



# 46<sup>th</sup> International Spring Seminar on Electronics Technology

## Conference Program

### Tuesday, 9<sup>th</sup> of May

9:00	7th edition of TIEplus Signal & Power Integrity Challenge	<b>Location: Hotel Perla, Timișoara, Str. Protopop Gheorghe nr. 9.</b>
	1st edition of TIE-M plus Structural Analysis Challenge	<b>Location: Continental Str. Siemens, nr. 1, Room: A6.153</b>
	1st edition of TIE-M plus Thermal Management Challenge	<b>Location: Continental, Room: A4.153</b>
14:15	TIE plus Technical Seminars & Awardings	<b>Location: Hotel Perla</b>
19:00	Event Dinner	<b>Location: Hotel Perla</b>

### Wednesday, 10<sup>th</sup> of May

8:30	Alpha Yearly Technical Seminar (by Deery Brook)	<b>Location: Hotel Perla Timișoara, Str. Protopop Gheorghe nr. 9.</b>
16:30	Workshop for Student Branch Chapters & TIEplus	<b>Location: Hotel Perla</b>
19:00	<b>Welcome Reception</b>	<b>Location: Hotel Perla</b>
20:00	<b>Steering Committee meeting</b>	<b>Location: Hotel Perla</b>

### Thursday, 11<sup>th</sup> of May

08:30	<b>Opening session of ISSE 2023</b>	<b>Location: Auditorium, UPT Library</b>
	<b>Welcome speech</b> Florin Dragan, Rector of Politehnica University Timisoara	

<b>08:45</b>	<b>Oral session I chaired by: O. Kramer and A. Gontean</b>	<b>Location: Auditorium, UPT Library</b>
<b>KN1</b>	<b>The Software-Defined Vehicle and Its Effects on Vehicle Architecture</b> Christian von Albrichsfeld (Continental Romania)	
<b>KN2</b>	<b>Trends and Challenges in Automotive Power MOSFETs – The Switches Enabling Clean, Safe and Smart Cars</b> Andrew Wood (Infineon Technologies Austria)	
<b>KN3</b>	<b>IPCEI Presentation and Related Internship and PhD Topics</b> Martin Gabernig and Nico Steinhäuser (Infineon Technologies Austria)	
<b>A121</b>	<b>High-Speed Digital Electronics Board on a Novel Biobased and Biodegradable Substrate</b> Vincent Grennerat (University Grenoble Alpes)	
<b>A116</b>	<b>Effects of Silanated Glass Particles as Photo Resin Filler to Embed Electronic Components</b> Tobias Tiedje (Technical University of Dresden)	
<b>10:45</b>	<b>Coffee break</b>	<b>Location: UPT Library</b>
<b>11:00</b>	<b>Oral session II chaired by: H. Wohlrabe and J. Nicolics</b>	<b>Location: Auditorium, UPT Library</b>
<b>KN4</b>	<b>The Tiny Power Box - a Bidirectional Onboard Charger with High Power Density</b> Alfred Binder, Silicon Austria Labs	
<b>D102</b>	<b>Parametrising Temperature Dependent Properties in Thermal-Mechanical Analysis of Power Electronics Modules Using Parametric Model Order Reduction</b> Sheikh R Hassan (University of Greenwich)	
<b>D97</b>	<b>Cross-sectional Nanoindentation: Applicability for Testing Polyimide Adhesion in Semiconductor Components</b> Moritz Hartleb (KAI - Kompetenzzentrum Automobil-und Industrie-Elektronik)	
<b>D100</b>	<b>Exploring the Photo Electrochemical Processes of the Parallel Connected DSSCs in Indoor Conditions</b> Daniel Ursu (National Institute of Research and Development for Electrochemistry and Condensed Matter)	
<b>12:30</b>	<b>Lunch</b>	<b>Location: UPT Library</b>
<b>13:30</b>	<b>Poster session I chaired by: G. Miskovic and A. Pietrikova</b>	<b>Location: UPT Library</b>
<b>I11</b>	<b>Carbon Nanotubes Decorated with Palladium Nanoparticles for Hydrogen Detection</b> Martin Šorm (University of West Bohemia)	
<b>I26</b>	<b>Towards Textile Thermopiles</b>	

Jan Kalčík (University of West Bohemia)

I29	<b>Development and Application of a Wireless, in Body Data Acquisition System for Observation of Experimental Rabbit's Bone Healing</b> Lajos Harasztosi (University of Debrecen)
I31	<b>Implementation of a ZigBee Mesh Network</b> Vlad-Dacian I Gavra (Universitatea Tehnica Cluj-Napoca)
I52	<b>Measurement Device for Pressure Monitoring in Vapour Phase Soldering Reflow Processes</b> Gergő Havellant (Budapest University of Technology and Informatics)
I59	<b>Condition Monitoring for Detecting the Malfunction of Industrial Machines</b> Ioan Szabo (University of Pitesti)
I61	<b>Wireless System for Soil Humidity Measurement Applied in Pots</b> Milica Kisic (University of Novi Sad Novi Sad)
I70	<b>Study and Practical Setup in the Laboratory of a Wireless Charger for Smartphones in Automotive</b> Emilian Ceuca ("1 Decembrie 1918" University of Alba Iulia)
I76	<b>Acquisition and Analysis of Soil Parameters for Vine Monitoring Using the IoT Sensor Network</b> Mihaela E. Hnatiuc (Constanta Maritime University)
I77	<b>The Proposal for Optimisation of Direction of Tilt Measurement in Small Angles</b> Veronika Junasova (Brno University of Technology)
I82	<b>Design and Implementation of a Greenhouse Monitoring and Control System</b> Radu S Ricman (Politehnica University Timisoara)
I93	<b>PVDF as a Polymer Membrane for Encapsulation and Characterisation of Gas Permeability</b> Victoria Constance Köst (Technical University of Dresden)
I99	<b>Polymer Thick-Film Piezoresistive Sensor Integrated Into the PCB</b> Igor Vehec (Technical University of Kosice)
I111	<b>AQI Monitoring System for Intelligent Transport System</b> Rosen Miletiiev (Technical University of Sofia)
I119	<b>Implementation of a Resistive Pressure Sensor Made With "Linqstat" for Automotive</b> Opriş Cristian-Ovidiu (University Politehnica of Bucharest)
15:00	<b>Coffee break</b> <b>Location: UPT Library</b>
15:15	<b>Oral session III chaired by: K. Dusek and A. Tulbure</b> <b>Location: Auditorium, UPT Library</b>

KN5	<b>Multi-Domain Digital Twins of LEDs and Luminaires for Supporting Design and Operation of Lighting Infrastructures</b> Andras Poppe (Budapest University of Technology and Economics)
D08	<b>Study of Whisker Growth from SAC0307-SiC Composite Solder Alloy</b> Halim Choi (Budapest University of Technology and Economics)
D27	<b>Effect of TiO<sub>2</sub> Nanoparticles Addition on the Electrochemical Migration of Low-Silver Lead-Free SAC Alloys</b> Ali Gharaibeh (Budapest University of Technology and Economics)
A64	<b>Investigation of Conductive Organic Films Grown on Carbyne Gas Sensing Nanomaterial</b> Mariya Aleksandrova (Technical University of Sofia)
16:45	<b>Coffee break</b> <span style="float: right;"><b>Location: UPT Library</b></span>
17:00	<b>Poster session II chaired by: M. Moise and P. Svasta</b> <span style="float: right;"><b>Location: UPT Library</b></span>
A30	<b>Analysis of the Suitability of Inkjet Printed Ag Particle Filled Inks for Use in Connections of Fine Pitch Electrical Components</b> Christian Voigt (Friedrich-Alexander-University Erlangen-Nürnberg)
A32	<b>Optimizing Adhesion of Printed Conductive Lines on Additively Manufactured Ceramics</b> Daniel Utsch (Friedrich-Alexander-University Erlangen-Nürnberg)
A39	<b>Conductive FDM Filament: Electrical Resistivity Assessment and Sensor Applications</b> Denis Froš (Czech Technical University in Prague)
A42	<b>Influence of SAC0307-TiO<sub>2</sub> Composite Solder Joint on Thermal Parameters of MOSFETs</b> Adrian Pietruszka (Gdynia Maritime University)
A51	<b>Evaluation of Electrolytically Manufactured Copper Foils Properties</b> Karel Dusek (Czech Technical University in Prague)
A58	<b>Solderless Component Assembly: Novel Ecological Approach to Electronics Production</b> Petr Veselý (Czech Technical University in Prague)
A62	<b>Comparative Study on the Effect of Surface Finish on Mechanical Properties of Solder Joint</b> Alena Pietrikova (Technical University of Kosice)
A67	<b>Exploring Gold and Aluminium Contacts on Novel Carbyne-Enriched Material</b> Rade Tomov (Technical University of Sofia)
A98	<b>Effect of Silicon Substrate Roughness on Silver-Based Backside Metallization for Power Electronics Packaging</b> Goran Miskovic (Silicon Austria Labs)

J34	<b>A Hybrid Architecture for Secure Big Data Integration and Sharing in Smart Manufacturing</b> I Made Putrama (Budapest University of Technology and Economics)
J35	<b>Development of Educational Materials for an Electrical Manufacturing Laboratory</b> Rebeka Gy Kiss (University of Debrecen)
J91	<b>Extracurricular Environment for Electronics Packaging Knowledge Integration</b> Cosmin Moisa (Continental Automotive Romania)
J115	<b>E-learning Platform for Digital Customization of Garments</b> Ion Razvan R Radulescu (National Research and Development Institute for Textiles and Leather Bucharest)
F15	<b>Techno-Environmental Evaluation of Recycling Pretreatment of Cylindrical Lithium-Ion Battery: Discharging via Salt-Based Solution</b> Anna Pražanová (Czech Technical University in Prague)
F40	<b>Decomposition of Sustainable PLA-Flax Based Biodegradable Printed Circuit Boards</b> Csaba Farkas (Budapest University of Technology and Economics)
19:00	<b>Dinner</b> <span style="float: right;"><b>Location: Hotel Perla</b></span>

Friday, 12 <sup>th</sup> of May		
08:30	<b>Oral session IV chaired by: D. Busek and B. Illes</b>	<b>Location: K1, UPT Library</b>
KN6	<b>2D Materials: Fabrication, Properties, and Applications in Electronic and Optoelectronic Devices</b> Antonio Di Bartolomeo (University of Salerno)	
C25	<b>Interconnection of Highly Flexible Carbon Threads Suitable for Wearable Strain Monitoring Using Ultrasonic Plastic Welding</b> Michaela Radouchova (University of West Bohemia)	
C86	<b>Die Attachment Processes Overview for High Power Semiconductors</b> Ryszard Kisiel (Warsaw University of Technology)	
C94	<b>Hybrid-Lithography for the Master of Multi- Mode Waveguide NIL Stamp</b> Akash Mistry (Technical University of Dresden)	
10:30	<b>Coffee break</b>	<b>Location: UPT Library</b>
10:45	<b>Poster session III chaired by: T. Blecha and B. Mihailescu</b>	<b>Location: UPT Library</b>
E06	<b>Model Development for an Islanded Microgrid</b> Nicolae A Sarbu (Technical University of Cluj-Napoca)	
D04	<b>Methodology for Solderability Measurement of Plated Through Holes Using Wetting Balance Test</b> Iva Králová (Czech Technical University in Prague)	

D05	<b>Evaluation of Dendrite Growth between Electrodes with Different Shapes and Voltage Polarity</b> Markéta Klimtová (Czech Technical University in Prague)	
D07	<b>Effect of Incorporation of Ceramic Nanoparticles in Bismuth-Tin Solder Paste on Electrochemical Migration</b> Petr Veselý (Czech Technical University in Prague)	
D19	<b>Considerations on Boundary Scan Integration in Industrial Dedicated Test Stations</b> Raul C Ionel (Politehnica University Timisoara)	
D21	<b>Board Level Underfill – the Influence of Flux</b> Zbyněk Plachý (Czech Technical University in Prague)	
D22	<b>A Case Study on the Six Sigma Application to Reduce Acoustic Noise Generated by Multi-Layer Ceramic Capacitors</b> Carina O Olenici (Politehnica University Timisoara)	
D28	<b>Comparative Shielding Measurements of Flexible Electromagnetic Shields</b> Ion Razvan R Radulescu (National Research and Development Institute for Textiles and Leather Bucharest)	
D38	<b>Partial Discharge Behaviour Analysis of Silicon Nitride Ceramics</b> Johannes Drechsel (Fraunhofer IKTS)	
D63	<b>Comparison of Two 3D Printing Technologies for Microfluidic Applications</b> Alexandra Borók (Budapest University of Technology and Economics)	
D75	<b>Investigating the Effect of Solder Material Quantity on Obtaining Strong Solder Joints in LGA Assembly Using Statistics</b> Valentin Petrov Tsenev (Technical University Sofia)	
D78	<b>Data Analysis for Several Dye-Sensitized Solar Cells Tested at Different Wavelengths and Lighting Conditions</b> Marius S.V Mares (University Politehnica of Bucharest)	
D80	<b>Transition to Digital Twin for Automotive Sensor Interfaces Test Equipment</b> Nicolae Gross (University Politehnica of Bucharest)	
D88	<b>Effect of Surface Finish and Roughness on the Mechanical Strength of Solder Joints</b> Pavel Rous (University of West Bohemia)	
D95	<b>Flexible Pyralux Based Ultra-Wideband Patch Antenna</b> Peter Lukacs (Technical University of Kosice)	
D103	<b>Investigation of Energy Flow in Particular Parts of the Discharge Characteristics of Li-ion Cells</b> Slavomir Kardos (Technical University of Kosice)	
D105	<b>Analysis of the Effect of Soldered Surface Roughness on Void Formation Using Computed Tomography</b> František Steiner (University of West Bohemia)	
D108	<b>Electrical Behaviour of MLCC Type 2 Capacitors Under Mechanical Quasi-Static Stress</b> Philip Gh Coanda (University Politehnica of Bucharest)	
12:30	<b>Lunch</b>	<b>Location: UPT Library</b>
13:30	<b>Oral session V chaired by: G. Khatibi and F. Steiner</b>	<b>Location: Auditorium, UPT Library</b>
KN7	<b>Improved Chip Bonding Solutions with Sinter Technology</b> Istvan Molnar (Macdermid Alpha Hungary)	
C87	<b>A Comparison Between Pressure-Less and Pressure-Assisted Cu Sintering for Cu Pillar Flip Chip Bonding</b> Augusto D Rodrigues (Silicon Austria Labs)	

<b>C96</b>	<b>5 <math>\mu\text{m}</math> Ultra-Fine Pitch Interconnects Using a Novel Lift-off Based Process of Thick Copper Films on Organic Substrate for Advanced Packaging</b> Mohamed Bellaredj (Silicon Austria Labs)	
<b>I16</b>	<b>Characterization of AlSiCu/TiN/p-Si Schottky Contacts with Nanophotonic Structures for Near-infrared Photodetectors</b> Hanying Wen (Fraunhofer Institute for Photonic Microsystems)	
<b>15:00</b>	<b>Social program</b>	<b>Location: Town Center</b>
<b>19:00</b>	<b>Dinner</b>	<b>Location: UPT Restaurant CP2</b>

### Saturday, 13<sup>th</sup> of May

<b>09:00</b>	<b>Poster session IV Chaired by: A. Geczy and D. Bonfert</b>	<b>Location: UPT Library</b>
<b>E01</b>	<b>Investigation and Simulation of the Effect of Laser Heating on Wafers from Different Material</b> Elitsa E Gieva (Technical University of Sofia)	
<b>E24</b>	<b>Modelling the Effect of Temperature on Relative Humidity Sensing</b> Maria Nikolic (University of Belgrade)	
<b>E43</b>	<b>Numerical Modelling Approaches to Current Reflow Soldering Applications: a Brief Overview</b> István Bozsóki (Budapest University of Technology and Economics)	
<b>E44</b>	<b>Analysis of Thermal Influence on the Operation of a Li-Ion Battery Used by an Electric Vehicle</b> Alexandru-Adrian A Ancuța (University Politehnica of Bucharest)	
<b>E60</b>	<b>Compact Model of JNT for Air-Pollution Sensor</b> George Angelov (Technical University of Sofia)	
<b>E81</b>	<b>Modelling of the Magnetic Field Sensor Based on Photo-Hall Effect</b> Viktor Sergiychuk (Igor Sikorsky Kyiv Polytechnic Institute)	
<b>E83</b>	<b>Modelling the Power Bank with Supercapacitors Energy Storage</b> Andrii Fursik (Igor Sikorsky Kyiv Polytechnic Institute)	
<b>G14</b>	<b>ESR Influence on EDLC Functional Behaviour</b> Irina Madalina Burcea (University Politehnica of Bucharest)	
<b>G36</b>	<b>Fabrication of Porous Surface Structures with Varying Elemental Composition by Spark Ablation and their Application in Surface Enhanced Raman Spectroscopy</b> Petra Pál (University of Debrecen)	
<b>G37</b>	<b>Peculiarities of Using Different Nanostructures for Surface-enhanced Raman Scattering</b> István Csarnovics (University of Debrecen)	
<b>G56</b>	<b>Finite Element Investigation of the Plasmonic Properties of Hexagonally Arranged Gold Nanoparticles</b> Rebeka Kovacs (Budapest University of Technology and Economics)	
<b>G57</b>	<b>Optimization of Phase Transfer Methods of Gold Nanoprisms</b> Nóra Tarpataki (Budapest University of Technology and Economics)	
<b>G92</b>	<b>Comparison of Nanocomposites based on PDMS and Conductive Nanomaterials for the Realization of Supercapacitors</b> Irina Madalina Burcea (University Politehnica of Bucharest)	
<b>G104</b>	<b>The Effect of the Buffers' Refractive Index on the SERS signal of Rhodamine 6</b> Shereen Zangana (Budapest University of Technology and Economics)	
<b>H09</b>	<b>Utilization of Direct-Write for the Realization of a Microstrip Resonator on a Flexible Substrate</b> Saeedeh Lotfi (University of West Bohemia)	
<b>H10</b>	<b>Study of Flexible Printed Transmission Lines Realized by Direct-Write Printing Technology</b>	

Saeedeh Lotfi (University of West Bohemia)

**K73 FET Gate Drivers Utilising Transient Gate Overvoltage**

Pavel Tomicek (Brno University of Technology)

**10:45 Coffee break**

**Location: UPT Library**

**11:00 Poster session V chaired by: C. Ionescu and R. Kisiel**

**Location: UPT Library**

**B66 Temperature Dependence of the Resistance of Adhesive Conductive Joints and Thermal Expansion of Conductive Adhesives**

David Busek (Czech Technical University in Prague)

**B71 A Hybrid Portable Battery Pack Screening System**

Stefan M. Rizanov (Technical University of Sofia)

**B72 Method for Non-Radiometric Thermal Video into Radiometric Thermal Images Conversion**

Nadezhda M. Kafadarova (Plovdiv University "Paisii Hilendarski")

**B106 IoT Portable Patient Health Monitoring System Using MEMS Sensors**

Moise M Vasile Madalin (University Politehnica of Bucharest - Center for Technological Electronics and Interconnection Techniques)

**B120 Optimization for Power Supplies Thermal Regime**

Corina Sandulescu (University Politehnica of Bucharest - Center for Technological Electronics and Interconnection Techniques)

**C17 Realization of Stretchable Conductive Traces on Textile Substrate Utilizing Direct-Write**

Martin Janda (University of West Bohemia)

**C18 Glutaric Acid as a Flux Substitute for Soldering on Ceramic Substrates**

David Michal (University of West Bohemia)

**C23 Thermal Shock Ageing of Joints Soldered Using Formic Acid Vapors on Thick Printed Copper Substrates**

Martin Hirman (University of West Bohemia)

**C65 Effect of Temperature Shocks on the Resistance of Joints Formed of Conductive Adhesives**

David Busek (Czech Technical University in Prague)

**C114 Analysis of the Possibility of Creating Embedded Vias' Based on Different Solder Alloys**

Tomas Lenger (Technical University of Kosice)

**D101 Investigation of the Influence of Dam and Fill Encapsulating Material Shrinkage on a Semiconductor Substrate Warpage**

Alexandr Otáhal (Brno University of Technology)

**D109 Field Failure Investigation of Power LEDs Caused by Bond Wire Defect**

Sebastian Schuh (Forschung Burgenland)

**D110 Diagnostics of a Future Blow Hole Issue Before Assembly**

David Busek (Czech Technical University in Prague)

**D112 Influence of No-Clean Flux on The Corrosivity of Various Surface Finishes After Reflow**

Kristina Sorokina (Czech Technical University in Prague)

**12:30 Lunch**

**Location: UPT Library**

**13:30 Oral session VI chaired by: A. Bonyar and P. Lukacs**

**Location: Auditorium, UPT Library**

**E117 Short Review on Machine Learning Optimization Methods in Surface Mounted Electronics Assembly Technologies**

Peter Martinek (Budapest University of Technology and Economics)

**E118 Calculation of the Resistance of Silver-Based Backside Metallization Stack for Die-attach Packaging Applications**



Mohamed Bellaredj (Silicon Austria Labs)

<b>G03</b>	<b>Hybrid Solder Joints: Morphology and Mechanical Properties of Sn-3.0Ag-0.5Cu Solders Prepared with Fe-NPs Doped Flux</b> Irina Wodak (TU Wien)	
<b>B79</b>	<b>Infrared Thermography of Ceramic Circuit Substrates for Power Electronics</b> Mirko Kirchhoff (Fraunhofer IKTS)	
<b>14:50</b>	<b>Closing session – invitation to ISSE 2024</b>	<b>Location: Auditorium, UPT Library</b>
<b>15:00</b>	<b>Social program</b>	<b>Location: Hotel Perla</b>
<b>18:00</b>	<b>Steering committee meeting</b>	<b>Location: P Room, UPT Library</b>
<b>19:00</b>	<b>Dinner</b>	<b>Location: Hotel Perla</b>
<b>Sunday, 14<sup>th</sup> of May</b>		
<b>09:00</b>	<b>Farewell; End of conference</b>	