

ISSE²⁰²⁰

WEB-BASED CONFERENCE

programme

MAY 14-15, 2020

SLOVAKIA

43rd International Spring Seminar on Electronics Technology

“Trends in Microelectronics Packaging and Interconnection Technology”



Conference Programme

THURSDAY, MAY 14th, 2020

WHEN		ACTIVITY
08:00 – 08:30		Connecting to the conference
08:30 – 08:40		OPENING SESSION DEAN OF FACULTY OF ELECTRICAL ENGINEERING AND INFORMATICS AND INTRODUCING SPEECH – ALENA PIETRIKOVA
		ORAL SESSION 1 CHAIRS: HEINZ WOHLRABE, DAVID BUSEK HOST: IGOR VEHEC
08:45 – 09:25	KN1	DESIGN CHALLENGES FOR ADVANCED PACKAGING OF ELECTRONIC SYSTEMS Chris Bailey University of Greenwich UK
09:30 – 10:00	A01	Application of Grid-Eye IR sensor for enhanced HMI and OSH purposes in Industry 4.0 reflow soldering environment <u>Attila Géczy</u> , Tólas D. Mátyás, Judit Kámán, Gábor Harsányi Budapest- University of Technology and Economics, Budapest, Hungary
10:05 – 10:35	A03	Impact of Microstructure on Humidity Influence on Complex Impedance of Iron Manganite <u>M. V. Nikolic</u> , Z. Z. Vasiljevic, M. P. Dojcinovic, J. Vujancevic, and M. Radovanovic University of Belgrade, Serbia
10:35 – 10:50		Coffee Break
		ORAL SESSION 2 CHAIRS: JOHANN NICOLICS, ATTILA GECZY HOST: SLAVOMIR KARDOS
10:50 – 11:30	KN2	LIFETIME PREDICTION AND RELIABILITY OF MULTILAYER STRUCTURES IN ELECTRONIC APPLICATIONS Golta Khatibi, TU Vienna, Austria
11:35 – 12:05	A08	Joining and Characterization of PLA Aluminium Compounds for Industrial Applications <u>P. Zink</u> , A. Schmid, A. Klotzbach, K. Harre and G. Göbel University of Applied Sciences, Germany
12:10 – 12:40	A09	Solderability of Injection Moldable Thermoset Resins for Use in 3D Mechatronic Integrated Devices <u>F. Häußler</u> , S. Petillon, J. Dornheim, S. Weser, W. Eberhardt, A. Zimmermann and J. Franke Friedrich-Alexander University Erlangen-Nürnberg, Germany

12:45 – 13:15	C08	Temperature Dependent Physical Properties of Sintered Silver Layers for Power Electronics <u>Z. G. Gökdeniz</u> , G. Khatibi, Ch. Gierl-Mayer, A. Steiger-Thirsfeld, and M. Mündlein Inst. for Chemical Technologies and Analytics, TU Wien, Austria
13:20 – 13:50	D04	Reliability of Mechatronic Integrated Devices Regarding Failure Mechanisms <u>P. Braeuer</u> , L. Wurzer, T. Kuhn, A. Knoeller, H. Mueller, W. Eberhardt, A. Zimmermann and J. Franke Friedrich-Alexander-University Erlangen Nuremberg, Germany
13:50 – 14:50		Lunch
		ORAL SESSION 3 CHAIRS: PAVEL MACH, OLIVER KRAMMER HOST: ONDREJ KOVAC
14:50 – 15:30	KN3	RELATIONSHIP BETWEEN ELECTRONICS PACKAGING AND NANOTECHNOLOGY – ON THE OCCASION OF THE ESTABLISHMENT OF THE IEEE HU&RO EPS&NTC JOINT HAPTER James E. Morris, Portland State University, USA Attila Bonyár, Budapest University of Technology and Economics
15:35 – 16:05	D08	Study of the Wrinkle Formation in the Heel Zone of Heavy Wire Bonds <u>T. Döhler</u> , H.-G. von Ribbeck, F. Fidorra, F. Felke and U. Geissler Technical University of Applied Sciences Wildau, Germany
16:10 – 16:40	D13	Embedding of Passive SMD Components into the Microvia <u>P. Lukacs</u> and A. Pietrikova Technical University of Kosice, Slovakia
16:40 – 17:00		Coffee Break
17:00 – 19:00		Three parallel Poster session block 1
17:00 – 19:00		Poster session A (10 min for 1 poster + 2 min, 13 posters) CHAIRS: FRANTIŠEK STEINER, DETLEF BONFERT HOST: ONDREJ KOVAC
	A02	Evaluation of Electrical Properties of Metalized Woven and Non-woven Polymer-Based Textiles <u>K. Dušek</u> , P. Hrzina, T. Tichý, T. Reichl, P. Veselý, J. Dušek, M. Neruda, and L. Vojtěch Czech Technical University in Prague, Czech Republic
	A04	Copper-filled Vias made by Thick Printed Copper Technology <u>J. Hlina</u> , J. Reboun, D. Michal, and A. Hamacek University of West Bohemia, Czech Republic
	A05	Analysis of Polylactic Acid Conductive Filament's Properties <u>O. Kovac</u> , and R. Halas Technical University of Kosice, Slovakia
	A10	Realization of Double-Sided Wiring Boards of Biopolymer <u>C. Henning</u> , A. Schmid, C. Rückmar, P. Zink, R. Bauer, K. Harre, and G. Göbel University of Applied Sciences Dresden, Germany

	A12	E-textile Piano Fabricated using Several Textile Technologies L. Kost, M. Pavec, <u>D. Michal</u> , D. Moravcova, R. Soukup and A. Hamacek University of West Bohemia, Czech Republic
	A14	Deposition Technologies for Electronic Systems Based on Ultra-Thin Glass <u>P. Knoch</u> , K. Meier, M. Luniak and K. Bock Technische Universität Dresden, Germany
	B01	Influence of Core Temperature on the Efficiency of a Planar Transformer <u>C. Ropoteanu</u> , P. Svasta Politehnica University of Bucharest, Romania
	C01	Interconnection of Terminals on Flexible Substrates with Printed Conductive Patterns <u>J. Řeboun</u> , D. Kalaš, D. Michal, J. Hlína University of West Bohemia, Czech Republic
	C03	Contacting of SMD Components on the Textile Substrates <u>D. Kalas</u> , S. Suchy, J. Kalcik, J. Reboun, R. Soukup, and A. Hamacek University of West Bohemia, Czech Republic
	C04	Reliability of Glued SMD Components on Smart Textile <u>M. Hirman</u> , J. Navratil, F. Steiner and A. Hamacek University of West Bohemia, Czech Republic
17:00 – 19:00		Poster session B (10 min for 1 poster + 2 min, 13 posters) CHAIRS: BALAZS ILLES, RADU BOZOMITU HOST: SLAVOMIR KARDOS
	C05	Electrical Resistance of Solder Joints on Conductive Ribbons <u>M. Hirman</u> , J. Navratil, F. Steiner and A. Hamacek University of West Bohemia, Czech Republic
	C06	Optimization of Contacting Technological Process on Printed Conductive Pattern for Wearable Electronics <u>A. Benešová</u> , M. Hirman, J. Hlína, J. Tupa, F. Steiner and J. Řeboun University of West Bohemia, Czech Republic
	C07	A Comparison of Resistance Spot and Ultrasonic Welding of Hybrid Conductive Threads <u>S. Suchý</u> , D. Kalaš, J. Kalčík and R. Soukup University of West Bohemia, Czech Republic
	D01	Whisker Development from SAC0307-Mn07 Solder Alloy <u>B. Illés</u> , R. Bátorfi, T. Hurtony, O. Krammer, G. Harsányi, A. Pietrikova, A. Skwarek and K. Witek Budapest University of Technology and Economics, Hungary
	D02	Applicability of Gage Type Pressure Sensors in Vapour Phase Soldering for Process Evaluation M. A. Alaya, L. Gál, <u>A. Géczy</u> Budapest University of Technology and Economics, Budapest
	D03	Accelerated Aging of Bismuth-Tin Solder Joints on Various Substrates <u>P. Veselý</u> , and M. Kozák Czech Technical University in Prague, Czech Republic

	D05	Study of Voids Inside Solder Joints Based on SAC305 Solder Paste with Different Properties <u>M. Kozák</u> , and P. Veselý Czech Technical University in Prague, Czech Republic
	D06	Bond Strength Test of Soldering Pads with Various Surface Finishes Performed under Different Thermal Conditions <u>D. Froš</u> , and K. Dušek Czech Technical University in Prague, Czech Republic
	D07	Analysis of Changes Due to Long-Term Thermal Aging in Capacitors Manufactured from Polypropylene Film <u>P. Mach</u> , and M. Horák Czech Technical University in Prague, Czech Republic
	D09	Influence of Production and Operating Conditions on Properties of Acrylic Conformal Coatings <u>F. Steiner</u> , M. Hirman, P. Rous and J. Hornak University of West Bohemia, Czech Republic
17:00 – 19:00		Poster session C (10 min for 1 poster + 2 min, 13 posters) CHAIRS: REINHARD BAUER, TOMAS BLECHA HOST: IGOR VEHEC
	D10	Wetting Balance Measurement of Solders and Evaluation of Strong Influences on the Shape of the Wetting Curves <u>M. Molhanec</u> Czech Technical University in Prague, Czech Republic
	D11	Comparison of Gold Plated PCB Finishes <u>K. Sorokina</u> , D. Bušek, and K. Dušek Czech Technical University in Prague, Czech Republic
	D12	A Jackknife Variance-based Stopping Criterion for Adaptive Verification of Integrated Circuits <u>I. Kovacs</u> , M. Ťopa, M. Ene, A. Buzo and G. Pelz Technical University of Cluj-Napoca, Romania
	D15	Experimental Investigation on Thermocouple Attachment Methods for Reliable Temperature Measurement <u>R. Seidel</u> , J. Volland, N. Thielen, Ch. Voigt and J. Franke Friedrich-Alexander-University Erlangen-Nürnberg, Germany
	D16	The Analysis of Wire Bonding Reliability under Critical Operating Conditions <u>M. Búran</u> , M. Řezníček and A. Vlasatý Brno University of Technology, Czech Republic
	D17	Optimized Impedance Measurement with AD5933 J. Ehlich, <u>I. Zhivkov</u> , R. Yordanov, O. Salyk, and M. Weiter Brno University of Technology, Czech Republic
	D19	Dendritic Growth at Constant Voltage Between Electrodes Coated by SnBiAg, SAC, SnCu and SnPb Solder <u>D. Bušek</u> Czech Technical University in Prague, Czech Republic
	D20	Investigation of Metallographic Etchants Selectivity for Tin Solder Alloys

		A. Otáhal, J. Skácel, and I. Szendiuch Brno University of Technology, Czech Republic
	D21	Current Load of Thick-film Pastes for Power Applications J. Skácel, <u>A. Otáhal</u> , J. Jankovský, and I. Szendiuch Brno University of Technology, Czech Republic
	D22	Thermal Monitoring of Flexible ZnS-based Screen-Printed Electroluminescence Structures Subjected to Accelerated Ageing <u>B. Bonev</u> , A. Stoyanova, and I. Zhivkov Brno University of Technology, Czech Republic
19:00		Ending of the first conference day

FRIDAY, MAY 15th, 2020

WHEN		ACTIVITY
08:00 – 08:30		Connecting to the conference
		ORAL SESSION 4 CHAIRS: KAREL DUSEK, PAUL SVASTA HOST: SLAVOMIR KARDOS
08:30 – 09:10	KN4	HOW TO FULFILL DEMANDS FOR FUTURE ELECTRONIC ASSEMBLIES <u>Vladimir Sitko</u> PBT Works, Rožnov pod Radhoštěm, Czech Republic
09:15 – 09:45	D14	A Machine Learning Based Approach to Detect False Calls in SMT Manufacturing <u>N. Thielen</u> , D. Werner, K. Schmidt, R. Seidel, A. Reinhardt, and J. Franke Friedrich-Alexander-University Erlangen-Nürnberg, Germany
09:50 – 10:20	E10	Prediction of the Solder Rise in Selective Wave Soldering Comparing Decision Tree and Logistic Regression <u>R. Seidel</u> , F. Leibold, N. Thielen, and J. Franke Friedrich-Alexander University Erlangen-Nuremberg, Germany
10:25 – 10:55	I21	Preparation of Nitrogen Dioxide Sensor Utilizing Aerosol Jet Printing Technology <u>J. Navratil</u> , P. Kubersky, P. Sedlak, and A. Hamacek Brno University of Technology, Czech Republic
10:55 – 11:10		Coffee Break
11:10 – 13:50		Three parallel Poster session block 2
11:10 – 13:50		Poster session D (10 min for 1 poster + 2 min, 10 posters) CHAIRS: ATTILA GECZY, TOMAS BLECHA HOST: ONDREJ KOVAC

D23	Material Characterization of Additively Manufactured Metals by Laser Speckle Photometry <u>D. Dang</u> , A. Elspaß, U. Cikalova, S. Kleszczynski, B. Bendjus, G. Witt Fraunhofer Inst. for Ceramic Technologies and Systems IKTS, Germany
E01	Vector Control of Induction Machine Used in Electric Vehicle <u>A.-M. Petri</u> , and D. Petreus Technical University of Cluj-Napoca, Romania
E02	Electrical Model of the Human Head-Circuit Parameters <u>D. A. Coman</u> , S. Ionita, and I. Lita University of Pitesti, Romania
E05	Simulation of Reflow-based Heat Transfer on Different Thermocouple Constructions <u>D. Straubinger</u> , B. Illés, R. Berényi, A. Géczy Budapest University of Technology and Economics, Hungary
E06	Embedded Image Analysis System Based on B-ANN <u>L.-M. Ionescu</u> , A. G. Mazare, D. Visan, A. I. Lita, I. Lita, G. Serban University of Pitesti, Romania
E08	Algorithm for Charging a Supercapacitor Energy Storage System <u>K. Kishkin</u> , D. Arnaudov, and D. Penev Technical University of Sofia, Bulgaria
E09	Management of Supercapacitor Battery Charging <u>D. Arnaudov</u> , D. Penev, and K. Kishkin Technical University of Sofia, Bulgaria
E13	A Finite Element Study on Acceleration of Reliability Testing for Solder Interconnects <u>T. Ackstaller</u> , K. Meier, and K. Bock Technische Universität Dresden, Germany
E14	Predicting the Transfer Efficiency of Stencil Printing by Machine Learning Technique <u>O. Krammer</u> , T. Al-Ma'aiteh, P. Martinek, K. Anda, N. Balogh Budapest University of Technology and Economics, Hungary
E15	Study of Process Variability-Sensitive Local Device Parameters for 14-nm Bulk FinFETs <u>G. Angelov</u> , D. Nikolov, M. Spasova, and R. Rusev Technical University of Sofia, Bulgaria
F01	Renewable Energy Microgrid Model using MATLAB – Simulink <u>A. Ignat</u> , E. Szilagyi, and D. Petreus Technical University of Cluj-Napoca, Romania
H01	Planar Textile Transmission Lines <u>T. Blecha</u> , and D. Moravcova University of West Bohemia, Czech Republic
G02	VLSI Implementation of 8-PSK/8-QAM/16-QAM Transmitter Circuit in CMOS Technology <u>R. G. Bozomitu</u> , A. Cracan, and G. Bonteanu “Gheorghe Asachi” Technical University, Romania

11:10 – 13:50		<p>Poster session E (10 min for 1 poster + 2 min, 10 posters) CHAIRS: ZSOLT ILLEFALVI-VITÉZ, DAVID BUŠEK HOST: IGOR VEHEC</p>
	I03	<p>The Effect of a Pattern of Capacitive Sensors for Liquid Level Measurements G. Nikolov, <u>E. Gieva</u>, B. Nikolova and I. Ruskova Technical University of Sofia, Bulgaria</p>
	I04	<p>Experimental Investigation of Washing Effects on the Properties of Textile Electrodes E. Hadzhigenova, G. Nikolov, <u>E. Gieva</u> and I. Iliev Technical University of Sofia, Bulgaria</p>
	I05	<p>High Sampling Rate IMU with Dual Band GNSS Receiver <u>R. Miletiev</u>, P. Kapanakov, E. Iontchev, and R. Yordanov Technical University of Sofia, Bulgaria</p>
	I06	<p>Parameters of Tensiometric Textile Threads Based on Material Composition <u>D. Michal</u>, S. Suchý, K. Moučková, and J. Řeboun University of West Bohemia, Czech Republic</p>
	I08	<p>A Contact Structure for the Hybrid Resistive Embroidery Threads <u>J. Kalčík</u>, D. Kalas, S. Suchy, and R. Soukup University of West Bohemia in Pilsen, Czech Republic</p>
	I09	<p>Single-Pixel Optoelectronic IR Detectors in Wireless Wildfire Detection Systems <u>S. Rizanov</u>, A. Stoyanova, and D. Todorov Technical University of Sofia, Bulgaria</p>
	I10	<p>System for Testing and Evaluating the Thermal Comfort of Smart Textiles Clothing <u>K. Šíma</u>, K. Moučková, A. Hamacek, R. Soukup, P. Komarkova, and V. Glombikova University of West Bohemia, Czech Republic</p>
	I11	<p>A Channel Modeling Procedure for Visible Light Sensing <u>S. Zahiri Rad</u>, K. Madane, A. P. Weiss, and F.P. Wenzl Joanneum Research Forschungsges.m.b.H, Austria</p>
	I12	<p>The Requirements of Visible Light Sensing on the Receiver Design <u>K. Madane</u>, A. P. Weiss, S. Zahiri Rad, S. Schantl, and Franz P. Wenzl Joanneum Research Forschungsges.m.b.H, Austria</p>
	I13	<p>Capacitive Sensors for Saturated Vapour Height Sensing in VPS Soldering <u>I. Vehec</u>, L. Livovsky, and A. Pietrikova Technical University of Kosice, Slovakia</p>
	I14	<p>Flexible Resistive Sensor Based on Velostat <u>I. Vehec</u>, and L. Livovsky Technical University of Kosice, Slovakia</p>
	I15	<p>Orientation of Carbon Nanotubes Using Electric Field for Applications of Electrochemical Sensors <u>J. Šlauf</u>, M. Pavec, and J. Řeboun University of West Bohemia, Czech Republic</p>
	I16	<p>System for Respiratory Rate Monitoring Integrated in Textiles <u>K. Moučková</u>, K. Šíma, and R. Soukup Faculty of Electrical Engineering, Czech Republic</p>

11:10 – 13:50		Poster session F (10 min for 1 poster + 2 min, 10 posters) CHAIRS: IVAN SZENDIUCH, BALAZS ILLES HOST: SLAVOMIR KARDOS
	I17	Autonomous Robot for House Supervision Based on Personal Assistance Technology A. Grama, <u>E. -M. Stetco</u> , O.-A. Pop, and O. Pop Technical University of Cluj-Napoca, Romania
	I18	A Survey on Threats and Security Solutions for IoT V.-D. Gavra, I.-M. Dobra, and <u>O. A. Pop</u> Technical University of Cluj-Napoca, Romania
	I19	Self-Switching Antenna for Higher Efficiency in RFID applications M. I. Andreea, <u>B. Mihailescu</u> , P. Svasta, J. Hehlgers and D. Pupeza Politehnica University of Bucharest, Romania
	I20	Acoustic Sensor for Surveillance of Isolated Geographical Areas O. Pop, <u>O. A. Pop</u> Technical University of Cluj-Napoca, Romania
	I22	Nonintrusive Measurement of Elevator Velocity Based on Inertial and Barometric Sensors in Autonomous Node <u>D. N. Nikolov</u> , M. B. Marinov, B. T. Ganev, and T. S. Djamiykov Technical University of Sofia, Bulgaria
	I23	Programable IoT Pills Dispenser <u>M. V. Moise</u> , P. M. Svasta and A. G. Mazare Polytechnic University of Bucharest, Romania
	I25	IoT Blockchain for Smart Sensors <u>V. Voicu</u> , D. Petreus, R. Etz Technical University of Cluj-Napoca, Romania
	I26	Electronic Sensor System for Research and Optimization of Railway Contact Networks N. Nenov, S. Slavchev, <u>V. Maznichki</u> , and D. Yosifova Technical University of Sofia, Bulgaria
	I27	Assembly of Epithelial Monolayers and Transmigration of Cancer Cells Captured with Phase Holographic Imaging <u>Á. G. Nagy</u> , I. Székács, A. Bonyár, and R. Horvath Budapest University of Technology and Economics, Hungary
	I28	A MEMS Accelerometer Utilization for Viscosity of Technical Oils Sensing <u>S. Kardos</u> , A. Pietrikova Technical University of Kosice, Slovakia
	I29	Resistance Measurement Method for IoT and Low Power Application <u>K. Sima</u> , D. Kalas, S. Pretl, and A. Hamacek University of West Bohemia, Pilsen, Czech Republic
	K01	Investigation of Dielectric Properties of Printed Material for Capacitor Application <u>M. Kisić</u> , L. Živanov, N. Blaž, A. Stefanov, and A. Menićanin University of Belgrade, Serbia
	K02	Frequency Characteristic of Integrated Inductor and Capacitor Device with Common Volume <u>M. Milutinov</u> , M. Kisić, C. Zlebic, and L. Zivanov University of Novi Sad, Serbia

13:50 – 15:30		Lunch
15:30 – 15:45		Connecting to the conference
15:45		Evaluation session and Ending of conference CHAIRS: HEINZ WOHLRABE, JOHANN NICOLICS, ALENA PIETRIKOVA HOST: SLAVOMIR KARDOS

Link for web-based ISSE conference were sent to registered participants of ISSE via E-mail.