

CYSC

2021

14TH ECerS CONFERENCE
FOR YOUNG SCIENTISTS IN CERAMICS

BOOK OF ABSTRACTS

October 20-23, 2021
Faculty of Technology Novi Sad
Novi Sad, Serbia



14TH ECerS CONFERENCE FOR YOUNG SCIENTISTS IN CERAMICS

**14th ECerS CONFERENCE for
YOUNG SCIENTISTS in CERAMICS**

**PROGRAMME
and
BOOK OF ABSTRACTS**

**October 20-23, 2021
Novi Sad, Serbia**

Programme and Book of Abstracts of The ECerS 14th Conference for Young Scientists in Ceramics (CYSC-2021) publishes abstracts from the field of ceramics, which are presented at traditional international Conference for Young Scientists in Ceramics.

Editors-in-Chief

Prof. Dr. Vladimir V. Srdić
Dr. Andraž Kocjan
Dr. Maria Canillas Perez

Publisher

Faculty of Technology, University of Novi Sad
Bul. cara Lazara 1, 21000 Novi Sad, Serbia

For Publisher

Prof. Dr. Biljana Pajin

Printing layout

Vladimir V. Srdić, Marija Milanović, Ivan Stijepović

Press

SAJNOS, Novi Sad

CIP – Каталогизacija у публикацији
Библиотека Матице српске, Нови Сад

666.3/.7(048.3)

CONFERENCE for Young Scientists in Ceramics (14 ; 2021 ; Novi Sad)

Programme and book of abstracts / 14th ECerS Conference for Young Scientists in Ceramics (CYSC-2021), October 20-23, 2021, Novi Sad ; [editor-in-chief Vladimir V. Srdić, Andraž Kocjan, Maria Canillas Perez]. - Novi Sad : Faculty of Technology, 2021 (Beograd : Službeni glasnik). - XX, 142 str. : ilustr. ; 24 cm

Tiraž 130. - Registar.

ISBN 978-86-6253-136-0

a) Керамика - Технологија - Апстракти
COBISS.SR-ID 48093961



The Book of Abstracts of the 14th ECerS Conference for Young Scientists in Ceramics is licensed under a

[Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/)

Preface

Dear colleagues and guests we have the pleasure to once again welcome you all to Novi Sad, Serbia as the venue for the 14th ECerS Conference for Young Scientists in Ceramics. The event is jointly organized by the Faculty of Technology Novi Sad, University of Novi Sad and the European Ceramic Society (ECerS) and its Young Ceramists Network (YCN).

The ECerS Conference for Young Scientists in Ceramics is the conference with more than twenty years of tradition. In the beginning in 1998 it was only national conference and it grew constantly to become the international event with participants coming from all over the world. This year we have the honour to co-host biannual ECerS 2021 Student Speech Contest where young ceramist research students, representing each of the ECerS member countries, will give an oral presentation of their research achievements that is evaluated by a jury.

In this year of pandemics and crisis we are happy to able to bring scientists from 28 different countries to Novi Sad, Serbia. In this way we will have an opportunity to hear 114 oral presentations given by young scientists and 19 presentations within ECerS 2021 Student Speech Contest together with 9 invited talks of the more experienced scientists and experts. We are sure that these numbers could have been much higher if there wasn't for pandemics. Nevertheless, we are proud to again bring together young scientists and promote their research and their achievements. This conference continues to serve as the meeting point for young people working in the vast field of ceramics, the place where they could broaden their knowledge but also their network of contacts. Within four days of the event young researchers will have a chance to exchange ideas and learn a lot from their peers and senior colleagues. This was and it will always be a basic idea behind the conference which is well recognised within ceramic scientists community. The topics covered by the conference include various aspects of the ceramics including processing, characterisation and application of advanced and traditional ceramics but also cutting edge results in the modelling and physics of the ceramic materials and structures. Thus, we are confident that the participants will have the opportunity to hear a lot of new results, to learn new concepts and ideas and to expand their knowledge.

All of this could not be possible without the help of our sponsors and co-organizers and we want to express our deepest gratitude to all of them. First of all, we want to acknowledge the JECS Trust Fund of the European Ceramic Society for being our greatest financial benefactor. Also, we are thankful to the Serbian Ministry of education, science and technological development which once again endorsed the conference financially. At the end, we would like to thank to all the people in the local organizing committee and colleagues from YCN who participated in the preparations of the Conference.

Editors

LIST OF SPONSORS



The European Ceramic Society



The JECS Trust Fund



*Ministry of Education and Science,
Republic of Serbia*



*Provincial Secretariat for Science and
Technological Development*

LIST OF ENDORSERS



Faculty of Technology



University of Novi Sad



Tourist organization city of Novi Sad

Organizer

- *Department of Materials Engineering, Faculty of Technology, University of Novi Sad, Novi Sad, Serbia*
- *Young Ceramists Network, The European Ceramic Society*

Scientific Committee

Subramshu S. Bhattacharya	<i>Indian Institute of Technology, Madras, India</i>
Jon Binner	<i>University of Birmingham, United Kingdom</i>
Davide Bossini	<i>Technical University Dortmund, Germany</i>
Vincenzo Buscaglia	<i>ICMATE-CNR, Genoa, Italy</i>
Francis Cambier	<i>Belgian Ceramic Research Center, Mons Belgium</i>
Dragan Damjanović	<i>Ecole Polytechnique Fédérale de Lausanne, Switzerland</i>
Igor Djerdj	<i>Josip Juraj Strossmayer University of Osijek, Croatia</i>
Konstantinos Giannakopoulos	<i>National Center for Scientific Res. "Demokritos", Greece</i>
Horst Hahn	<i>Forschungszentrum Karlsruhe, Germany</i>
Andraž Kocjan	<i>Jožef Stefan Institute Ljubljana, Slovenia</i>
Akos Kukovecz	<i>University of Szeged, Hungary</i>
Anne Leriche	<i>University of Valenciennes & Hainaut-Cambresis, France</i>
Karel Maca	<i>Brno University of Technology, Czech Republic</i>
Branko Matović	<i>Institute for Nuclear Sciences "Vinca", Serbia</i>
Marija Milanović	<i>University of Novi Sad, Serbia</i>
Liliana Mitoseriu	<i>University "Al. I. Cuza", Romania</i>
Zbigniew Pedzich	<i>AGH, University of Science and Technol, Krakow, Poland</i>
Maria Canillas Perez	<i>Universidad Politécnica de Madrid, Spain</i>
Mitar Perusic	<i>University of East Sarajevo, Bosnia & Herzegovina</i>
Pavol Šajgalik	<i>Inst. of Inorganic Chemistry Academy of Sciences, Slovakia</i>
Laura Silvestroni	<i>CNR-ISTEC, Faenza, Italy</i>
Alexandre Simões	<i>Universidade Estadual Paulista UNESP, Brazil</i>
Vladimir Srdić	<i>University of Novi Sad, Serbia</i>
Biljana Stojanović	<i>University of Belgrade, Serbia</i>
Maxim M. Sychev	<i>St.Petersburg State Institute of Technology, Russia</i>
Paula Vilarinho	<i>University of Aveiro, Portugal</i>
Louis A.J.A. Winnubst	<i>University of Twente, The Netherlands</i>
Markus Winterer	<i>University of Duisburg-Essen, Germany</i>

Secretary

Ivan Stijepović *University of Novi Sad, Serbia*

Organizing Committee

YCN Committee	<i>European Ceramic Society</i>
Branimir Bajac	<i>University of Novi Sad, Serbia</i>
Nikola Kanas	<i>University of Novi Sad, Serbia</i>
Andrea Nesterović	<i>University of Novi Sad, Serbia</i>
Danica Piper	<i>University of Novi Sad, Serbia</i>
Jovana Stanojev	<i>University of Novi Sad, Serbia</i>
Elvira Tot	<i>University of Novi Sad, Serbia</i>
Jelena Vukmirović	<i>University of Novi Sad, Serbia</i>

Content

PROGRAMME

Wednesday, October 20, 2021	2
Thursday, October 21, 2021	5
Friday, October 22, 2021	9
Saturday, October 23, 2021	13

INVITED LECTURES

András Sápi FIGHTING CLIMATE CHANGE WITH CERAMIC BASED NANOCATALYST ...	18
Peter Tatarko JOINING AND INTEGRATION OF SILICON CARBIDE BASED CERAMICS	19
Julian Walker LEARNING FROM CERAMICS TO ENGINEER HYBRID SUPRAMOLECULAR FERROICS	20
Louis Winnubst FABRICATION AND PROPERTIES OF CERAMIC MEMBRANES FOR MOLECULAR SEPARATION UNDER DEMANDING CONDITIONS	22
Andraž Kocjan ZIRCONIA DENTAL CERAMICS: MICROSTRUCTURE AND SURFACE CONDITIONING RELATED <i>IN VIRTO</i> / <i>IN VIVO</i> PERFORMANCE	23
Raúl Bermejo EXPLORING NEW CONCEPTS TO DESIGN DAMAGE TOLERANT LAYERED CERAMICS	24
Stevan Armaković DESITY FUNCTIONAL THEORY: APPLICATION IN MATERIALS SCIENCE	25
Dejan Zagorac THEORETICAL MODELING OF ADVANCED CERAMIC MATERIALS	25
Łucjan Kozielski META COMPOSITES AND META MATERIALS FOR ELECTROMAGNETIC WAVE SCREENS	26

ECerS 2021 STUDENT SPEECH CONTEST

List of participants - ECerS 2021 Student Speech Contest	30
--	----

ORAL PRESENTATIONS

Anna-Katharina Hofer STEREOLITHOGRAPHIC 3D-PRINTING OF TEXTURED ALUMINA MICROSTRUCTURES	34
Vladimír Prajzler RAPID RATE SINTERING AND SPARK PLASMA SINTERING OF LEAD-FREE BCZT PIEZOELECTRIC CERAMICS	35
Iryna Marek AGING OF MATERIALS IN THE ZrO_2 - Y_2O_3 - CeO_2 SYSTEM	36
Maria Parfenova 3D-PRINTING OF EXPLODED T-x-y DIAGRAMS PROTOTYPES TO CORRECT EXPERIMENTAL AND THERMODYNAMIC INTERPRETATIONS: $Al_2O_3(TiO_2)$ - SiO_2 - ZrO_2 & Ag-Cu-Ni	37
Petra Šimonová SINTERING WITHOUT SHRINKAGE – THE STRANGE CASE OF PURE TIN OXIDE CERAMICS	38
Naima Boughazif FORMULATION OF MUSCOVITE CERAMIC INKS	39
Apoorv Kulkarni INTEGRATING POLYMER DERIVED CERAMICS WITH FUSED FILAMENT FABRICATION TYPE 3D PRINTING	40
Abdullah Jabr CONTACT DAMAGE OF ALUMINA-BASED LAYERED CERAMICS WITH TAILORED MICROSTRUCTURE	41
Katarzyna Matysiak FUNCTIONALIZATION OF THE BORON CARBIDE SURFACE	42
Dawid Koziń SINTERING BY VARIOUS METHODS AND ANALYSIS OF THE MICROSTRUCTURE OF B_4C -Ti COMPOSITES	42
Hakan Ünsal IN SITU SYNTHESIS AND CHARACTERIZATION OF ZrB_2 - SiC CERAMICS WITH RARE-EARTH BASED ADDITIVES	43

Mariia Smyrnova-Zamkova PHYSICO-MECHANICAL PROPERTIES OF COMPOSITES 90 wt.% Al ₂ O ₃ - 10 wt.% ZrO ₂ (Y ₂ O ₃ , CeO ₂)	44
Ivana Milenković N-DOPED CARBON DOTS IMPROVE FINGERPRINT IMAGING	45
Abolghasem Nourmohammadi EFFECT OF TWO-STEP SINTERING PARAMETERS ON GRAIN SIZE DISTRIBUTION IN BARIUM TITANATE CERAMICS	46
Andreas Wohninsland QUENCHING-INDUCED CHANGES IN CRYSTALLOGRAPHIC STRUCTURE AND POLARIZED VOLUME OF 94Na _{1/2} Bi _{1/2} TiO ₃ -6BaTiO ₃ PIEZOCERAMICS	48
Nikola Kanas HETEROSTRUCTURING – AN EFFECTIVE WAY TO BOOST zT OF CaMnO ₃ -BASED CERAMICS	49
Mona Yarahmadi PRODUCTION AND PROPERTIES OF YTTRIA-STABILIZED ZIRCONIA CERAMICS BY DIRECT INK WRITING	50
Dmitrii Komissarenko DLP 3D PRINTING OF HIGH STRENGTH OXIDE CERAMICS	51
Maxim Arsentev COMPARATIVE STUDY OF DIAMOND SURFACE GRAPHITIZATION WITH ORIENTATIONS (111) AND (100) USING THE METHOD OF MOLECULAR DYNAMICS	52
Sladana Laketić SURFACE DAMAGE CAUSED BY LASER IRRADIATION OF THE Ti45Nb ALLOY PROCESSED BY HIGH-PRESSURE TORSION	53
Abolghasem Nourmohammadi GROWTH OF RUTILE TITANIUM OXIDE NANOTUBES BY SOL-GEL ELECTROPHORESIS	54
Joanna Tanska ZrO ₂ -Mo COMPOSITES OBTAINED BY GELCASTING AND SLIP CASTING WITH THE USE OF METAL PRECURSOR	55
Vladimir Terek SURFACE TOPOGRAPHY OF NANOSTRUCTURED TiAlSiN COATING DEPOSITED WITH DIFFERENT DEGREES OF ROTATION ON VARIOUS SUBSTRATE MATERIALS	56
Aleksei S. Sedegov COMPARISON OF THE PERFORMANCE CHARACTERISTICS OF (TaTiNbZrX)C (X= Mo, W, Hf) HIGH-ENTROPY CARBIDES	57
Karolina Dudek IN-SITU HIGH TEMPERATURE STRUCTURAL AND MECHANICAL INVESTIGATIONS OF THE SiAlON's SINTER	58

Paulina Wójcik IMAGINE ANALYSIS FOR CHARACTERIZATION OF CMC COMPOSITES	58
Erin Valenzuela ENGINEERING DAMAGE TOLERANT FAILURE MODES INTO CHEMICALLY BONDED PHOSPHATE CERAMIC MATRIX COMPOSITES	59
Anna Baran-Sadleja ANALYSIS OF CERAMIC MATRIX COMPOSITES USING COMPUTER TOMOGRAPHY METHOD	60
Josef Schlacher MECHANICAL CHARACTERIZATION OF ADDITIVE MANUFACTURED MULTI-MATERIAL CERAMICS	61
Aimee Coleman MAX-PHASES: ADVANCED CERAMICS WITH UNUSUAL PROPERTIES FOR NUCLEAR APPLICATION	62
Alejandro Montón Zarazaga POWDER BED SELECTIVE LASER PROCESSING OF SILICON CARBIDE	63
Maliha Siddiqui ROLE OF Ca ²⁺ DOPING ON PHASE STABILITY OF FREEZE CASTED HYDROXYAPATITE	64
Gilyana Kazakova SYNTHESIS OF NEWBERITE POWDERS FOR PRODUCTION OF RESORBABLE BIOCERAMICS BY STEREOLITOGRAPHY 3D PRINTING	64
Denata Sylva SYNTHESIS OF MULTI-SUBSTITUTED HYDROXYAPATITE USING A CONTINUOUS LATERAL FLOW METHOD	65
Cosmin Iulian Codrea ANTIMICROBIAL PROPERTIES OF COMPOSITE COATINGS USED FOR STONE HERITAGE CONSERVATION	67
Maksim Kaimonov COMPOSITE CERAMIC MATERIALS BASED ON SODIUM SILICATE AQUEOUS SOLUTION AND CALCIUM PHOSPHATE POWDERS FOR BONE TISSUE REGENERATION	68
Otabek Toshev CERAMIC MATERIALS IN K ₂ O-CaO-P ₂ O ₅ SYSTEM OBTAINED BY ANNEALING OF CEMENT-SALT STONE PREPARED FROM HIGHLY LOADED SUSPENSIONS	69
Simona Ioniță MESOPOROUS SILICA-BASED NANOCOMPOSITES FOR TARGETED DELIVERY OF CHEMOTHERAPEUTIC AGENTS	70
Elena Mirabela Soare MICROSTRUCTURE AND DIELECTRIC PROPERTIES OF SOL-GEL BaTi _{1-x} Hf _x O ₃ CERAMICS	71

Adrian Graboś DENSE KNN POLYCRYSTALS DOPED BY Er ₂ O ₃ OBTAINED BY HOT PRESSING WITH HEXAGONAL NITRIDE PROTECTIVE LAYER	72
Daria Gierszewska STRUCTURAL AND ELECTRICAL PROPERTIES OF Fe- OR Lu-DOPED BARIUM LANTHANUM COBALTITE (Ba _{0.5} La _{0.5} CoO _{3-δ})	73
Přemysl Šťastný GEL-TAPE CASTING OF HIGH STRENGTH CERAMIC FOILS AND THEIR APPLICATION	74
Milica Stefanović DEPOSITION OF METHYLAMMONIUM LEAD BROMIDE PEROVSKITE ON TITANIA NANOTUBE ARRAYS ASSISTED BY SUPERCRITICAL CARBON DIOXIDE	75
Vojtěch Mařák FABRICATION AND PHYSICAL, MICROSTRUCTURAL AND MECHANICAL PROPERTIES OF RARE-EARTH-DOPED BARIUM TITANATE CERAMICS	76
Radu Stîrbu INVESTIGATION OF ANISOTROPIC POROSITY IN BaTiO ₃ -BASED CERAMICS: EXPERIMENT AND MESOSCALE MODELS FOR STRAIN STRESS DISTRIBUTIONS	76
Arkadiusz Dawczak STRUCTURAL AND ELECTRICAL PROPERTIES OF HIGH-ENTROPY RARE-EARTH ORTHO-NIOBATES	78
Andrzej Kruk WAVELENGTH DEPENDENCE OF VERDET CONSTANT OF RE ³⁺ DOPED MAGNETO-OPTICAL CERAMICS	79
Marta Lubszczyk OPTIMIZATION OF WET CHEMISTRY METHODS OF FABRICATING PURE AND RE-DOPED KNN FOR PIEZOELECTRIC APPLICATIONS	80
Milena Dojcinovic SYNTHESIS, STRUCTURE AND ELECTROCHEMICAL PERFORMANCE OF NiMn ₂ O ₄	81
Danica Piper BILAYER LaMnO ₃ / (Ba,Sr)TiO ₃ THIN FILMS PREPARED BY CHEMICAL SOLUTION DEPOSITION TECHNIQUES	82
Tatiana Lomakina RELATIONSHIP BETWEEN CONDITIONS OF SYNTHESIS AND PROPERTIES OF PRECURSORS BASED ON STABILIZED AND NON-DOPED ZrO ₂	83
Tereza Uhlířová STEREOLOGY-BASED INVESTIGATION OF COMPUTER-GENERATED MICROSTRUCTURE OF POROUS CERAMICS	84

Daniel Lincu PHASE CHANGE MATERIALS BASED ON POROUS SILICA	85
Harshit Tripathi FABRICATION OF Y_2O_3 CERAMICS WITH SINTERING ADDITIVES FOR OPTO-ELECTRONICAL APPLICATIONS	86
Kiryl Zakharchuk CHARACTERIZATION OF $La_{2-x}Ba_xNiO_4$ ELECTROCATALYST FOR POTENTIAL APPLICATION IN SOLID OXIDE CELL FOR NO_x REDUCTION	87
Owais Al-Aqtash CERAMICS-BASED CATALYST CHARACTERIZATION	88
Daniela V. Lopes ELECTROCHEMICAL RECOVERY OF Fe FROM POROUS IRON-RICH CERAMIC CATHODES FOR POSSIBLE RED MUL VALORISATION	88
Ghazaleh Khoshroo CATALYTIC REACTION OF CARBON DIOXIDE WITH METHANE ON SUPPORTED Co/Mo CATALYSTS	89
Svetlana Butulija REMOVAL OF Pb(II) FROM AQUEOUS SOLUTIONS BY NANO-CeO ₂	90
Anastasiia Efremova Pt-MESOPOROUS-METAL-OXIDE SURFACE INTERACTIONS DURING CO ₂ METHANATION	91
Jelena Vujančević PHOTOACTIVITY OF VANADIUM OXIDE TiO ₂ NANOTUBES	92
Ákos Szamosvölgyi ROLE AND IMPORTANCE OF CeO ₂ SUPPORTED Ni ACTIVE SITES IN CO ₂ HYDROGENATION	93
Piotr Czaja EFFECT OF DOPANT IONS ON SELECTED PROPERTIES OF LEAD FREE K _{0.5} Bi _{0.5} TiO ₃ CERAMICS	94
Mateusz Bara STRUCTURAL AND ELECTRICAL PROPERTIES OF BNTW CERAMICS AND ITS NOVEL DERIVATIVES	95
Weronika Bulejak THE SYNTHESIS AND CHARACTERIZATION OF NEW WATER-THINNABLE POLYMERIC BINDERS AND THEIR APPLICATION IN FERROELECTRIC CERAMIC POLYMER COMPOSITES	95
Nikola Ilić MECHANICAL ENERGY HARVESTING POTENTIAL OF BiFeO ₃ -PVDF FLEXIBLE COMPOSITES	96

Teodora Matei THE SYNTHESIS AND CHARACTERIZATION OF NEW WATER-ROLE OF COMPOSITION ON THE ELECTROCALORIC PROPERTIES OF $BaM_xTi_{1-x}O_3$ CERAMICS	97
Nina Kuzmić CERAMIC UPSIDE-DOWN COMPOSITES FOR FUTURE ELECTRONICS	98
Kiryl Zakharchuk FORMATION OF HIGHLY POROUS $BaZr_{0.85}Y_{0.15}O_3$ IONIC CONDUCTIVE CERAMICS BY EMULSIFICATION	99
Daniel Jaworski HIGH-ENTROPY PEROVSKITE OXIDE AS A NEW FAMILY OF PROTON CONDUCTORS	100
Islam Bouakaz COMPARATIVE STUDY ON THE MECHANICAL PROPERTIES OF 3 LATTICE STRUCTURES WITH THREE DIFFERENT PORE SIZE AND WALL THICKNESS	101
Yasemin Tabak IMPROVEMENT OF BIOACTIVITY FOR FUNCTIONALLY GRADED Si_3N_4 WITH HAP-CHITOSAN DIP-COATING	102
Lucie Pejchalová FREEZE-CASTING OF BIOCERAMICS: AN ALTERNATIVE APPROACH FOR NEUTRAL SCAFFOLDS	103
Maria M. Uzelac USING EXPERIMENTAL AND COMPUTATIONAL TOOLS TO MAP DEGRADATION MECHANISMS ASSOCIATED WITH TOXICITY OF SELECTED β -BLOCKERS	104
Mahmoud M. Ismail (M-TYPE AND Y-TYPE) BARIUM HEXAFERRITE NANO-STRUCTURES FOR INDUCING HYPERTHERMIA BASED CANCER TREATMENT	105
Salim Brahimi THE EFFECT OF SODIUM SILICATE ON IN VITRO BIOACTIVITY AND MECHANICAL PROPERTIES OF HYDROXYAPATITE BIOCERAMICS EXTRACTED FROM NATURAL CAMELUS BONE	106
Selim Burak Cantürk SOLID STATE SYNTHESIS AND UP-CONVERSION PROPERTIES OF $Yb^{3+}=Tm^{3+}=Er^{3+}$ DOPED $La_2Ti_2O_7$ PHOSPHORS	106
Anastasia A. Vornovskikh INFLUENCE OF CERIUM DOPING ON THE PHOTOLUMINESCENCE PERFORMANCES OF $Al_2O_3-Ce:YAG$ CERAMIC PHOSPHORS	108
Francesco Picelli EFFECT OF POWDER TREATMENT ON OPTICAL QUALITY OF TRANSPARENT CERAMICS	109
Abdi Soylu GLASS-CERAMIC COATINGS FOR WHITEBOARD APPLICATIONS	110

Jagoda Budnik STRUCTURAL PROPERTIES AND WATER UPTAKE OF $\text{BaCe}_{0.6}\text{Zr}_{0.2}\text{Y}_{0.2-x}\text{Fe}_x\text{O}_{3-\delta}$ TRIPLE-CONDUCTING OXIDES	111
Artem Zaripov PROTON CONDUCTIVITY OF POLYANTIMONIC ACID BASED MEMBRANES	112
Evgenii Kildiushov STRUCTURE, PHASE COMPOSITION AND Na^+ - H^+ SUBSTITUTION DEGREE OF THE PROTONATED BETA-ALUMINA	113
Hirad Salari POISONING EFFECTS OF SODIUM ON THE PERFORMACES OF LSM AIR ELECTRODE	114
Vlad-Alexandru Lukacs COMPARATIVE STUDY OF BaTiO_3 NANOCERAMICS PRODUCED BY NANOCUBE AND SPHERE-LIKE NANOPARTICLES WITH SIMILAR SIZES	115
Soňa Hřibálová CERAMICS – FROM CUBIC CELL MODELS TO EFFECTIVE MEDIUM APPROXIMATIONS AND NUMERICS	116
Olga Mazur INFLUENCE OF PRESSURE ON SELF-ORGANIZATION OF FERROELECTRIC DOMEN STRUCTURE UPON PHASE TRANSITION	117
Cristina Vladut OPTICAL AND PIEZOELECTRIC PROPERTIES OF Mn DOPED ZnO THIN FILMS OBTAINED BY CHEMICAL METHODS	118
Sara Joksović EPITAXIAL Sr -DOPED LaMnO_3 THIN FILMS PREPARED BY POLYMER ASSITED DEPOSITION	119
Diaa El-Rahman Rayan REMARKABLE IMPACT FOR MICROSTRUCTURE DEVELOPMENT AND OPTICAL PROPERTIES OF CO-DOPED INSERTION ON LiAl_5O_8 NANOCRYSTALS	120
Ivana Dinic SOLVOTHERMAL SYNTHESIS OF NaGdYF_4 : Yb , Er UCNPs WITH DIFFERENT STRUCTUAL, MORPHOLOGICAL AND OPTICAL PROPERTIES	121
Mélanie Rousselle BELOW 600 °C SPARK PLASMA SINTERING OF LANTHANUM PHOSPHATE .	122
Vojtěch Nečina MYTHS AND FACTS ABOUT THE USE OF LiF IN THE PREPARATION OF TRANSPARENT SPINEL (MgAl_2O_4) CERAMICS	123
Zorka Ž. Vasiljević INFLUENCE OF CALCINATION TEMPERATURE ON THE STRUCTURE, MORPHOLOGY AND OPTICAL PROPERTIES OF ELECTROSPUN PSEUDOBROOKITE NANOFIBERS	124

Ufuk Akkasoglu LAS GLASS-CERAMICS WITH TAILORED THERMAL EXPANSION	125
Volodymyr Shmybelskyi ZrO ₂ COMPLEX DOPED WITH LIGHT GROUP OF OXIDES REE FOR TBC	126
Alina Makudera THERMAL DURABILITY OF ZrO ₂ -BASED CERAMIC LAYER FOR THERMAL BARRIER COATINGS	127
Jakub Ramult INVESTIGATION OF CORROSION RESISTANCE OF SPINELS DIFFERING IN THE MOLAR RATIO OF MgO/Al ₂ O ₃ TO INDUSTRIAL SLAG	128
Justyna Ignaczak STRUCTURE AND ELECTRICAL PROPERTIES AND DETERMINATION OF PHASE STABILITY OF Mn-Cu-Fe OXIDE SYSTEM	129
İremnur Ceylan A SUSTAINABLE ROUTE FOR PRODUCTION OF ACID RESISTANT FLUORINE MICA-BASED GLASS CERAMIC COATINGS	130
Yasin Bozkurt Yılmaz LIVESTOCK WASTE AS A SECONDARY SOURCE OF CaO-P ₂ O ₅ FOR INORGANIC COATINGS	131
Suleyman Onder Varisli THE EFFECT OF SiO ₂ /Al ₂ O ₃ RATIO ON THE OPACITY OF WALL AND FLOOR TILE ENGOBES	132
Fahriye Taskiran DEVELOPMENT OF GLAZED PORCELAIN TILES WITH IMPROVED SLIP RESISTANCE	133
Sinan Daloğlu DEVELOPMENT OF STEAM-RESISTANT GLASS CERAMIC COATINGS FOR SELF-CLEANING OVENS	134
Giacomo Boschi ANALYSIS OF PARTICULATE MATTER FROM GASEOUS EMISSIONS OF THE CERAMIC TILES INDUSTRY	134
Karina Warmuz A LONG-TERM KINETIC INVESTIGATION OF HYDROTALCITE SYNTHESIS THROUGH THE HYDRATION OF MgO AND Al ₂ O ₃	135
Dunja Đukić MECHANICAL, MICROSTRUCTURAL AND ADSORPTION PROPERTIES OF BRUSHITE-METAKAOLIN GEOPOLYMER MATERIALS	136
Robert Kusiorowski COAL COMBUSTION RESIDUALS FROM HOME FURNACE AS A SECONDARY RAW MATERIAL FOR THE PRODUCTION OF CERAMIC BUILDING MATERIALS	137

Tariq Labbilta ELABORATION AND CHARACTERIZATION OF NEW PHOSPHATE GLASSY FERTILIZERS FOR AGRICULTURAL APPLICATION	138
Imane Anasser STRUCTURE CONTROL OF SrBi ₂ Nb ₂ O ₉ PREPARED BY SOLID STATE TREATMENT FOR FERROELECTRIC APPLICATION	139
Olga V. Chudinovych PHASE EQUILIBRIA IN THE La ₂ O ₃ -Lu ₂ O ₃ -Er ₂ O ₃ SYSTEMS AT 1500 °C	139
Abdelmajid Agnaou SYNTHESIS AND STUDY OF THE STRUCTURAL PROPERTIES OF Bi ₄ P _x V _{2-x} O ₁₁	140
Serhiy V. Yushkevych PHASE RELATION STUDIES IN THE CeO ₂ -La ₂ O ₃ -Yb ₂ O ₃ SYSTEM AT 1500 °C ..	141
Arsalan Zare SYNTHESIS OF Sr ₂ Fe _{1.5-x} Mo _{0.5+x} O _{6-δ} (0≤x≤0.5) AS AN ELECTRODE MATERIAL FOR SOLID OXIDE CELLS	142

INDEX OF AUTHORS

ferroelectrics. However to create a composite material with the best properties, it is necessary to optimize their composition and the process of their production. The chemical structure of polymers has a big influence on the properties of composite materials. Chain length of polymers, glass transition temperature and variable hydrophobic to hydrophilic polymer part ratio will effect on the rheological behavior of ceramic suspensions and on the mechanical and electrical properties of the composites.

In presented research the ferroelectric ceramic-polymer composites based on barium-strontium titanate and water-thinnable polymeric dispersions, obtained by using tape casting method. Barium strontium titanate with the assumed stoichiometry $\text{Ba}_{0.65}\text{Sr}_{0.35}\text{TiO}_3$ was synthesized by the high temperature solid-state reaction. Water-thinnable polymeric dispersions were synthesized from butyl acrylate, styrene and tert-butyl acrylate containing different amounts of individual monomers. Then, the ceramic-polymer composites were obtained by tape casting. The influence of the chemical structure of synthesized binders on the rheological properties of the slurries and on physicochemical properties of ceramic-polymer composites were investigated.

OC-66

MECHANICAL ENERGY HARVESTING POTENTIAL OF BiFeO_3 -PVDF FLEXIBLE COMPOSITES

Nikola Ilić¹, Mirjana Vijatović Petrović¹, Željko Despotović², Jelena Bobić¹,
Adis Džunuzović¹, Guilhermina F. Teixeira³, Biljana Stojanović⁴

¹Institute for Multidisciplinary Research, University of Belgrade, Belgrade, Serbia

²Institute Mihajlo Pupin, Belgrade, Serbia

³Federal University of Goiás, Institute of Chemistry, Goiânia, Goiás, Brazil

⁴Academy of Engineering Sciences of Serbia, Belgrade, Serbia

e-mail: niksentijs@gmail.com

Bismuth ferrite (BiFeO_3) powders were synthesized by sol-gel methods and incorporated into flexible composites by hot pressing with polyvinylidene fluoride (α -PVDF). Several metal ions with various valences were used to dope BiFeO_3 in order to examine their influence on electrical properties. XRD characterization confirmed that almost all of the dopants incorporated very well into the perovskite structure. Microstructural study showed that the composites are homogeneous with thickness of 50 to 140 μm . Dielectric, impedance and ferroelectric properties of composite samples showed that all of the dopants even those with smaller valence than the ions they substitute enhance the capability to handle the electric field. α -PVDF matrix also helped in preventing electrical breakdown comparing to BiFeO_3 ceramics, which is usually susceptible to high leakage. Flexible composites were subjected to impact piezoelectric test with the idea to study their potential to collect mechanical energy from the surrounding vibrations.