



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

## CONFERENCE PROGRAM

### Wednesday, 14<sup>th</sup> of May

<b>14:00</b>	Arrival, registration, and accommodation	<b>Location: IBIS &amp; TRIBE Hotel</b>
<b>19:00</b>	Welcome Reception, Dinner	<b>Location: TRIBE   Cloud IX Skybar</b>
<b>21:00</b>	Steering Committee meeting	<b>Location: TRIBE   Blue Corner</b>

### Thursday, 15<sup>th</sup> of May

<b>08:30</b>	<b>Opening session of ISSE 2025</b>	<b>Location: TRIBE   Arena hall</b>
	<b>Welcome speech from the organizers</b> Oliver Krammer, Attila Geczy	
<b>08:45</b>	<b>Oral session I chaired by: O. Krammer and A. Geczy</b>	<b>Location: TRIBE   Arena hall</b>
<b>KN01</b>	<b>The APECS pilot line is powering the evolution of chiplet technologies</b> Rolf Aschenbrenner (Fraunhofer IZM, Berlin)	
<b>KN02</b>	<b>Sustainable electronics: what kind of sustainability?</b> Pascal Xavier (Grenoble Alps University)	
<b>S01</b>	<b>Metrology and Inspection Method Advancements Driven by the Advanced Packaging Market</b> Orsolya Keri (Semilab, Budapest)	
<b>A13</b>	<b>Low Temperature Soldering (LTS) in the Electronics Industry: a Brief Review</b> Balazs Illes (Budapest University of Technology and Economics)	
<b>A20</b>	<b>A technological Study examining the Implementation of sub-15 µm Finelines using photoimageable thick-film Pastes on Low Temperature Cofired Ceramics</b> Uwe Ziegler (TU Ilmenau)	
<b>10:45</b>	<b>Coffee break   Sponsored by Balluff</b>	
<b>11:00</b>	<b>Oral session II chaired by: K. Niewegłowski and B. Illes</b>	<b>Location: TRIBE   Arena Hall</b>
<b>KN03</b>	<b>Open-Source Educational Tools, past, present, future</b> David J. Cuartielles Ruiz (Malmo University, Arduino)	

A93	<b>Multi-material Additive Manufacturing of Electronic Circuits Combining ARBURG Plastic Freeforming Technology with Molten Metal Printing</b> Daniel Straubinger (Hahn-Schickard)	
A52	<b>Investigation of PEDOT:PSS/Bismuth Telluride Composite for Flexible Thermocouples</b> Karol Rauch (Wroclaw University of Science and Technology)	
A30	<b>Microstructural evolution of Sn-Cu Based Bi Alloyed Lead-free Solder at Low Cooling Rate</b> Bela Bodi (Obuda University)	
12:30	<b>Lunch</b>	<b>Location: TRIBE   Restaurant</b>
13:30	<b>Poster session I chaired by: P. Xavier and D. Cuartielles</b>	<b>Location: TRIBE   Arena &amp; Dome</b>
A07	<b>Dielectric Properties of BaFe12O19 Doped with SiO2 in the Low Frequency Region</b> Stanko Aleksic (Institute of Nuclear Sciences Vinca Belgrade)	
A28	<b>Novel Ceramic-Polymer Composite for Stereolithography with Enhanced Thermal Conductivity</b> Petr Vesely (Czech Technical University in Prague)	
A42	<b>Fabrication of Piezoelectric Composite Polymers Using Stereolithography</b> Jaroslav Pazourek (Czech Technical University in Prague)	
A49	<b>Synergistic Use of 3D Printing and Electrochemical Plating to Produce Electrical Discharge Machining Electrodes</b> Radek Tucek (Czech Technical University in Prague)	
A55	<b>Additively Manufactured Electronic Circuits from Polymer Pastes</b> Jonas Uricar (Czech Technical University in Prague)	
A100	<b>Investigating the Mechanical Behaviour of Biodegradable Substrates</b> Oliver Krammer (Budapest University of Technology and Economics)	
A102	<b>Lifetime Dependent Behaviour of Sulphite Gold Electrolyte</b> Evelyn Napetschnig (Infineon Technologies Austria AG)	
F10	<b>Biodegradable Sensors for Timber Construction Monitoring</b> Daniel Kranz (University of Applied Sciences Dresden)	
F26	<b>3D Printed Circuit Boards from Recycled Plastics: Conductive Pattern Properties</b> Jakub Zdrahal (Czech Technical University in Prague)	
F41	<b>Ultrasonic-Assisted Electrode Material Separation: Towards Industrial Applications</b> Anna Prazanova (Czech Technical University in Prague)	
F79	<b>A Sustainable Temperature Monitoring System Powered by Solar Cells and Supercapacitors</b> Marius Mares (University POLITEHNICA of Bucharest)	
F95	<b>Soil degradation of sustainable PCB substrates in natural and controlled environments</b> Csaba Farkas (Budapest University of Technology and Economics)	
F101	<b>Current carrying capacity of PCB traces on PLA/Flax biodegradable substrates</b> Adam Csapody (Budapest University of Technology and Economics)	
F108	<b>Enhancing the Manufacturability of Biodegradable PLA/Flax PCB Assemblies Through Design Optimization</b> Gergo Havellant (Budapest University of Technology and Economics)	
F113	<b>Effect of Water Absorption on the Low-Frequency Dielectric Properties of Biodegradable PLA/Flax PCB Substrates</b> Zoltan Adam Tamus (Budapest University of Technology and Economics)	
15:00	<b>Coffee break   Sponsored by Balluff</b>	
15:15	<b>Oral session III chaired by: D. Busek and K. Dusek</b>	<b>Location: TRIBE   Arena</b>
KN04	<b>Chiplets 1960-2030; Where We've Been &amp; Where We're Going!</b> Charles E. Bauer (TechLead Corporation)	

<b>C50</b>	<b>Investigation of the Solder Thickness Effect on the Propagation Properties of Reactive Multilayer Systems</b> Nesrine Jaziri (TU Ilmenau)	
<b>C68</b>	<b>Ultrasonic Bonding of AlCu Wire – An Advance to Reliable Interconnects for Power Modules</b> Chun-Hao Chen (National Yang Ming Chiao Tung University)	
<b>16:30</b>	<b>Poster session II chaired by: F. Steiner and J. Nicolics</b>	<b>Location: TRIBE   Arena &amp; Dome</b>
<b>B31</b>	<b>Study on Thermal Management Systems for Li-ion Cell Batteries</b> Mirela Olteanu (Technical University of Cluj-Napoca)	
<b>B72</b>	<b>Battery Preconditioning Methods for Electric Vehicles in Cold Climates: A Comparative Review</b> Adelina Ilies (Technical University of Cluj-Napoca)	
<b>B77</b>	<b>Study on the Impact of Component Placement on the Thermal Performance of a Power Electronic Board</b> Alexandra Fodor (Technical University of Cluj-Napoca)	
<b>B78</b>	<b>Influence of the Solder Joint Thermal Resistance on Thermal Performance of Power MOSFETs</b> Adrian Pietruszka (Gdynia Maritime University)	
<b>C27</b>	<b>A Study on Stretchable Electrical Contacting Techniques for Embedded Chip Components</b> Victoria Constance Kost (TU Dresden)	
<b>C51</b>	<b>Advancements in Miniaturization of High-aspect Ratio Through Ceramic Microvias (TCμV) for High-Density Interconnect LTCC Interposer</b> Nesrine Jaziri (TU Ilmenau)	
<b>C67</b>	<b>Reactive Bonding by the use of Nanolayer Stacks on LTCC Substrates</b> Steffen Wiese (Saarland University)	
<b>C109</b>	<b>Development of a New Ceramic Package Design for Special Applications</b> Pavel Kopriva (Brno University of Technology)	
<b>C118</b>	<b>Innovative Solutions for the Development of High-Performance ADS-B Receivers</b> Vlad Hociung (University POLITEHNICA of Bucharest)	
<b>E02</b>	<b>Modeling Electrochemical Migration of Sn-9Zn: Insights from Finite Difference and Finite Element Methods</b> Ali Dayoub (Budapest University of Technology and Economics)	
<b>E22</b>	<b>The AIoT Infection Prediction in Vine Using Meteorological Condition</b> Mihaela Hnatiuc (Constanta Maritime University)	
<b>E34</b>	<b>A Comparative Study of Short-Term Load Forecasting Methods for Improved Energy Management in Microgrids with Battery Storage</b> Patarau Toma (Technical University of Cluj-Napoca)	
<b>E46</b>	<b>Modeling and Analyzing Copper Dendrite Growth during Electrochemical Migration Using Monte Carlo Simulation</b> Ali Gharaibeh (Budapest University of Technology and Economics)	
<b>E54</b>	<b>Induction Motor Impedance Estimation Based on the Compressed Sensing Approach</b> Ondrej Kovac (Technical University of Kosice)	
<b>E69</b>	<b>Hardware in the Loop Simulation for Renewable Energy Resources</b> Nicolae Sarbu (Technical University of Cluj-Napoca)	
<b>E70</b>	<b>Deployed Synthetic Lithium-Ion Battery for Improving Battery Diagnosis</b> Eliza Olariu (Technical University of Cluj-Napoca)	
<b>E99</b>	<b>Magnetic Field Influence on the Content of Steroidal Glycoalkaloids and Derivatives under Drought Conditions in Tomatoes</b> Mirjana Damnjanovic (University of Novi Sad)	
<b>19:00</b>	<b>Dinner</b>	<b>Location: TRIBE   Restaurant</b>

Friday, 16<sup>th</sup> of May

**08:30 Oral session IV chaired by: P. Lukacs and M. Kisic Location: TRIBE | Arena**

- KN05 Long Term Reliability of Light Emitting Diodes**  
Gabor Harsanyi and Andras Poppe (Budapest University of Technology and Economics)
- KN06 Applications of Discontinuous Metal Thin Films to Electronics Packaging**  
James Morris (Portland State University)
- G81 Fabrication of Conductive Contact on Graphene Monolayers via Direct Ink Writing**  
Martin Sorm (University of West Bohemia)
- G96 Influence of Fe and Co Nanoparticle Flux Doping on Stress Relaxation Behaviour of Sn-3.5Ag Solder Joints**  
Irina Wodak (TU Wien)

**10:15 Coffee break | Sponsored by Balluff**

**10:30 Poster session III chaired by: T. Blecha and A. Pietrikova Location: TRIBE | Arena & Dome**

- I24 The Influence of Mechanical Strain on the Resistance of Thick Layers Printed on Textile Substrates**  
Michalina Gruza (Wroclaw University of Science and Technology)
- I29 Comparison of Manufacturing Methods for Skin Hydration Textile Sensor**  
Jan Balaban (University of West Bohemia)
- I36 Development of a Capacitive Measurement Setup for a Non-Contact Control System**  
Tobias Tiedje (TU Dresden)
- I40 Design and Implementation of a Tensile Testing Machine for Textronics Materials Characterization**  
Afrodyta Daskalakis (Wroclaw University of Science and Technology)
- I43 Analysing the Influence of Conductive Layer Morphology on Microwave Field Behaviour**  
Olga Rac-Rumijowska (Wroclaw University of Science and Technology)
- I38 Realization of Cost-Effective Supercapacitors Utilising Substitutable Materials**  
Irina Madalina Burcea (National University of Science and Technology Politehnica Bucharest)
- I48 Electrical Characterization of AlSiCu-on-AlSiTi/TiN Structured Contacts for Schottky Photodiodes**  
Leonor Shala (Fraunhofer IPMS)
- I56 A New Software Defined Radio Communication System Using 256-QAM**  
Radu Gabriel Bozomitu ("Gheorghe Asachi" Technical University of Iasi)
- I58 Enhanced Gas Monitoring for Automated Greenhouses**  
Vlad Veliciu (Technical University of Cluj-Napoca)
- I60 Development of an Intelligent EEG-Based System for Monitoring Environmental Impact on Human Neurophysiology**  
Gombos Andreea (Technical University of Cluj-Napoca)
- I61 Bioimpedance Circuit Simulation for Real-Time Hydration Assessment in Athletic Performance Monitoring**  
Pena Madalina (Technical University of Cluj-Napoca)
- I66 Design and Testing of a Capacitive Sensor for Liquid Level Measurements**  
Andrei Kiss (Technical University of Cluj-Napoca)
- I82 MEMS Accelerometer as a Component for Increasing the Power Cutting Equipment Safety**  
Slavomir Kardos (Technical University of Kosice)
- I87 3-D Printed Galinstan-Based Capacitive Strain Sensor**  
Milica Kisic (University of Novi Sad Novi Sad)

I89	<b>Precise Positioning System for Autonomous Vehicles and Intelligent Transport</b> Rosen Miletiev (Technical University of Sofia)	
I94	<b>Low-Cost Drone-mounted Frequency-Modulated Continuous Wave Ground Penetrating Radar</b> Mihaela Hnatiuc (Constanta Maritime University)	
I98	<b>Development of Fully Elastic Sensor Based on Conductive Hydrogel for Mechanical Multi-Deformation Sensing</b> Milica Kisic (University of Novi Sad)	
I117	<b>Pectin-based Impedance Humidity Sensor</b> Patrycja Suchorska-Wozniak (Wroclaw University of Science and Technology)	
I119	<b>Respiratory Monitoring with Silicon Nanowires</b> Rebeka Kiss (University of Debrecen)	
12:30	<b>Lunch</b>	<b>Location: TRIBE   Restaurant</b>
13:30	<b>Oral session V chaired by: P. Markowski and G. Harsanyi</b>	<b>Location: TRIBE   Arena</b>
B80	<b>Comparative Study of Layout Effects on Thermal Management in PCB Hot-Plate</b> Vlad Cristescu (Technical University of Cluj-Napoca)	
E45	<b>Simulation of Temperature Distribution in Large-Area Joints in Power Electronics</b> Peter Nemergut (Technical University of Kosice)	
F83	<b>Power Electronics Solar Inverter on a Biosourced and Biodegradable Substrate – Thermal Study</b> Vincent Grennerat (University Grenoble Alpes)	
I14	<b>AI-enhanced and automated indirect process monitoring at the sensor edge</b> Maedeh Nobari (Fraunhofer IPMS)	
15:00	<b>Break</b>	
16:30	<b>Bus Trip from TRIBE to Unicum House and Museum</b>	
17:00	<b>Museum, Cinema and Distillery Visit at Unicum House</b>	<b>Location: Unicum House</b>
19:00	<b>Networking Dinner @ Herb Bar and Museum</b>	<b>Location: Unicum House</b>
21:00	<b>Bus Trip back to TRIBE (21:00, 21:30, 22:00 turns)</b>	

Saturday, 17 <sup>th</sup> of May		
09:00	<b>Poster session IV chaired by: H. Wohlrabe and P. Vesely</b>	<b>Location: TRIBE   Arena &amp; Dome</b>
D05	<b>Development of a Low Budget Solar Simulator for Testing the Solar Radiation Effects</b> Martin Hirman (University of West Bohemia)	
D12	<b>Fabrication and Experimental Analysis of a Multi-Voltage Level Switching Circuit</b> Gergo Kovacs (Technical University of Cluj-Napoca)	
D15	<b>Effect of Fe and Bi Additives on Electrochemical Migration Behavior of SAC105</b> Marketa Klimtova (Czech Technical University in Prague)	
D16	<b>Comparison of Thermal Impacts on Performance of LEDs Considering Lighting Fixture Type</b> Denis Fros (Czech Technical University in Prague)	
D19	<b>Design of Analog Front End for Measuring Bioimpedance</b> Miroslav Jusko (Technical University of Košice)	
D23	<b>Influence of Stencil Thickness and Surface Finishes of Soldering Pads on the Formation of the Voids Inside Solder Joints</b> Karel Dusek (Czech Technical University in Prague)	

D25	<b>Impact of Prepreg Thickness and Thermal Stress on Thermomechanical Behavior of Printed Circuit Board Substrates</b> Daniel Koc (Czech Technical University in Prague)	
D38	<b>Study of Dielectric Strength of Ceramic Substrates for Power Electronics</b> Jiri Hlina (University of West Bohemia)	
D39	<b>Wetting Balance Test of Tin-Based Solder Alloys: Effect of Oxide Removal on Wetting Performance</b> Iva Kralova (Czech Technical University in Prague)	
D44	<b>Mechanical Strength of Aged Solder Joints: Impact of Plasma Treatment</b> Pavel Rous (University of West Bohemia)	
D47	<b>Space Charge Accumulation and Measurement Method for Insulation Materials</b> Frantisek Steiner (University of West Bohemia)	
D53	<b>Performance Assessment of Commercial MOX Sensors in Elevated Hydrogen and Methane Concentrations</b> Felix Stadermann (TU Dresden)	
D63	<b>Investigation of the Solder Fluxes Activity by Measuring of the Contact Angle</b> Daniel Dzivy (Technical University of Kosice)	
D65	<b>Modelling the Fault Injection of Sensor Interfaces in Automotive Electronics</b> Nicolae Gross (University POLITEHNICA of Bucharest)	
D71	<b>Stability of Embedded Solder Joints' Electrical Resistance</b> Tomas Lenger (Technical University of Kosice)	
D74	<b>Characterization of Solder Flux by Synergic Combination of Gas Chromatography Coupled to Mass Spectrometry and Fourier-Transform Infrared Spectroscopy</b> Dominik Pilnaj (Czech Technical University in Prague)	
D75	<b>Degradation Mechanisms of LEDs Used in Residential Lighting</b> Bianka Forczek (Budapest University of Technology and Economics)	
D76	<b>Stability of Embedded Polymer Thick-film Resistors in 3D Printed Structures Compared to FR4-based PCBs</b> Igor Vehec (Technical University of Kosice)	
D86	<b>Underfill Inspection and Testing in Surface Mount Technology: A Review of Diagnostic and Analytic Methods</b> Zbynek Plachy (Czech Technical University in Prague)	
D90	<b>Properties of Thin Films on 3D Printed Substrates</b> David Busek (Czech Technical University in Prague)	
D114	<b>Investigation of Electromigration in Cu-Sn Interfaces under the Condition of High Current Pulses</b> Irina Wodak (TU Wien)	
D116	<b>Seebeck Coefficient Characterisation Using Innovative Set-up for Film Materials</b> Piotr Markowski (Wroclaw University of Science and Technology)	
11:00	<b>Coffee break</b>	
11:15	<b>Poster session V chaired by: G. Khatibi and B. Mihailescu</b>	<b>Location: TRIBE   Arena &amp; Dome</b>
A17	<b>Effect of mechanochemical modification of Ag<sub>2</sub>O particles on the electrical properties of Ag layers formed from Ag<sub>2</sub>O pastes</b> Alena Pietrikova (Technical Univerisity of Kosice)	
A84	<b>Development of Hydrosoluble Substrate with Low Surface Roughness</b> Nora Tarpataki (Budapest University of Technology and Economics)	
F37	<b>Homogeneity Analysis of Ecological Paper-Based Substrates' Dielectric Properties</b> Peter Lukacs (Technical University of Kosice)	

<b>G33</b>	<b>Synthesis, Characterization, and Application of PVDF Thin Film Separator for Supercapacitors</b> Irina Burcea (National University of Science and Technology Politehnica Bucharest)	
<b>G64</b>	<b>Colour Sensitivity on the OLED Smartphone Display</b> Adrian Tulbure ("1 Decembrie 1918" University of Alba Iulia)	
<b>G85</b>	<b>Comparison of Rectangular and Hexagonal Periodic Unit Cells for Modeling Plasmonic Nanoparticle Arrays</b> Rebeka Kovacs (Budapest University of Technology and Economics)	
<b>G107</b>	<b>Optical and Electrochemical Sensing with Gold Nanoparticles</b> Mate Kalman Stift (Budapest University of Technology and Economics)	
<b>G110</b>	<b>Single Live Cell Assays with Label-free Optical Biosensor for the Development of Diagnostic Methods</b> Igor Sallai (Budapest University of Technology and Economics)	
<b>H59</b>	<b>Advanced Noise Suppression Techniques in ECG Systems: Combining Right-Leg Drive (RLD) Amplifiers with Digital Signal Processing (DSP)</b> Gombos Andreea (Technical University of Cluj-Napoca)	
<b>H62</b>	<b>Comparison of Signal Integrity Simulation Tools: HyperLynx vs. Keysight ADS on eMMC Interfaces</b> Octavian Axinte (Technical University of Cluj-Napoca)	
<b>H73</b>	<b>Improvement of Over-the-Air Antenna Performance Tests for Electric Vehicle Alternating Current Chargers</b> Rumeyza Tuba Seven Iyison (Ozyegin University)	
<b>H104</b>	<b>Considerations Regarding the Study of EMC Filters Applied to Power Inverters</b> Tudor Bancu (Technical University of Cluj-Napoca)	
<b>H105</b>	<b>Textile-Based Flexible Coaxial Cable with Improved EMC</b> Jan Handrejch (University of West Bohemia)	
<b>J09</b>	<b>Improving Atomic Layer Deposition Process of Silicon Oxide (SiO<sub>2</sub>)</b> Long Lei (Fraunhofer IPMS)	
<b>J21</b>	<b>Two-in-one IoT Device for Product Pricing and Inventory Monitoring</b> Rajmond Jano (Technical University of Cluj-Napoca)	
<b>J91</b>	<b>International Collaborative Hands-on Activities on Advanced Electronics and Photonics for Higher Education Using 3D Printing Techniques</b> Krzysztof Nieweglowski (TU Dresden)	
<b>J111</b>	<b>Sustainable Design, Manufacturing and Development of E-transportation Electronics Training in the TRIREME project</b> Balint Medgyes (Budapest University of Technology and Economics)	
<b>13:00</b>	<b>Lunch</b>	<b>Location: Conference Venue</b>
<b>14:00</b>	<b>Oral session VI chaired by: K. Dusek and A. Tulbure</b>	<b>Location: Location: TRIBE   Arena</b>
<b>D18</b>	<b>Machine Learning Modelling for Electronic Reliability Analysis in Solder Joints</b> Cristian Garzon Alfonso (University of Florence)	
<b>D103</b>	<b>A Brief Review on Electromigration Behaviours of Solder Joints under Electrothermal Load</b> Zoltan Tafferner (Budapest University of Technology and Economics)	
<b>D115</b>	<b>Effect of Plasma Gas onto Epoxy Mold Compound Adhesion within Heatsink Attach of Power Modules</b> Mario Sprenger (Institute for Factory Automation and Production Systems)	
<b>15:00</b>	<b>Closing ceremony – invitation to ISSE 2026</b>	<b>Location: TRIBE   Arena</b>
<b>15:30</b>	<b>Bus Trip from TRIBE to docks</b>	

16:00	Danube Boat Trip w. open bar and snacks	Location: Daube (from Infopark)
18:00	Leaving the boat and walk from docks to University (10 min)	
18:00	Steering Committee Meeting	Location: BME   I building   IB019
18:30	Arrival at the Gala Dinner, open bar	Location: BME   I building main hall
19:00	Quartetto Speranza (concert) and Awarding Session	Location: BME   I building   IB028
20:00	Dinner	Location: BME   I building hall

Sunday, 18 <sup>th</sup> of May		
09:00	Farewell; End of conference	