_3O_4 on Mg-Zn-Ca alloys in inflammatory conditions
Sara Bahrampour, Aydin Bordbar-Khiabani, M. Hossein Siadati, Michael Gasik, Masoud Mozafari 46

Two faces of biodegradable molybdenum nanoparticles regarding oxidative stress and biomedical applications
Polina Navrátilová, Daniel Wojtas, Jan Burda, Luděk Ryba, Monika Pávková Goldbergová 47

Assessing the biocompatibility of polyhydroxybutyrate scaffolds for dental stem cell applications
Miloš Lazarević, Dijana Mitić, Evelina Herendija, Murat Demirbilek, Gokhan Gungor, Atalayin Ozkaya 48

Precision medicine for musculoskeletal regeneration, prosthetics and active ageing - PREMUROSA: a Marie Skłodowska-Curie Innovative Training Network
Enrica Vernè, Silvia Spriano, Janis Locs, Dagnija Loca, Jonathan Massera, Bojana Obradović, Jasmina Stojkovska, Mauro Alini, Tiziano Serra, Marco Corazzari, Annalisa Chiocchetti, Meriem Lamghari, Michael Gasik, Manolo Venturin, Manolo Venturin, Carla Baldasso, Abhay Pandit, Lia Rimondini 49

End-to-end multidisciplinary optimal design for improved personalized bioactive glass/ceramic bone substitute implants- ReBone: a Marie Skłodowska-Curie Doctoral Network
Pasquale Vena, Dario Gastaldi, Francesco Baino, Enrica Vernè, Lia Rimondini, Davide Ruffoni, Martin Schwentenwein, Barbara Misof, John Dunlop, Jasmina Stojkovska, Andrzej Skalski 50

Novel hybrid biomimetic macroporous composites with tuned biodegradability, improved osteointegration and anticancer properties for bone tissue regeneration (HyBioComBone)
Đorđe Veljović, Đorđe Janaćković, Rada Petrović, Biljana Ljujić, Milena Radunović, Anđela Radisavljević, Željko Radovanović, Vukašin Ugrinović, Tamara Matić, Marija Milivojević, Miloš Papić, Tamara Vlajić-Tovilović, Irena Ognjanović, Ivica Vujičić 51

Antimicrobial biomaterials and strategies

Antimicrobial coatings for orthopaedic applications
Mohadeseh Zare, Laura Colomina Alfaro, Antonella Bandiera, Artemis Stamboulis 52

Discouraging cellular and bacterial adhesion on surfaces for bone temporary devices through ZrO_2-Ag coatings
Andrea Cochis, Sara Ferraris, Alessandro C. Scalia, Silvia Spriano, Lia Rimondini 53

SADRŽAJ nastavak
CONTENTS Continued

Nanostructured Ag- and Cu- doped ZnO antibacterial magnetron sputtered coatings for biomedical applications
Ana-Marija Milisav, Maja Mičetić, Pavo Dubček, Lamborghini Sotelo, Cristina Cantallops Vilà, Tommaso Fontanot, Ina Erceg, Krunoslav Bojanić, Željka Fiket, Maja Ivanić, Silke Christiansen, Edwige Meurice, Tihomir Car, Maja Dutour Sikirić 54

Polyelectrolyte multilayers with metal/metal oxide nanoparticles as antimicrobial solution for biomedical applications
Ana-Marija Milisav, Lamborghini Sotelo, Cristina Cantallops Vilà, Tommaso Fontanot, Ina Erceg, Krunoslav Bojanić, Tomislav Vuletić, Željka Fiket, Maja Ivanić, Silke Christiansen, Edwige Meurice, Maja Dutour Sikirić 55

Zeta potential titration and Kelvin probe force microscopy as tools for the design of biomaterials
Silvia Spriano, Sara Ferraris, Francesca Gamna, Andrea Cochis, Lia Rimondini, Alessandro C. Scalia, Ajay Kumar, Biljana Mojsoska 56

Electrochemically synthesized biomaterials
Ana Janković, Marija Đošić, Milena Stevanović, Maja Vukašinović-Sekulić, Vesna Kojić, Vesna Mišković-Stanković 57

Innovative hydroxyapatite-based coatings for bone implants: A multifaceted approach
Milena Stevanović, Marija Đošić, Ana Janković, Christoph Martin Sprecher, Maja Vukašinović-Sekulić, Vesna Mišković-Stanković 58

Bioactivity of gentamicin-loaded hydroxyapatite/poly(vinyl alcohol)/chitosan composite coatings aimed for orthopedic application
Maja Vukašinović-Sekulić, Marija Đošić, Ana Janković, Milena Stevanović, Svetlana Grujić, Ivana Matić-Bujagić, Vesna Kojić, Vesna Mišković-Stanković 59

Towards laser based methods for improving surface properties of materials
Albena Daskalova, Matthias Ahlhelm, Liliya Angelova, Ivan Buchvarov 60

A novel thermostable YtnP lactonase inhibits biofilm formation and induces decomposition of preformed *Pseudomonas aeruginosa* biofilms
Jovana Ćurčić, Milka Malešević, Branko Jovčić 61

Novel alginate/activated-charcoal platform for local treatment of resistant pathogens in wounds
Andrea Osmokrović, Ivan Jančić, Ivona Janković-Častvan, Marina Milenković, Bojana Obradović 62

Activated charcoal as a carrier of probiotics: A new approach for pathogen elimination in wounds
Sonja Mojsilović, Tanja Krunić, Vesna Lazić, Miloš Đuknić, Andrea Osmokrović 63

Production technology and characterization of alginate-based impregnated gauze
Jovana Zvicer, Jasmina Stojkovska, Andrea Osmokrović, Bojana Obradović 64

Various applications of novel materials

Characterization of *Vaccinium myrtillus* leaf extract-loaded liposomes
Muna Rajab Elferjane, Milena Milošević, Vojislav Ćirić, Branko Bugarski, Aleksandar Marinković, Aleksandra A. Jovanović 65

Stability of liposomal particles with encapsulated coumarin derivate
Aleksandra A. Jovanović, Edina Avdović, Ana Plećić, Natalija Čutović, Branko Bugarski, Zoran Marković 66

SADRŽAJ nastavak
CONTENTS Continued

Luminescent fluoroapatite nano-biomaterial for labeling yeast cells as an innovative approach for identification, imaging and monitoring
Dušan Milojkov, Gvozden Jovanović, Vukosava Živković-Radovanović 67

GPT4 aided biomaterials research use case: stabilization of selenium nanoparticles with proteins
Zoran Stojanović, Nenad Filipović, Maja Kuzmanović, Sara Lukač, Magdalena Stevanović 68

Novel micro- and nano- composite materials for water purification
Katarina Sokić, Natalija Milojković, Aleksandra Dapčević, Sanja Jevtić, Michael Gasik 69

Impact of different concentrations of alginate in alginate-yeast hydrogel biosorbent
Tanja Krunić, Marica Rakin 70

The effect of sulfuric acid treatment on physicochemical properties of g-C_3N_4 and its efficiency for photocatalytic reduction of Cr(VI)
Jana Petrović, Željko Radovanović, Slavica Lazarević, Đorđe Janković, Rada Petrović 71

Hybrid biobased composites with natural pyrophyllite
Srđan Perišić, Vukašin Ugrinović, Michael Gasik, Katarina Dimić-Mišić, Aleksandar Grujić, Vesna Radojević 72

Twinning projects

The ExcellMater project: Advancing biomaterials engineering towards novel medical devices
Bojana Obradović, Lia Rimondini, Mauro Alini, Michael Gasik 73

Twinning for intensified enzymatic processes for production of prebiotic-containing functional food and bioactive cosmetics (TwinPrebioEnz)
Dejan Bezbradica, Ellen van den Bogaard, Joe Miguel Palomo, Kahlile Y. Abboud 74

Knowledge and skills transfer for the application of nanotechnology in biosensors for foodborne pathogens
Vasa Radonić, Slavica Savić Ružić, Branimir Bajac, Nikolina Janković, Jasna Mastilović 75

Experiences from BiH: H2020 Twinning project SMARTWATER
Đurađ Hajder, Mihajlo Marković, Mladen Todorović, Nery Zapata, Teresa A. Paço, Erminio E. Riezzo5, Sabrija Čadro 76

Boosting Institute of Chemistry, Technology and Metallurgy in water biomonitoring – BIOLAWEB
Danijela Vidaković, Jelena Avdalović, Biljana Dojčinović, Aleksandra Marković, Srđan Miletić, Katarina Milanović, Željka Milovanović, Vladimir Petrović, Dragana Zlatović, Benjamin Alric, Herve Dumont, Clarisse Lemonnier, Antoine Moatti, Frederic Rimet, Andreas Ballot, Susanne Claudia Schneider, Miloš Ćirić 77

STREAMLINE HUB: a high capacity hub for research of neuro-developmental disorders in the Western Balkan region
Danijela Drakulić, Spyros Petrakis, Adrian. J. Harwood, David Linden, Andrijana Lazić, Nataša Kovačević-Grujičić, Milena Stevanović 78

Twinning for graphene-based composites in EMI shielding
Svetlana Jovanovć, Dejan Kepić, Miroslav Huskić, Muhammad Yasir, Kamel Haddadi 79

Characterisation of strontium-substituted hydroxyapatite as potential biomedical material

Marija Đošić*, Jelena Nikolić, Jovica Stojanović, Nikola Vuković, Marija Marković, Veljko Savić and Vladimir Topalović

Institute for Technology of Nuclear and Other Mineral Raw Materials, Belgrade, Serbia

Keywords: Apatite; strontium; bones; bioactivity

Hem. Ind. **78(1S)** 40 (2024)

Available on-line at the Journal web address: http://www.ache.org.rs/HI/

INTRODUCTION: Owing to its similarity to the inorganic part of the natural bone, excellent bioactivity, biocompatibility, and ability to stimulate the osteoconductive process, synthetic hydroxyapatite (HAP) is very often the material of choice for biomedical applications. Diverse ions can be found as substitutes within natural bone structures, each playing a distinct and crucial role in the physiological processes governing the lifecycle of bones [1]. Among them, strontium ion has a very important role for the acceleration of osteogenesis and the inhibition of osteoclasts activity [2]. Current research aims to provide physico-chemical characterization of synthesized HAP and strontium substituted HAP (Sr-HAP) powders obtained by varying strontium concentration (10, 20 and 40 mol.%) in the starting solutions.

EXPERIMENTAL: HAP powder was synthesized by wet chemical precipitation, using aqueous solutions of $Ca(NO_3)_2$ $4H_2O$ (Merck, p.a.) and $(NH_4)_2HPO_4$ (Sigma-Aldrich, ≥99 %). By adding NH_4OH (CENTROHEM, *p.a.*), pH value was adjusted to 10. The obtained precipitate was heated up to 90 °C. The same procedure was followed for Sr-HAP powder syntheses, by adding $Sr(NO_3)_2$ (Sigma-Aldrich ≥99.0 %) and maintaining the (Ca + Sr)/P ratio at 1.67 in the mixed Ca^{2+}/Sr^{2+} solution. Synthesized powders were characterised by FTIR spectroscopy (Nicolet IS-10, Thermo Fisher Scientific), XRD analysis (Philips PW 1710, Philips, The Netherlands), TG analysis (Netzsch STA 449 F5 Jupiter instrument), and FE-SEM analysis (JSM-7001F, JEOL Ltd, Japan).

RESULTS AND DISCUSSION: FTIR spectra revealed the presence of carbonate-substituted hydroxyapatite in both pure and Sr-substituted HAP powders. The powders showed a granular, homogeneous morphology without the Sr separation. XRD analysis revealed that the amount of incorporated Sr in the HAP structure increased with increased Sr concentration in the starting solutions. Thermal stability of the Sr-HAP powders decreased with increased Sr concentration.

CONCLUSIONS: Physico-chemical characteristics of Sr-HAP powders are directly dependent on Sr ion concentration in powders.

Acknowledgements: This research is supported by The Ministry of Science, Technological Development and Innovation, Republic of Serbia, (Contract No. 451-03-47/2023–01/200023).

REFERENCES

[1] I. Cacciotti, Cationic and Anionic Substitutions in Hydroxyapatite, in: I.V. Antoniac (Ed.), Handb. Bioceram. Biocomposites, Springer International Publishing, Switzerland, 2016: pp. 146–188. https://doi.org/10.1007/978-3-319-12460-5_7.

[2] A. Ressler, A. Žužić, I. Ivanišević, N. Kamboj, H. Ivanković, Ionic substituted hydroxyapatite for bone regeneration applications: A review, Open Ceram. 6 (2021). https://doi.org/10.1016/j.oceram.2021.100122.

*Corresponding author E-mail: mdjosic@yahoo.com