

# 14<sup>th</sup> ECerS Conference for Young Sciences in Ceramics

Novi Sad, Serbia, October 20-23, 2021

## 20.10.2021. Wednesday

09.00-18.00 h Registration - Conference Desk

INVITED LECTURE, IL-1 – **András Sápi**, *Hungary*, Fighting climate change with ceramic based nanocatalyst

INVITED LECTURE, IL-2 - **Peter Tatarko**, *Slovakia*, Joining and integration of silicon carbide based ceramics

INVITED LECTURE, IL-3 -, **Julian Walker**, *Norway*, Learning from ceramics to engineer hybrid supramolecular ferroics

	<b>University - Rectorate Amphitheater</b>	
11.00-11.30 h	Opening ceremony	
11.30-12.15 h	IL-1 <u>András Sápi</u> , <i>Hungary</i>	
12.15-13.00 h	IL-2 Peter Tatarko, <i>Slovakia</i>	
13.00-14.15 h	Welcome party	
14.15-16.00 h	<p>Ceramic processing - 1 Chair: Branko Matović</p> <p>OA-1 Anna-Katharina Hofer, <i>Austria</i> <b>Stereolithographic 3D-printing of textured alumina microstructures</b></p> <p>OA-2 Vladimír Prajzler, <i>Czech Republic</i> <b>Rapid rate sintering and spark plasma sintering of <math>(\text{Ba}_{0.85}\text{Ca}_{0.15})(\text{Zr}_{0.1}\text{Ti}_{0.9})\text{O}_3</math> lead-free piezoelectric ceramics</b></p> <p>OA-4 Maria Parfenova, <i>Russia</i> <b>3D-printing of exploded T-x-y diagrams prototypes to correct experimental and thermodynamic interpretations: <math>\text{Al}_2\text{O}_3(\text{TiO}_2)\text{-SiO}_2\text{-ZrO}_2</math> &amp; Ag-Cu-Ni</b></p> <p>OA-5 Petra Šimonová, <i>Czech Republic</i> <b>Sintering without shrinkage - The strange case of pure tin oxide ceramics</b></p> <p>OA-6 Naima Boughazif, <i>France</i> <b>Formulation of muscovite ceramic inks</b></p>	

	<p>OA15-Nikola Kanas, Serbia/Norway  <b>Heterostructuring - an effective way to boost zT of CaMnO<sub>3</sub>-based ceramics</b></p> <p>OA-17 Mona Yarahmadi, <i>Spain</i>  <b>Production and properties of yttria-stabilized zirconia ceramics by direct ink writing</b></p>	
16.00-16.15 h	Coffee break	
16.15-17.00 h	IL-3 Julian Walker, <i>Norway</i>	
17.00-18.45 h	<p>Engineering and refractory ceramics - 1  Chair: Nikola Kanas</p> <p>OA-18 Dmitrii Komissarenko, <i>Switzerland</i>  <b>DLP 3D printing of high strength oxide ceramics</b></p> <p>OA-19 Maxim Arsentev, <i>Russia</i>  <b>Comparative study of diamond surface graphitization with orientations (111) and (100) using the method of molecular dynamics</b></p> <p>OA-8 Abdullah Jabr, <i>Austria</i>  <b>Contact damage of alumina-based layered ceramics with tailored microstructure</b></p> <p>OA-10 Dawid Kozień, <i>Poland</i>  <b>Sintering by various method and analysis of the microstructure of B<sub>4</sub>C-Ti composites</b></p> <p>OA-11 Hakan Ünsal, <i>Slovakia</i>  <b>In situ synthesis and characterization of ZrB<sub>2</sub>-SiC ceramics with rare-earth based additives</b></p> <p>OA-13 Ivana Milenković, <i>Serbia</i>  <b>N-doped carbon dots improve fingerprint imaging</b></p> <p>OC-22 Joanna Tanska, <i>Poland</i>  <b>ZrO<sub>2</sub>-Mo composites obtained by gelcasting and slip casting with the use of metal precursor</b></p>	

## 21.10.2021. Thursday

08.00-18.00 h Registration - Conference Desk

INVITED LECTURE, IL-4 – **Louis Winnubst**, *The Netherlands*, Fabrication and properties of ceramic membranes for molecular separation under demanding conditions

INVITED LECTURE, IL-5 - **Andraž Kocjan**, *Slovenia*, Zirconia dental ceramics: Microstructure and surface conditioning related *in vitro/in vivo* performance

INVITED LECTURE, IL-6 – **Raúl Bermejo**, *Austria*, Exploring new concepts to design damage tolerant layered ceramics

	<b>University - Rectorate Amphitheater</b>	<b>Faculty of Technology Blue Hall</b>
09.15-10.45 h	<p>Engineering and refractory ceramics - 2 Chair: Branko Škorić</p> <p>OC-26 Paulina Wójcik, <i>Poland</i> <b>Use of image analysis for description of CMC composites</b></p> <p>OC-23 Vladimir Terek, <i>Serbia</i> <b>Surface topography of nanostructured TiAlSiN coating deposited with different degrees of rotation on various substrate materials</b></p> <p>OC-28 Anna Baran-Sadleja, <i>Poland</i> <b>Analysis of ceramic matrix composites using computer tomography method</b></p> <p>OC-29 Josef Schlacher, <i>Austria</i> <b>Mechanical characterization of additive manufactured multi-material ceramics</b></p> <p>OA-20 Slađana Laketić, <i>Serbia</i> <b>Surface damage caused by laser irradiation of the Ti<sub>45</sub>Nb alloy processed by high-pressure torsion</b></p> <p>OC-35 Cosmin Iulian Codrea, <i>Romania</i> <b>Antimicrobial properties of composite coatings used for stone heritage conservation</b></p>	<p>Bioceramics - 1 Chair: Aleksandar Đorđević</p> <p>OA-32 Maliha Siddiqui, <i>Czech Republic</i> <b>Role of Ca<sup>2+</sup> doping on phase stability of freeze-casted hydroxyapatite</b></p> <p>OA-33 Gilyana Kazakova, <i>Russia</i> <b>Synthesis of newberite powders for production of resorbable bioceramics by stereolithography 3D printing</b></p> <p>OA-34 Denata Sylva, <i>United Kingdom</i> <b>Synthesis of multi-substituted hydroxyapatite using a continuous laminar flow method</b></p> <p>OC-36 Maksim Kaimonov, <i>Russia</i> <b>Composite ceramic materials based on sodium silicate aqueous solution and calcium phosphate powders for bone tissue regeneration</b></p> <p>OC-37 Otabek Toshev, <i>Russia</i> <b>Ceramic materials in K<sub>2</sub>O-CaO-P<sub>2</sub>O<sub>5</sub> system obtained by annealing of cement salt stone prepared from highly loaded suspensions</b></p> <p>OC-38 Simona Ioniță, <i>Romania</i> <b>Mesoporous silica-based nanocomposites for targeted delivery of chemotherapeutic agents</b></p>
10.45-11.00 h	Coffee break	
11.00-11.45 h	IL-4 Louis Winnubst, <i>The Netherlands</i>	
11.45-12.30 h	IL-5 Andraž Kocjan, <i>Slovenia</i>	
12.30-13.30 h	Lunch break	
13.30-14.15 h	IL-6 Raúl Bermejo	
14.15-14.30 h	Coffee break	Coffee break

14.30-16.35 h	<p>Students Speech Contests - 1 Chair: Andraž Kocjan</p> <p>SC-1 Soňa Hříbalová, <i>Czech Republic</i> <b>New light scattering models for transparent ceramics with birefringent crystallites</b></p> <p>SC-2 Álvaro Eguluz Castro, <i>Spain</i> <b>Processing of a full ceramic 3D- scaffolds by FFF using a colloidal feedstock</b></p> <p>SC-3 Arijeta Bafti, <i>Croatia</i> <b>The development of geopolymer materials into thin-films for the application in vertically mounted solar cells</b></p> <p>SC-4 Else Ellermann, <i>United Kingdom</i> <b>Understanding the effect of surface properties of bioactive ceramics on protein attachment and angiogenesis</b></p> <p>SC-5 Maximilian Staudacher, <i>Austria</i> <b>Biaxial strength testing: A comparison of the Ball-on-Three-Balls- and the Ring-on Ring-Test</b></p>	<p>Electroceramics – 1 Chair: Željka Cvejić</p> <p>OA-39 Elena Mirabela Soare, <i>Romania</i> <b>Microstructure and dielectric proprieties of sol-gel BaTa<sub>1-x</sub>Hf<sub>x</sub>O<sub>3</sub> ceramics</b></p> <p>OA-89 Sara Joksovic, <i>Serbia</i> <b>Epitaxial Sr-doped LaMnO<sub>3</sub> thin films prepared by polymer-assisted deposition</b></p> <p>OA-41 Daria Gierszewska, <i>Poland</i> <b>Structural and electrical properties of Fe- or Lu-doped barium lanthanum cobaltite (Ba<sub>0.5</sub>La<sub>0.5</sub>CoO<sub>3-δ</sub>)</b></p> <p>OA-42 Přemysl Štastný, <i>Czech Republic</i> <b>Gel-tape casting of high strength ceramic foils and their application</b></p> <p>OA-43 Milica Stefanović, <i>Serbia</i> <b>Deposition of methylammonium lead bromide perovskite on titania nanotube arrays assisted by supercritical carbon dioxide</b></p> <p>OA-44 Vojtěch Mařák, <i>Czech Republic</i> <b>Fabrication and physical, microstructural, and mechanical properties of rare-earth-doped barium titanate ceramics</b></p> <p>OA-45 Radu Stirbu, <i>Romania</i> <b>Investigation of anisotropic porosity in BaTiO<sub>3</sub>-based ceramics: Experiment and mesoscale models for strain-stress distributions</b></p> <p>OA-46 Arkadiusz Dawczak, <i>Poland</i> <b>Structural and electrical properties of high-entropy rare-earth ortho-niobates</b></p>
16.35-16.50 h	Coffee break	Coffee break
16.50-18.30 h	<p>Students Speech Contests - 2 Chair: Andraž Kocjan</p> <p>SC-6 Veronika S. Buinevich, <i>Russia</i> <b>Combustion synthesis (CS) and spark plasma sintering (SPS) of promising ultra-high temperature ceramic materials based on hafnium carbonitride for advanced spacecraft</b></p> <p>SC-7 Marija Egerić, <i>Serbia</i> <b>Assessment of the applicability of waste seashell powder on separation and stabilization of selected heavy metals from contaminated water and soil</b></p> <p>SC-8 Yigithan Tufan, <i>Turkey</i> <b>Yttria stabilized zirconia/clay composites for bone tissue regeneration</b></p>	<p>Electroceramic - 2 Chair: Nikola Ilić</p> <p>OA-47 Andrzej Kruk, <i>Poland</i> <b>Wavelength dependence of RE doped magneto-optical ceramics</b></p> <p>OA-48 Marta Lubszczyk, <i>Poland</i> <b>Optimization of wet chemistry methods for fabrication of pure and RE doped KNN toward piezoelectric applications</b></p> <p>OA-49 Milena Dojcinovic, <i>Serbia</i> <b>Synthesis, structure and electrochemical performance of NiMn<sub>2</sub>O<sub>4</sub></b></p> <p>OA-50 Danica Piper, <i>Serbia</i> <b>Epitaxial bilayer LaMnO<sub>3</sub> (Ba,Sr)TiO<sub>3</sub> thin films prepared by</b></p>

	<p>SC-9 Nikos Kyriakou, <i>The Netherland</i>  <b>Controlled nanoconfinement of polyimide network in mesoporous alumina membranes via surface-induced polymerization for molecular separations</b></p>	<p><b>polymer-assisted deposition</b>  Ceramics processing - 3  Chair: Nikola Ilić</p> <p>OA-51 Tatiana Lomakina, <i>Russia</i>  <b>Relationship between conditions of synthesis and properties of precursors based on stabilized and non-doped ZrO<sub>2</sub></b></p> <p>OC-52 Tereza Uhlířová, <i>Czech Republic</i>  <b>Stereology-based investigation of computer-generated microstructure of porous ceramics</b></p> <p>OC-53 Daniel Lincu, <i>Romania</i>  <b>Phase change materials based on porous silica</b></p> <p>OA-54 Harshit Tripathi, <i>India</i>  <b>Fabrication of Y<sub>2</sub>O<sub>3</sub> ceramic with sintering additives for opto-electrical applications</b></p>
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## 22.10.2021. Friday

08.00-10.00 h Registration - Conference Desk

INVITED LECTURE, IL-7 – **Stevan Armaković**, *Serbia*, Density functional theory: Application in materials science

INVITED LECTURE, IL-8 **Dejan Zagorac**, *Serbia*, Size and scaling effects in ferroelectric ceramics

	University - Rectorate Amphitheater	Faculty of Technology Amphitheater
09.15-11.20 h	<p>Students Speech Contests - 3 Chair: Andraž Kocjan</p> <p>SC-10 Susanta Sengupta, <i>Slovakia</i> <b>Composite fibers incorporating therapeutic ion-doped mesoporous bioactive glass nanoparticles (MBGNs): Influence of surface roughness and fiber diameter on cell</b></p> <p>SC-11 Dawid Kozień, <i>Poland</i> <b>Synthesis and biological evaluation of boron carbide (B<sub>4</sub>C) nanopowders as a boron deliver agent in Boron Neutron Capture Therapy (BNCT)</b></p> <p>SC-12 Nicola Gilli, <i>Italy</i> <b>Microstructure and local properties of (Zr,TM)B<sub>2</sub> solid solutions</b></p> <p>SC-13 Kira Schlesier, <i>Germany</i> <b>Influence of optical radiation on nanocrystalline functional ceramic coatings for energy conversion fabricated via powder aerosol deposition</b></p> <p>SC-14 Christelle Chauffeton, <i>France</i> <b>Physico-chemical study of pigments used at the Manufacture Nationale de Sèvres</b></p>	<p>Catalysts Chair: Sanja Panić</p> <p>OA-55 Kiryl Zakharchuk, <i>Portugal</i> <b>Characterization of La<sub>2-x</sub>Ba<sub>x</sub>NiO<sub>4</sub> electrocatalyst for potential application in solid oxide cell for NO<sub>x</sub> reduction</b></p> <p>OA-56 Owais Aqtash, <i>Hungary</i> <b>Ceramic based catalyst characterization</b></p> <p>OA-57 Daniela V. Lopes, <i>Portugal</i> <b>Electrochemical recovery of Fe from porous iron-rich ceramic cathodes for possible red mud valorization</b></p> <p>OC-58 Ghazaleh Khoshroo, <i>Hungary</i> <b>Catalytic reaction of carbon dioxide with methane on supported Co/Mo catalysts</b></p> <p>OA-59 Svetlana Butulija, <i>Serbia</i> <b>Removal of Pb(II) from aqueous solutions by nano-CeO<sub>2</sub></b></p> <p>OC-60 Anastasiia Efremova, <i>Hungary</i> <b>Pt-mesoporous metal oxides surface interactions during CO<sub>2</sub> methanation</b></p> <p>OA-61 Jelena Vujančević, <i>Serbia</i> <b>Photoactivity of vanadium oxide-TiO<sub>2</sub> nanotubes</b></p> <p>Company Presentation Chair: Miloš Bokorov</p> <p>IC-1 Slavko Žižel, <i>Slovenia</i> <b>Electron microscopy - JEOL</b></p>
11.20-11.35 h	Coffee break	Coffee break
11.35-13.40 h	<p>Students Speech Contests - 4 Chair: Andraž Kocjan</p> <p>SC-15 Chloé Goutagny, <i>Belgium</i> <b>Additive manufacturing of β-TCP using the stereolithography technology: Suspension preparation and process optimisation</b></p>	<p>Company Presentation Chair: Miloš Bokorov</p> <p>IC-2 Jens Huber, <i>Germany</i> <b>Presentation of Dr. Fritsch</b></p>

	<p>SC-16 Nikolett Hegedüs, <i>Hungary</i>  <b>Examination of the hydrogen formation in Radio Frequency sputtered hydrogenated SiN<sub>x</sub> thin films</b></p> <p>SC-17 Ashish Mohite, <i>Finland</i>  <b>Speed-based additive manufacturing technique - Discovery and exploration of design potential of speed of deposition in additive manufacturing</b></p> <p>S-18 Cristian Radu, <i>Romania</i>  <b>Structural investigation of ferroelectric thin films using transmission electron microscopy techniques</b></p> <p>SC-19 Hermina Hudelja, <i>Slovenia</i>  <b>Freeze-casting of highly porous cellulose-nanofiber-reinforced <math>\gamma</math>-Al<sub>2</sub>O<sub>3</sub> hierarchical monoliths</b></p>	<p>Electroceramics – 3  Chair: Jelena Vukmirović</p> <p>OA-63 Piotr Czaja, <i>Poland</i>  <b>Effect of dopant ions on selected properties of lead free K<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> ceramics</b></p> <p>OC-65 Weronika Bulejak, <i>Poland</i>  <b>The synthesis and characterization of new water-thinnable polymeric binders and their application in ferroelectric ceramic-polymer composites</b></p> <p>OC-66 Nikola Ilić, <i>Serbia</i>  <b>Mechanical energy harvesting potential of BiFeO<sub>3</sub>-PVDF flexible composites</b></p> <p>OC-67 Teodora Matei, <i>Romania</i>  <b>Role of composition on the electrocaloric properties of BaM<sub>x</sub>Ti<sub>1-x</sub>O<sub>3</sub> ceramics</b></p> <p>OC-68 Nina Kuzmić, <i>Slovenia</i>  <b>Ceramic upside-down composites for future electronics</b></p> <p>Ionic conductors -1  Chair</p> <p>OA-69 Kiryl Zakharchuk, <i>Portugal</i>  <b>Formation of highly porous BaZr<sub>0.85</sub>Y<sub>0.15</sub>O<sub>3</sub> ionic conductive ceramics by emulsification</b></p> <p>OA-70 Daniel Jaworski, <i>Poland</i>  <b>High-entropy perovskite oxides as a new family of proton conductors</b></p>
13.40-14.40 h	Lunch break	
14.40-15.25 h	IL-7 Stevan Armakovic, <i>Serbia</i>	
15.25-16.10 h	IL-8 Dejan Zagorac, <i>Serbia</i>	
16.10-16.25 h	Coffee break	Coffee break
16.25-16.40 h	<p>Bioceramics - 2  Chair: Louis Winnubst</p> <p>OA-71 Islam Bouakaz, <i>Belgium</i>  <b>Comparative study on the mechanical properties of 3 lattice structures with three different pores sizes and wall thicknesses</b></p>	
16.40-18.25 h	<p>OA-72 Yasemin Tabak, <i>Turkey</i>  <b>Improvement of bioactivity for functionally graded Si<sub>3</sub>N<sub>4</sub> with HAP-chitosan dip-coating</b></p>	<p>Ionic conductors -2  Chair: Lucjan Kozielski</p> <p>OA-81 Jagoda Budnik, <i>Poland</i>  <b>Structural properties and water uptake of BaCe<sub>0.6</sub>Zr<sub>0.2</sub>Y<sub>0.2-x</sub>Fe<sub>x</sub>O<sub>3-5</sub></b></p>

	<p>OA-73 Lucie Pejchalová, <i>Czech Republic</i>  <b>Freeze-casting of bioceramics: an alternative approach for neural scaffolds</b></p> <p>OA-74 Maria M. Uzelac, <i>Serbia</i>  <b>Using experimental and computational tools to map degradation mechanisms associated with toxicity of selected <math>\beta</math>-blockers</b></p> <p>OC-76 Salim Brahim, <i>Algeria</i>  <b>The effect of sodium silicate on in vitro bioactivity and mechanical properties of hydroxyapatite bioceramics extracted from natural camelus bone</b></p> <p>Optics - 1  Chair: Louis Winnubst</p> <p>OA-77 Selim Burak Cantürk, <i>Turkey</i>  <b>Solid state synthesis and up-conversion properties of <math>\text{Yb}^{3+}=\text{Tm}^{3+}=\text{Er}^{3+}</math> doped <math>\text{La}_2\text{Ti}_2\text{O}_7</math> phosphors</b></p> <p>OA-79 Francesco Picelli, <i>Italy</i>  <b>Effect of powder treatment on optical quality of transparent ceramics</b></p> <p>OA-80 Abdi Soyulu, <i>Turkey</i>  <b>Glass-ceramic coatings for whiteboard applications</b></p>	<p><b>triple-conducting oxides</b></p> <p>OA-82 Artem Zaripov, <i>Russia</i>  <b>Proton conductivity of polyantimonic acid based membranes</b></p> <p>OC-83 Evgenii Kildiushov, <i>Russia</i>  <b>Structure, phase composition and <math>\text{Na}^{+}</math>- <math>\text{H}^{+}</math> substitution degree of the protonated beta-alumina</b></p> <p>Electroceramics - 4  Chair: Lucjan Kozielski</p> <p>OA-85 Vlad-Alexandu Lukacs, <i>Romania</i>  <b>Comparative study of <math>\text{BaTiO}_3</math> nanoceramics produced by nanocube and sphere-like nanoparticles with similar sizes</b></p> <p>OA-86 Soňa Hřibálová, <i>Czech Republic</i>  <b>Effective properties of porous piezoelectric ceramics – From cubic cell models to effective medium approximations and numerics</b></p> <p>OA-88 Cristina Vladut, <i>Romania</i>  <b>Optical and piezoelectric properties of Mn doped ZnO thin films obtained by chemical methods</b></p>
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20.00-23.00 h Restaurant "Fontana" - Meeting of Young Ceramists Network of the European Ceramic Society and Conference dinner -



## 23.10.2021. Saturday

INVITED LECTURE, IL-9 – **Lucjan Kozielski**, *Poland*, Meta composites and meta materials for electromagnetic wave screens

		<b>Faculty of Technology Amphitheater</b>
09.00-10.45 h		<p>Optics – 2 Chair: Bojan Miljević</p> <p>OA-91 Ivana Dinic, <i>Serbia</i> <b>Solvothermal synthesis of NaGdYF<sub>4</sub>:Yb,Er UCNPs with different structural, morphological and optical properties satisfied</b></p> <p>OA-92 Mélanie Rousselle, <i>France</i> <b>Below 600°C spark plasma sintering of lanthanum phosphate</b></p> <p>OC-93 Vojtěch Nečina, <i>Czech Republic</i> <b>Myths and facts about the use of LiF in the preparation of transparent spinel (MgAl<sub>2</sub>O<sub>4</sub>) ceramics</b></p> <p>OC-94 Zorka Vasiljevic, <i>Serbia</i> <b>Influence of calcination temperature on the structure, morphology and optical properties of electrospun pseudobrookite nanofibers</b></p> <p>OA-95 Ufuk Akkasoglu, <i>Turkey</i> <b>LAS glass-ceramics with tailored thermal expansion</b></p> <p>Traditional Ceramics - 1 Chair: Bojan Miljević</p> <p>OT-99 Justyna Ignaczak, <i>Poland</i> <b>Structure and electrical properties and determination of phase stability region of Mn-Cu-Fe oxide system</b></p> <p>OT-100 İremnur Ceylan, <i>Turkey</i> <b>A sustainable route for production of acid resistant fluorine mica-based glass ceramic coatings</b></p>
10.45-11.00 h		Coffee break
11.00-11.45 h		IL-9 Lucjan Kozielski, <i>Poland</i>
11.45-13.30 h		<p>Traditional Ceramics - 2 Chair: Snežana Vučetić</p> <p>OT-101 Yasin Bozkurt Yilmaz, <i>Turkey</i> <b>Livestock waste as a secondary source of CaO-P<sub>2</sub>O<sub>5</sub> for inorganic coatings</b></p> <p>OT-105 Giacomo Boschi, <i>Italia</i> <b>Analysis of particulate matter from gaseous emissions of the</b></p>

		<p><b>ceramic tiles industry</b></p> <p>OT-107 Dunja Đukić, <i>Serbia</i>  <b>Mechanical, microstructural and adsorption properties of brushite-metakaolin geopolymer materials</b></p> <p>OT-102 Suleyman Onder Varisli, <i>Turkey</i>  <b>The Effect of SiO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> ratio on the opacity of wall and floor tile engobes</b></p> <p>OT-115 Farid Salari, <i>Italy</i>  <b>Parametric analysis of cement distribution in binder jetting printed materials as a function of processing parameters</b></p> <p>OT-103 Fahriye Taskiran, <i>Turkey</i>  <b>Development of glazed porcelain tiles with Improved slip resistance</b></p> <p>OT-104 Sinan Daloglu, <i>Turkey</i>  <b>Development of steam-resistant glass ceramic coatings for self-cleaning ovens</b></p>
13.30-13:45 h		Closing ceremony