

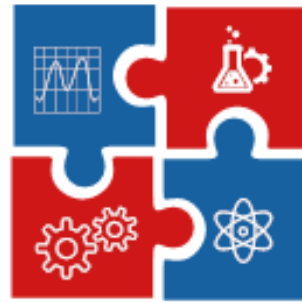
**Innovation Center of  
Faculty of Mechanical  
Engineering**



**Faculty of Mechanical  
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**Center for Business  
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**CNN TECH**

**„International Conference of Experimental and  
Numerical Investigations and New Technologies“**

**Sponsored by:**

**MINISTRY OF EDUCATION OF THE REPUBLIC OF SERBIA**

# **Programme and The Book of Abstracts**

**04 – 07 July 2023**

**Zlatibor, Serbia**

**„International Conference of Experimental and Numerical  
Investigations and New Technologies“**

# **CNN TECH 2023**

**04 – 07 July 2023**

**Hotel Mona, Miladina Pecinara 26, Zlatibor, Serbia**

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**Organised by:**

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Faculty of Mechanical Engineering, University of Belgrade  
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# “International Conference of Experimental and Numerical Investigations and New Technologies”

## CNN TECH 2023

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We particularly wish to thank our sponsor, **The Ministry of Education, Government of the Republic of Serbia**.

We would like to thank the University of Belgrade - Faculty of Technology and Metallurgy for supporting the young researchers of this conference.

We are also grateful to companies, **3D Republic** and **Shimadzu**, who have significantly contributed to the organization and realization of the conference.

# PREFACE

Dear Friends and Colleagues,

welcome to the CNN Tech 2023 Conference and the fabulous mountain of Zlatibor!

With 118 papers (19 by international authors) and contributions by authors from different countries, the International Conference of Experimental and Numerical Investigations and New Technologies CNN Tech 2023 successfully sets a high level for future conferences. Participation of a large number of domestic and international authors, as well as the diversity of topics, justifies our efforts to organise this conference and contribute to the exchange of knowledge, research results and experience of industry experts, research institutions and faculties which all share a common interest in the field in experimental and numerical investigations.

This year CNN Tech 2023 focuses on the following topics:

- Mechanical Engineering,
- Engineering Materials,
- Chemical and Process Engineering,
- Experimental Techniques,
- Numerical Methods,
- New Technologies,
- Clear sky,
- Dental Materials and Structures,
- Advanced Materials and Technology,
- Artificial intelligence
- Student session and
- Successful Project Stories.

For the first time, we have a new section “Successful Project Stories” dedicated to showcasing inspiring results from exceptional projects that have achieved remarkable success in their respective fields. Apart from plenty of interesting lectures, the participants will have a chance to lighten up and communicate in friendly and relaxed settings. The organising committee of CNN Tech 2023 would like to express gratitude to the Ministry of Education and the Ministry of Science, Technological Development and Innovation for the financial support of the

Conference. On behalf of the Innovation Center of the Faculty of Mechanical Engineering, Faculty of Mechanical Engineering and Center for Business Trainings, we wish this to be a splendid CNN Tech conference filled with many memorable moments.

PROGRAMME AND ORGANIZING COMMITTEE

# CONTENTS

<b>PROGRAMME</b> .....	<b>1</b>
<b>ABSTRACTS</b> .....	<b>1</b>
<b>Mechanical Engineering</b> .....	<b>2</b>
<i>Milan D. Kalajdzic</i> <b>REDUCING GREENHOUSE GAS EMISSIONS IN THE MARITIME INDUSTRY: CHALLENGES AND OPPORTUNITIES</b> .....	<b>3</b>
<i>Bozica A. Bojovic</i> <b>STRAIN RATE DEPENDENT MECHANICAL PROPERTIES OF 3D PRINTED ABS AND PLA RESINS USING THE DLP TECHNIQUE</b> .....	<b>4</b>
<i>Aleksandar Zahariev, Viktor Stojmanovski</i> <b>TOPOLOGY OPTIMISATION AS METHOD FOR IMPROVING THE DESIGN PROCESS OF TIPPING SEMI-TRAILER</b> .....	<b>5</b>
<i>Muhamed Bisic, Adi Pandžic</i> <b>3D PRINTED FIREARM, AMMUNITION AND MILITARY EQUIPMENT</b> .....	<b>6</b>
<i>Ivana Vasovic Maksimovic, Dragi Stamenkovic, Mirko Maksimovic, Katarina Maksimovic</i> <b>CRACK GROWTH ANALYSIS OF DAMAGED THIN-WALLED STRUCTURAL COMPONENTS USING X-FEM</b> .....	<b>7</b>
<i>Ivana Jevtic, Goran Mladenovic, Milos Milosevic, Isaak Trajkovic, Aleksa Milovanovic</i> <b>DEVIATIONS MEASUREMENTS OF SLS PA MATERIAL AT COMPRESSIVE SPECIMENS</b> ..	<b>8</b>
<i>Boris Folic, Milos Coki, Mladen Cosic, Simon Sedmak, Zeljko Zugic</i> <b>THE INFLUENCE OF PARAMETARS OF SAND SOIL ON STATES PH 2D FRAME ON SEISMICS REASPONSE</b> .....	<b>9</b>
<i>Aleksandar Grbovic, Martina Balac, Lajos Sarvas</i> <b>ANALYSIS OF THE CONTRIBUTION OF PROTECTIVE BELLOWS ON THE STABILITY OF ALUMINUM FRAMES USED IN PIVOTING JOINT</b> .....	<b>10</b>
<i>Marko S. Djurovic, Zeljko V. Despotovic</i> <b>THE EFFICIENCY OF ENERGY PRODUCTION FROM SOLAR PANELS DEPENDING ON THE TYPE OF ORIENTATION AND MODE OF THEIR INSTALLATION</b> .....	<b>11</b>
<i>Sasa T. Zivanovic, Nikola M. Vorkapic, Nikola R. Slavkovic, Zoran Z. Dimic, Jelena Z. Vidakovic</i> <b>DESIGN OF MULTIPRODESK: MULTIFUNCTIONAL RAPID PROTOTYPING DESKTOP MACHINE</b> .....	<b>12</b>



<i>Igor Kocic, Goran Mladenovic, Sasa Nikolic, Darko Mitic, Nikola Dankovic, Petar Djekic</i> <b>REVITALIZATION OF HORIZONTAL BORING MILL MACHINE USING PLC CONTROLLER AND DC CONVERTER.....</b>	<b>13</b>
<i>Strahinja Djurovic, Dragan Lazarevic, Milan Misic, Zivce Sarkocevic, Zoran Golubovic</i> <b>3D PRINTING AND CNC MACHINING: AN OVERVIEW OF TECHNOLOGY AND HYBRID MANUFACTURING .....</b>	<b>14</b>
<i>Dusan Arsic, Snezana Kirin, Aleksandra Arsic, Ruzica Nikolic, Ljubica Radovic</i> <b>IMPROVEMENT OF RELIABILITY OF THE BUCKET-WHEEL EXCAVATOR TROUGH IMPLEMENTATION OF NEW METHOD OF FAULT-TREE ANALYSIS.....</b>	<b>15</b>
<i>Katarina Colic</i> <b>DEVELOPMENT OF A NEW METHOD FOR ASSESSMENT OF STRUCTURAL INTEGRITY AND LIFE OF ORTHOPEDIC IMPLANTS .....</b>	<b>16</b>
<b>Engineering Materials.....</b>	<b>17</b>
<i>Zorana Golubovic</i> <b>DETAILED CHARACTERIZATION OF PLA AND PLA RESIN ADDITIVELY MANUFACTURED MATERIALS .....</b>	<b>18</b>
<i>Marina B. Dojcinovic, Olivera A. Eric Cekic, Snezana M. Ciric-Kostic, Nebojsa M. Bogojevic Vladimir Z. Sindjelic</i> <b>EFFECT OF SECTION THICKNESS ON CAVITATION BEHAVIOUR OF SELECTIVE LASER SINTERED POLYAMIDE 12 .....</b>	<b>19</b>
<i>Nikola A. Milovanovic, Aleksandar S. Sedmak, Mihajlo S. Arandjelovic, Lazar D. Jeremic</i> <b>APPLICATION OF FRACTURE MECHANICS PARAMETERS TO EVALUATE THE INTEGRITY OF ROTATING EQUIPMENT.....</b>	<b>20</b>
<i>Branislav Djordjevic, Sreten Mastilovic, Blagoj Petrovski, Aleksandar Sedmak, Aleksandar Dimic</i> <b>A METHOD FOR FRACTURE PROBABILITY ASSESSMENT IN FUNCTION OF J-INTEGRAL IN TRANSITION TEMPERATURE REGIME OF FERRITIC STEEL.....</b>	<b>21</b>
<i>Lazar Jeremic, Branislav Djordjevic, Mihajlo Arandjelovic, Nikola Milovanovic, Simon Sedmak, Aleksandar Jovanovic</i> <b>STRUCTURAL INTEGRITY ASSESSMENT OF WELDS ON PRESSURE VESSELS .....</b>	<b>22</b>
<i>Ana Maksimovic, Bojana Zecevic, Ljubica Milovic, Vujadin Aleksic</i> <b>EFFECTS OF ALLOYING ELEMENTS ON THE PROPERTIES OF HSLA STEEL .....</b>	<b>23</b>
<i>Dimitrije Eric, Milos Milosevic, Ivan Zlatanovic, Isaak Trajkovic</i> <b>STRUCTURAL ABILITIES OF CHAIN MADE FROM RECYCLED PET BOTTLES .....</b>	<b>24</b>

<i>Aleksandra Ivanovska, Mirjana Reljic, Biljana Mangovska</i> <b>STUDYING THE INFLUENCE OF ELASTANE CONTENT AND DIFFERENT WET PROCESSES ON THE PROPERTIES OF COTTON AND COTTON/ELASTANE SINGLE JERSEY KNITTED FABRICS AND THE REVALORIZATION OF FABRIC WASTE .....</b>	<b>25</b>
<i>Isaak Trajkovic, Milos Milosevic, Nenad Mitrovic, Aleksandar Sedmak, Marko Rakin, Bojan Medjo</i> <b>THE INFLUENCE OF CYLLINDRICAL SPECIMEN GEOMETRY ON THE VALUES OF FRACTURE MECHANICS PARAMETERS .....</b>	<b>26</b>
<i>Katarina Colic, Sanja Petronic</i> <b>METHODS FOR IMPROVING THE STRUCTURAL INTEGRITY OF BIOMEDICAL CONSTRUCTIONS BY ENHANCING THE MECHANICAL CHARACTERISTICS OF METAL BIOMATERIALS.....</b>	<b>27</b>
<i>Marija Baltic, Milos Vorkapic, Aleksandar Simonovic, Toni Ivanov, Dragoljub Tanovic</i> <b>ASSEMBLING BIOMATERIAL SPECIMENS IN A MOULD MADE OF THERMOPLASTIC POLYMER: 3-POINT BENDING TEST .....</b>	<b>28</b>
<b>Chemical and Process Engineering .....</b>	<b>29</b>
<i>Mina M. Volic</i> <b>NOVEL HYDROGEL-BASED SYSTEMS FOR FOOD APPLICATION.....</b>	<b>30</b>
<i>Marko S. Jaric, Nikola J. Budimir, Sanja Z. Petronic</i> <b>ESTIMATION OF THE REMAINING LIFE OF THE IMINODIETHANOL COLUMNS.....</b>	<b>31</b>
<i>Nikola J. Budimir, Marko S. Jaric</i> <b>REPAIR OF THE CRACK ON THE PIPE ELBOW – A CASE FROM INDUSTRIAL PRACTICE.....</b>	<b>32</b>
<i>Jovana Bosnjakovic</i> <b>PHOTOCATALYTIC DEGRADATION OF ACETAMIPIRID IN A QUARTZ PHOTOREACTOR.....</b>	<b>33</b>
<i>Aleksandra Mitrovic, Ivana Ilic</i> <b>HISTORICAL DEVELOPMENT AND IMPORTANCE OF INDUSTRIAL ECOLOGY .....</b>	<b>34</b>
<i>Ivana Ilic, Aleksandra Mitrovic</i> <b>INDUSTRIAL ECOLOGY IN MINING AND MINERAL INDUSTRY .....</b>	<b>35</b>
<b>Experimental Techniques.....</b>	<b>36</b>
<i>Nenad B. Tadic</i> <b>PLASMA ELECTROLYTIC OXIDATION. STRUCTURAL, OPTICAL AND PHOTOCATALYTIC PROPERTIES OF STRUCTURES OBTAINED BY THIS PROCESS .....</b>	<b>37</b>

<i>J. Dinkic, S. M. Levic, V. Nedovic, N. Obradovic, A. DJordjevic</i> <b>RADIO-FREQUENCY ELECTRICAL CHARACTERIZATION OF VIABLE-CELL SUSPENSIONS .....</b>	<b>38</b>
<i>Nada V. Ratkovic Kovacevic, Goran Z. Vojnovic, Djordje N. Dihovicni, Dragan D. Kreculj</i> <b>AUTOMATED LIBRARY INVENTORY USING STEPPER MOTOR AND ARDUINO BOARD .</b>	<b>39</b>
<i>Milos Milosevic, Nenad Korolij, Isaak Trajkovic, Ivan Zlatanovic</i> <b>A METHOD DEVELOPMENT FOR ANALYSING FOOD TEXTURE AND EXAMINING CRISPINESS .....</b>	<b>40</b>
<i>Milos Milosevic, Nenad Korolij, Isaak Trajkovic, Ivan Zlatanovic</i> <b>COMPRESSION DETERMINATION OF DIFFERENT TYPES OF DRIED VEGETABLES .....</b>	<b>41</b>
<i>Ivica Camagic, Milivoje Jovanovic, Simon Sedmak, Predrag Zivkovic, Mladen Radojkovic</i> <b>INFLUENCE OF TEMPERATURE ON CRACK INITIATION AND CRACK GROWTH RESISTANCE OF WELDED JOINT CONSTITUENTS FOR STEEL SA-387 GR. B WELDS SUBJECTED TO CYCLIC LOADS .....</b>	<b>42</b>
<i>Dragan D. Milkovic, Goran Z. Simic, Sasa Z. Radulovic, Vojkan J. Lucanin, Aleksandra S. Kostic Milicic</i> <b>THE ROLE OF RELAY VALVE WITH KINKED CHARACTERISTICS IN BRAKING WAGONS WITH DIFFERENT BRAKES IN A FREIGHT TRAIN.....</b>	<b>43</b>
<i>M. Maksimovic, I. Vasovic Maksimovic, S. Manasijevic, M. Djuric, S. Maksimovic</i> <b>NUMERICAL AND EXPERIMENTAL STUDY OF FATIGUE STRENGTH OF HELICOPTER COMPOSITE TAIL ROTOR BLADES.....</b>	<b>44</b>
<b>Numerical Methods.....</b>	<b>45</b>
<i>Adriana Peles Tadic, George Vukovic, Aleksandar Kojovic, Dusica Stojanovic, Branislav Vlahovic, Natasa Milosavljevic, Nina Obradovic, Vladimir Pavlovic</i> <b>FRACTAL ANALYSIS AND MICROSTRUCTURE DEVELOPMENT OF BATIO3 AND PVDF BASED MULTIFUNCTIONAL MATERIALS .....</b>	<b>46</b>
<i>Mirko Maksimovic, Ivana Vasovic Maksimovic, Katarina Maksimovic</i> <b>STRESS AND STRENGTH ANALYSIS OF SANDWICH CONSTRUCTION: NUMERICAL AND EXPERIMENTAL STUDY .....</b>	<b>47</b>
<i>DJordje D. DJurdjevic, Andrijana A. DJurdjevic, Nina M. Andjelic, Ana S. Petrovic, Vesna Milosevic-Mitic</i> <b>COMPARATIVE ANALYSIS OF THIN-WALLED <math>\Omega</math> PROFILE EXPOSED TO THE ACTION OF CONSTRAINED AND UNCONSTRAINED TORSION .....</b>	<b>48</b>
<i>Rafa, K., Petkovic, J.</i> <b>VARIATIONS OF THE AHP METHOD, AND APPLICATION OF THE AHP EXPRESS METHOD IN THE MULTICRITERIA EVALUATION OF COMPANIES .....</b>	<b>49</b>

<i>Slobodanka Boljanovic</i> <b>FAILURE EVALUATIONS FOR WING SKIN WITH ELLIPTICAL FLAW UNDER DYNAMIC LOADING</b> .....	<b>50</b>
<i>Ivana B. Ivanovic</i> <b>THE CURRENT STATE OF THE OPEN-SOURCE ENGINEERING SOFTWARE</b> .....	<b>51</b>
<i>Jovan D. Tanaskovic, Jagos M. Stojanovic, Goran M. Mladenovic, Jovana D. Rankovic</i> <b>ANALYSIS OF STATIC STRENGTH OF SPECIAL TOOL FOR ASSEMBLING WAGON BODY</b> .....	<b>52</b>
<i>Jovan D. Tanaskovic, Jovana D. Rankovic, Goran M. Mladenovic, Jagos M. Stojanovic</i> <b>ANALYSIS OF STATIC STRENGTH OF THE PRODUCTION TOOL FOR MOUNTING AND INTERNAL TRANSPORT THE CAB OF THE MIREO HIGH-SPEED TRAIN</b> .....	<b>53</b>
<i>Andrijana A. Djurdjevic, Djordje D. Djurdjevic, Ljubisa J. Bucanovic, Aleksandar Zivkovic, Aleksandar S. Sedmak</i> <b>MICROHARDNESS OF FRICTION STIR WELDED LAP JOINT OF ALUMINIUM ALLOY</b> .....	<b>54</b>
<i>Djordje Djurdjevic, Nina Andjelic, Andrijana Djurdjevic, Ana Petrovic, Vesna Milosevic-Mitic, Bojan Ivljanin</i> <b>NUMERICAL STRESS AND STRAIN CALCULATION OF OMEGA CANTILEVER BEAM MODEL LOADED WITH TORSION</b> .....	<b>55</b>
<i>Mirjana Stamenic, Branislav Gajic, Aleksandar Milivojevic, Vuk Adzic, Nikola Tanasic</i> <b>POSSIBILITIES OF USING NUMERICAL SIMULATIONS IN DEFINING THE OPTIMAL POSITION OF BURNER HEADS OF THE REGENERATIVE BURNER SYSTEM FOR TUNDISH PREHEATING IN THE STEEL INDUSTRY</b> .....	<b>56</b>
<b>New Technologies</b> .....	<b>57</b>
<i>Natasa S. Obradovic</i> <b>APPLICATION OF NANOTECHNOLOGY IN COSMETIC INDUSTRY-CIRCULAR AND SUSTAINABLE APPROACH</b> .....	<b>58</b>
<i>Djordje Dihovicni, Milan Miscevic</i> <b>CAD/CAM APPROACH TO AUTOMATION OF THE PRODUCTION PROCESS</b> .....	<b>59</b>
<i>Andrijana A. Djurdjevic, Djordje D. Djurdjevic, Ljubisa J. Bucanovic, Aleksandar B. Zivkovic, Aleksandar S. Sedmak</i> <b>HYBRID FRICTION STIR WELDING – LAP JOINT OF ALUMINIUM ALLOY PLATES</b> .....	<b>60</b>
<i>Goran Mladenovic, Jagos Stojanovic, Radovan Puzovic, Mihajlo Popovic, Milos Pjevic</i> <b>APPLICATION OF ROUGH MACHINING WITH BALL END MILL CUTTER IN 3 AXIS FREE FORM SURFACE MANUFACTURING</b> .....	<b>61</b>
<i>Igor Svetel</i> <b>INFORMATION AND QUERY IN BIM</b> .....	<b>62</b>

<i>Bojan Stojcetovic, Zivce Sarkocevic</i> <b>RENEWABLE ENERGY ALTERNATIVE SELECTION AT THE MUNICIPAL LEVEL</b> .....	63
<i>Jagos M. Stojanovic, Goran M. Mladenovic, Jovan D. Tanaskovic, Milos D. Pjevic</i> <b>FORCE PREDICTION MODELS IN BALL END MILLING OF FREEFORM SURFACES</b> .....	64
<b>Clear sky</b> .....	65
<i>Toni D. Ivanov</i> <b>HYDROGEN AS A SUSTAINABLE FUEL FOR AVIATION PROPULSION</b> .....	66
<i>Milica Ivanovic, Marija Baltic, Dragoljub Tanovic</i> <b>TOWARDS INNOVATIVE AND MORE EFFICIENT SOLUTIONS FOR HEAT ECHANGERS IN AEROSPACE INDUSTRY</b> .....	67
<i>Dragoljub Tanovic, Milos Vorkapic, Katarina Telebak, Jagos Stojanovic</i> <b>EFFECT OF PITCH ANGLE ON WIND TURBINE PERFORMANCES</b> .....	68
<i>Petar Z. Marcetic, Grigorije M. Djokic, Ana S. Stojanovic, Nikola D. Jovanovic, Toni D. Ivanov</i> <b>DESIGN OF MODULAR UAV “MODULAR X”</b> .....	69
<i>Milica M. Ivanovic, Snezana P. Malisic, Aleksandar M. Simonovic, Marija Z. Baltic</i> <b>PERSPECTIVES OF THE INTEGRATION OF AN ABSORPTION REFRIGERATION CYCLE IN ENERGY PRODUCTION SYSTEM</b> .....	70
<b>Dental Materials and Structures</b> .....	71
<i>Ljiljana Djukic</i> <b>ACTIVITY STATE OF DENTINE-DERIVED TGF-B1 RELEASED AFTER RESTORATIVE DENTAL MATERIALS TREATMENT</b> .....	72
<i>Maja Zebic</i> <b>ADVANCES IN DENTAL COMPOSITE CURING</b> .....	73
<i>Ksenija Zelic Mihajlovic</i> <b>APPLICATION OF FINITE ELEMENT METHOD IN DENTISTRY</b> .....	74
<i>Aleksandra Mitrovic</i> <b>ANALYSIS OF MECHANICAL AND PHYSICAL-CHEMICAL PROPERTIES OF DENTAL COMPOSITE CEMENTS</b> .....	75
<i>Nemanja V. Majstorovic, Branislav Glisic</i> <b>DIGITAL ORTHODONTICS – ONE APPROACH</b> .....	76

<b>Advanced Materials and Technology .....</b>	<b>77</b>
<i>N. Obradovic, L. Feng, S. Filipovic, M. Mirkovic, D. Kosanovic, J. Zivojinovic1, J. Rogan, W. G. Fahrenholtz</i>	
<b>CHARACTERIZATION OF MECHANICALLY ACTIVATED ZRO2-C POWDER MIXTURES ...</b>	<b>78</b>
<i>D. Kosanovic, W. G. Fahrenholtz, N. Obradovic, S. Filipovic, J. L. Watts, G. E. Hilmas</i>	
<b>ELEVATED TEMPERATURE THERMAL PROPERTIES OF ZRB2 WITH TUNGSTEN ADDITIONS .....</b>	<b>79</b>
<i>Aleksa Milovanovic, Matteo Montanari, Roberto Brighenti, Aleksandar Sedmak, Milos Milosevic</i>	
<b>TIME-DEPENDENT BEHAVIOUR OF PHOTSENSITIVE RESINS IN MSLA TECHNOLOGY</b>	<b>80</b>
<i>Ivana V. Jelic, Aleksandar R. Savic, Tatjana A. Miljojcic, Marija Z. Slijivic-Ivanovic, Slavko D. Dimovic, Marija M. Jankovic, Ivana M. Perovic, Dimitrije M. Zakic, Dragi Lj. Antonijevic</i>	
<b>APPLICABILITY OF CONSTRUCTION AND DEMOLITION WASTE IN GEOPOLYMERS – A SCREENING TEST .....</b>	<b>81</b>
<b>Artificial intelligence .....</b>	<b>82</b>
<i>Djordje Dihovicni, Petar Jakovljevic, Nada Ratkovic Kovacevic, Dragan Kreculj</i>	
<b>ROBOT MOVEMENT PROGRAMMING AND SIMULATION GENERATION FOR PICK AND PLACE MATERIALS IN ABB ROBOT STUDIO .....</b>	<b>83</b>
<i>Djordje Dihovicni</i>	
<b>APPLICATION OF ROBOTS IN DEMANDING CONDITIONS.....</b>	<b>84</b>
<i>Vuk Vujosevic, Irina Stamatovic, Ognjen Bobicic</i>	
<b>ETHICAL CONSIDERATIONS AND HUMAN RIGHTS REGARDING AI IN AUTONOMOUS VEHICLES .....</b>	<b>85</b>
<i>Nenad Korolija, Vladisav Jelisavcic, Milan Redzic</i>	
<b>A BRIEF OVERVIEW OF CURRENT VECTOR DATABASE SOLUTIONS FOR KNOWLEDGE DISCOVERY .....</b>	<b>86</b>
<i>Nenad Korolija, Vladisav Jelisavcic, Milan Redzic</i>	
<b>DATAFLOW HARDWARE FOR REAL-TIME HIGH-SPEED CAMERA IMAGE PROCESSING .....</b>	<b>87</b>
<i>Milan Redzic, Ge Wang, Nenad Korolija</i>	
<b>INDOOR USER LOCALIZATON BASED ON VISION TRANSFORMER FOR AMBIENT ASSISTED LIVING APPLICATIONS .....</b>	<b>88</b>
<i>Milan Redzic, Nenad Korolija, Dragan Bojic</i>	
<b>ACTION RECOGNITION BASED ON VISION TRANSFORMER AND A CONTRASTIVE LEARNING TECHNIQUE.....</b>	<b>89</b>

<b>Student session .....</b>	<b>90</b>
<i>Dusan Perisic, Aleksandar Djuric</i>	
<b>THE NUMERICAL METHODS FOR EXAMINATION AND DEVELOPMENT OF NEW BIOMATERIALS .....</b>	<b>91</b>
<i>Marija Vasilijevic, Danilo Pejic, Luka Lekic, Mihajlo Popovic, Milos Pjevic, Aleksa Milovanovic</i>	
<b>INVESTIGATION OF THE TENSILE STRENGTH OF POLYMER MATERIALS OBTAINED THROUGH 3D PRINTING TECHNOLOGIES.....</b>	<b>92</b>
<i>Viktor Hric, Andjela Delic</i>	
<b>EVALUATION OF RADIOCAPACITY OF CALCIUM SILICATE AND CALCIUM ALUMINATE CEMENTS WITH ADDITION OF TITANIUM DIOXIDE .....</b>	<b>93</b>
<i>Katarina B. Telebak, Dragoljub Lj. Tanovic, Isaak Trajkovic, Nikola S. Jokic</i>	
<b>APPLICATION OF CERAMIC MATERIALS OBTAINED BY ADDITIVE MANUFACTURING ..</b>	<b>94</b>
<i>Tijana Vukic, Katarina Puzovic, Aleksandra Spadijer Gostovic, Stefan Vulovic</i>	
<b>THE EFFECT OF THERMAL CYCLING ON SURFACE PROPERTIES OF CAD/CAM HYBRID CERAMIC MATERIAL.....</b>	<b>95</b>
 <b>Successful Project Stories .....</b>	 <b>90</b>
<i>Ognjen Pekovic, Ivan Aleksic, Jelena Svorcan, Goran Volf, Dusan Matic, Snezana Kirin, Nenad Mitrovic</i>	
<b>DEVELOPMENT OF HIGH-REACH PANTOGRAPHS FOR HIGH-SPEED RAILWAYS .....</b>	<b>97</b>
<i>S. DJurasevic, N. Jasnic, N. Zrnic, P. Bulat, C. Mitrovic, M. Dragan, H.H. Hochrinner, A. Ejubovic, F. Badia</i>	
<b>DEVELOPING GUIDELINES FOR THE IMPLEMENTATION OF MICRO-CREDENTIALS IN HIGHER EDUCATION.....</b>	<b>98</b>
<i>Zarko Miskovic, Nenad Zrnic, Sanja Savic, Ivan Blagojevic, Sasa Mitic, Milos Maljkovic</i>	
<b>GOOD PRACTICE FROM AUTOMOTIVE INDUSTRY POWERED BY CIRCULAR ECONOMY IN THE REPUBLIC OF SERBIA .....</b>	<b>99</b>
<i>Dragicevic Aleksandra, Marko Milanovic, Martina Bosic, Sanja Cirovic, Milica Milanovic, Ivan Jestrovic</i>	
<b>SMART TRACKING FOR PATHOLOGY LABS: EFFICIENT CHEMICAL AND CONSUMABLE MANAGEMENT" .....</b>	<b>100</b>

# PROGRAMME

**Tuesday, July 04, 2023**

19:00 to 21:00 | Registration and Welcome cocktail – in front of the HALL A

**Wednesday, July 05, 2023**

12:00 to 12:30 | Registration – in front of the HALL A

Opening Ceremony – HALL A

*dr Aleksandar Sedmak, prof. Emeritus*

*Ministry of Education of the Republic of Serbia*

12:30 to 13:00

*dr Nenad Mitrović*

*dr Miloš Milošević*

*Svetozar Kolesar - New trends in additive manufacturing, Republic of the third dimension*

**INVITED LECTURES – PARALLEL SESSION 1 – HALL A**

*Chairman: dr Goran Mladenović*

Nataša Obradović - APPLICATION OF NANOTECHNOLOGY IN COSMETIC INDUSTRY-CIRCULAR AND SUSTAINABLE APPROACH

Mina Volić - NOVEL HYDROGEL-BASED SYSTEMS FOR FOOD APPLICATION

Adriana Peleš - FRACTAL ANALYSIS AND MICROSTRUCTURE DEVELOPMENT OF BaTiO<sub>3</sub> AND PVDF BASED MULTIFUNCTIONAL MATERIALS

13:00 to 15:00

Nenad Tadić - PLASMA ELECTROLYTIC OXIDATION. STRUCTURAL, OPTICAL AND PHOTOCATALYTIC PROPERTIES OF STRUCTURES OBTAINED BY THIS PROCESS

Milan Kalajdžić - REDUCING GREENHOUSE GAS EMISSIONS IN THE MARITIME INDUSTRY: CHALLENGES AND OPPORTUNITIES

Toni Ivanov - HYDROGEN AS A SUSTAINABLE FUEL FOR AVIATION PROPULSION



13:00 to 15:00	<p><b>INVITED LECTURES – PARALLEL SESSION 2 – HALL B</b></p> <p>Chairman: dr Aleksandra Dragičević</p> <p><u>Stefan Jovanović</u> - APPLICATION OF ANALYTICAL AND INSTRUMENTS FOR DETERMINING THE MECHANICAL PROPERTIES OF MATERIALS IN THE QUALITY CONTROL OF DENTAL MATERIALS, Shimadzu Corp.</p> <p><u>Maja Zebić</u> - ADVANCES IN DENTAL COMPOSITE CURING</p> <p><u>Liljana Đukić</u> - ACTIVITY STATE OF DENTINE-DERIVED TGF-B1 RELEASED AFTER RESTORATIVE DENTAL MATERIALS TREATMENT</p> <p><u>Ksenija Zelić Mihajlović</u> - APPLICATION OF FINITE ELEMENT METHOD IN DENTISTRY</p> <p><u>Aleksandra Mitrović</u> - ANALYSIS OF MECHANICAL AND PHYSICAL-CHEMICAL PROPERTIES OF DENTAL COMPOSITE CEMENTS</p> <p><u>Zorana Golubović</u> - DETAILED CHARACTERIZATION OF PLA AND PLA RESIN ADDITIVELY MANUFACTURED MATERIALS</p> <p><u>Božica Bojović</u> - STRAIN RATE DEPENDENT MECHANICAL PROPERTIES OF 3D PRINTED ABS AND PLA RESINS USING THE DLP TECHNIQUE</p>	
15:00 to 15:30	Coffee break - in front of the HALL A	
15:30 to 17:00	<p><b>POSTER SESSION</b> <b>(all papers) – HALL A</b></p>	<p><b>Erasmus+ project “Driven”</b> <b>MULTIPLIER EVENT (HALL B)</b></p>
17:00 to 20:00	Free time	
20:00 to 23:00	Gala dinner	
<b>Thursday, July 06, 2023</b>		
12:00 to 12:30	Registration - in front of the HALL A	
12:30 to 13:00	<p>Opening Ceremony</p> <p><i>Ministry of Science, Technological Development and Innovation of the Republic of Serbia</i></p> <p><i>Innovation fund of the Republic of Serbia</i></p>	
13:00 to 15:00	<p><b>WORKSHOP - REGIONAL INNOVATION FORUM 2023 – HALL A</b></p> <p>Chairman: dr Žarko Mišković and dr Miloš Milošević</p> <ul style="list-style-type: none"> <li>• HOW TO PITCH YOUR IDEA AND HOW TO FIND AN INVESTOR FOR A STARTUP? - winners of SmartStart and Catapult projects and investor/mentor <ul style="list-style-type: none"> <li>○ Ivana Berić - Innovation fund of the Republic of Serbia</li> <li>○ Investor / Mentor - Nicolas Rabrenovic</li> <li>○ StudENTER - Team leader Nikola Jokic o Anoris Technology - Director Nenad Krstic</li> <li>○ B2bee - Chief operations officer Luka Radovanovic</li> <li>○ RotoDyna - Director dr Nebojsa Gnjatovic</li> <li>○ MISP - Team leader Isaak Trajkovic</li> </ul> </li> </ul>	

15:00 to 15:30	Coffee break - in front of the HALL A	
15:30 to 16:30	<p><b>WORKSHOP – PARALLEL SESSION 1 – HALL A</b></p> <ul style="list-style-type: none"> <li>• HOW TO GET ERASMUS PROJECTS? dr Nenad Marković, University of East Sarajevo</li> </ul> <p><b>WORKSHOP – PARALLEL SESSION 2 – HALL B</b></p> <ul style="list-style-type: none"> <li>• HOW CAN STARTUPS PROTECT THEIR INTELLECTUAL PROPERTY? Zorica Obradović, The Intellectual Property Office of the Republic of Serbia</li> </ul> <p><b>WORKSHOP – PARALLEL SESSION 3 – HALL C</b></p> <ul style="list-style-type: none"> <li>• INTEGRATING NEW CLIENTS INTO THE EEN NETWORK dr Snežana Kirin, Innovation Center of the Faculty of Mechanical Engineering</li> </ul>	<p><b>B2B MEETINGS</b></p> <p><b>in front of the HALL A</b></p>
16:30 to 18:00	<b>POSTER SESSION (all papers) – HALL A</b>	
18:00 to 21:00	<b>Dinner - HOTEL RESTOURANT</b>	
<b>Friday, July 07 2023</b>		
From 10:00	<b>Zlatibor excursion (optional)</b>	
12:00 to 13:30	<b>B2B MEETINGS - HALL A</b>	
13:30 to 14:30	<b>Closing Ceremony and final remarks – HALL A</b>	

# ASSEMBLING BIOMATERIAL SPECIMENS IN A MOULD MADE OF THERMOPLASTIC POLYMER: 3-POINT BENDING TEST

Marija Baltic<sup>1</sup>, Milos Vorkapic<sup>2</sup>, Aleksandar Simonovic<sup>1</sup>, Toni Ivanov<sup>1</sup>, Dragoljub Tanovic<sup>1</sup>

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## Abstract

*The utilization of biomaterials with mycelia as a stabilizing agent is gaining popularity in the fields of construction and architecture, offering a sustainable solution aligned with the principles of the circular economy. Interdisciplinary research involving biologists, technologists, and engineers is necessary to advance this field where science, art and design converge. These biomaterials contribute to energy reduction and cost-effectiveness, utilizing readily available and recyclable raw materials. Mycelium-based blocks have shown to be more affordable than traditional cement and gypsum blocks while significantly reducing CO2 emissions. The mycelium network, formed by hyphae, can be cultivated into a solid material, providing a defined technological process. This study focusses on performing 3-point bending testing on moulded specimens using additive technology PLA material, following the ASTM D1037 standard. After the growth of mycelium and the formation of the test tube-shaped structure, the samples are dried and characterized to enhance their mechanical characteristics.*

## Keywords

Biomaterials, mycelia, additive technology, mold, bending test.

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