

POLAND

WHERE WEST MEETS EAST

EMPC 2017



21ST EUROPEAN
MICROELECTRONICS AND PACKAGING
CONFERENCE (EMPC) & EXHIBITION

WARSAW UNIVERSITY OF TECHNOLOGY
POLAND, SEPTEMBER 10th TO 13th 2017



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WELCOME TO THE 21ST EUROPEAN MICROELECTRONICS AND PACKAGING CONFERENCE (EMPC 2017) & EXHIBITION, WARSAW, POLAND.

**It is our pleasure to welcome you to the 21st European Microelectronics
and Packaging Conference & Exhibition at the impressive historic Main Hall
of Warsaw University of Technology in Poland.**

The EMPC 2017 conference continues a line of successful events – the latest were in Germany (2015) and France (2013) – to benefit exhibitors and technical contributors. EMPC brings together the entire microelectronics supply chain, technical and marketing professionals from around the world.

The variety of sessions offers the possibility to enhance professional development, technical knowledge /skills and career progression. Furthermore, the industrial exhibition will highlight the latest products and service applications of value to the electronics community.

The International Microelectronics and Packaging Society (IMAPS) is a worldwide organization, which leads communication, education and interaction at all levels in the field. IMAPS is dedicated to the growth of the community focused on developments of microelectronics, photonics and related packaging technologies of the present and future, including 3D Integration, SMT, CoB and FC-Assembly, Embedding, Wafer Level Packaging, Encapsulation, Printed Electronics, MEMS, Photonics, HF, HT, Power-Electronics, Flexible Electronics, Advanced Materials, Thermal Management, Modeling/Design /Simulation, Reliability.

The conference is an important platform for dialogue between industry and academia. At EMPC 2017, we will provide you with an excellent technical programme of most recent research and development results worldwide.

In 2017 EMPC is held in Warsaw the thriving Capital of Poland, an excellent location for this prestigious event. Don't miss the opportunity to meet international experts and exchange experience, gain ideas and cutting edge information of microelectronics and packaging industries at EMPC 2017.

Sincerely,

Malgorzata Jakubowska
EMPC 2017 General Chair

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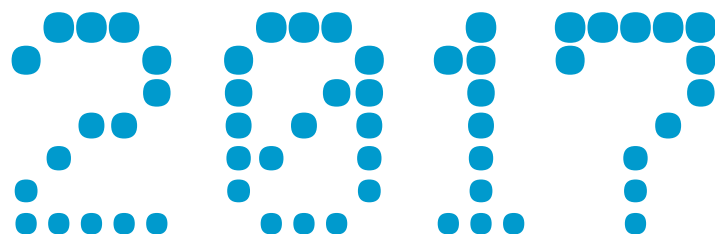
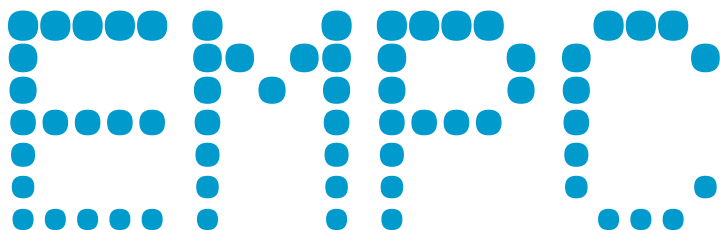


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Outline

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General Information

The registration desk of EMPC 2017 is located in the Main Building of the Warsaw University of Technology near the main entrance.

Opening Hours:

Sunday September 10 15.00-20.00 hrs

Monday September 11 08.00-21.00 hrs

Tuesday September 12 08.00-23.00 hrs

Wednesday September 1308.00-14.00 hrs

Badges:

Participants are obliged to wear the official conference badge on all occasions.

There will be rigorous badges controls. Participants who lost their badge will have to register and pay a new fee.

Disabled persons

Participants with disabilities are kindly requested to contact the conference organizers for assistance when entering the venue area.

Non-smoking Policy

EMPC 2017 will be a non-smoking conference.

Smoking is prohibited in all meeting rooms & exhibition of the conference.

Language

The official language of EMPC 2017 is English.

Coffee and Lunch

Coffee will be served in the exhibition area only during the the breaks between sessions.

Lunch will be served in the room 206 on the second floor.

Liability

Both participants and exhibitors in EMPC 2017 agree that neither the EMPC 2017 Committees nor Organizing Secretariat assume any liability whatsoever. Participants and sponsors should organize their own health, travel and personal insurance.

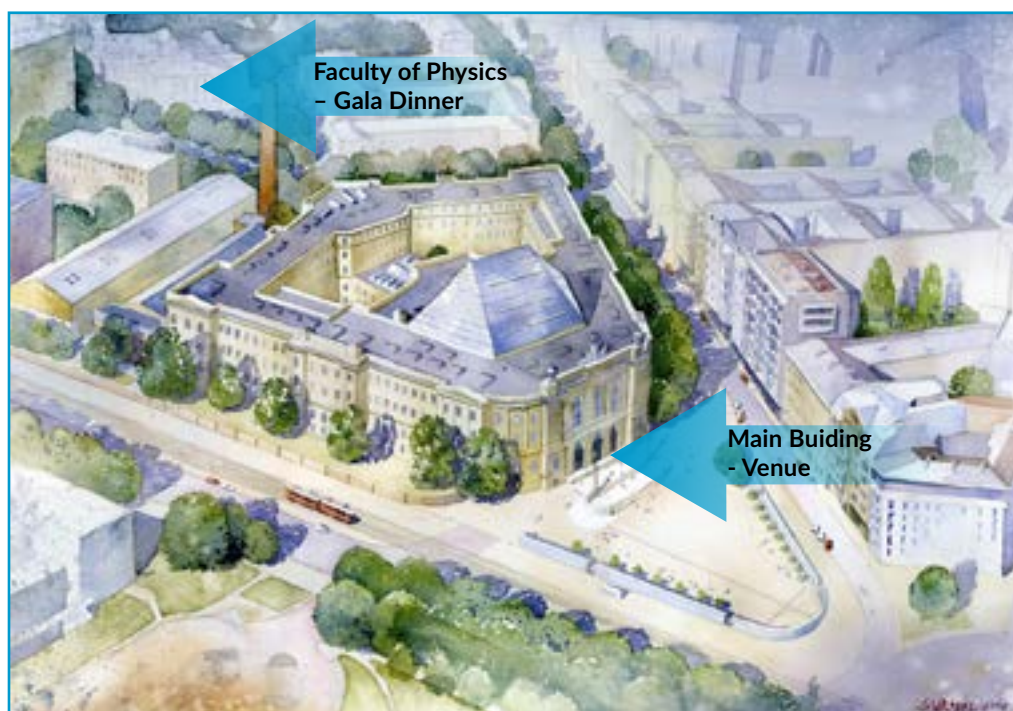


Image courtesy of Grzegorz Wróbel

Keynote Talks - Monday

Monday, 11 September 2017, 9:00-9:45

3D System Integration. An Interconnect Hierarchy driven Technology Landscape

Eric Beyne, Imec Leuven, Belgium

Abstract: It is becoming increasingly clear that 3D integration complements semiconductor scaling in enabling higher integration density as well as heterogeneous technology integration. Using 3D technology, it is possible to extend the number of functions per 3D chip well beyond the capabilities of traditional scaling. In addition, one can combine a wide variety of device technologies to optimize system performance.

The field of 3D integration has been very active over the past ten years. A large number of technology directions have been proposed and many different names and acronyms have been created to identify different technologies. Unfortunately this also often created confusion for those trying to compare and select technologies for system applications. In this presentation, A hierarchical view on the need for 3D interconnects will be presented, offering a landscape view on technology options, from relatively coarse package level 3D integration technologies to ultra-dense sub-micron transistor level stacking technologies. Examples will be shown and possible technology directions will be given.

Biography: Eric Beyne, obtained a degree in electrical engineering in 1983 and the Ph.D. in Applied Sciences in 1990, both from the Katholieke Universiteit Leuven, Belgium. Since 1986 he has been with IMEC in Leuven, Belgium where he has worked on advanced packaging and interconnect technologies. Currently, he is imec fellow and program director of imec's 3D System Integration program. In this project, over 30 companies work together on advanced 3D integration technologies. In March of this year he received the European Semi Award 2016 for contributions to the development of 3D technologies.

Monday, 11 September 2017, 9:45-10:30

Printed stretchable electronics – enabler of unobtrusive biosignal monitoring

Matti Mäntysalo, Tampere University of Technology, Finland

Abstract: Wearable electronics is currently one of the fastest growing electronics markets. Specifically, with the sports and healthcare industries showing a particularly strong interest in the field, as wearables present possibilities of measuring one's vital signals unobtrusively. Today's wearable electronics is mainly based on wrist, head, and chest worn concepts. However, textile integrated solutions are continuously being introduced by researchers and industry. The next paradigm shift in wearable electronics is going to be epidermal electronic systems (EES) enabled by recent advances in flexible and stretchable electronics technologies. EES can conform to temporary transfer tattoos and deform with the skin without detachment or fracture. EESs are developed to monitor, for example, electrophysical signals (e.g. ECG, EMG), temperature, skin hydration, lactate level, and movement disorders. In many cases, the main idea has been wireless monitoring of body signals and functions for healthcare and assisted living applications. Most EESs dedicated for body monitoring are fabricated in complex and costly vacuum and lithography processes. However, the proposed approach utilizes low-cost printing processes enabling the wider exploitation of the results. This presentation focuses on recent development in printed stretchable electronics and its advances in smart textiles and epidermal electronic systems.

Biography: Matti Mäntysalo received his M.Sc. and D.Sc. (Tech) degrees in electrical engineering in Tampere University of Technology, Tampere, Finland in 2004 and 2008, respectively. He is an Associate Professor in Electronics materials and manufacturing in Tampere University of Technology, received Academy research fellow grant from Academy of Finland, and has awarded with Adjunct Professor in Digital fabrication in Tampere University of Technology. Mäntysalo has led the Printable Electronics Research Group at TUT since 2008. He was a visiting scientist in iPack Vinn Excellence Center, School of information and Communication Technology, KTH Royal Institute of Technology, Stockholm, Sweden, from 2011 to 2012. His research interests include printed electronics materials, fabrication processes, stretchable electronics, and especially integration of printed electronics with silicon-based technology (hybrid systems). Mäntysalo has more than 100 international journal and conference articles. He has served IEEE CMPT, IEC TC119 Printed electronics standardization, and Organic Electronics Association.

Keynote Talks - Tuesday

Tuesday, 12 September 2017, 9:00-9:45

Future of Embedding and Fanout Packaging Technologies

Rao Tummala, Georgia Institute of Technology, United States of America

Abstract: All the packaging technologies can be classified into four types: 1) Wafer-level Packaging, 2) Embedded Packaging, 3) Fan-out Packaging, and 4) Embedded and Fan-out Packaging. Wafer-level Packaging (WLP) is an approach that starts with ICs and builds package wiring in the wafer fab by simply redistributing the BEOL I/Os and placing bumps. This WLP is a single unit with a continuum of interconnections from transistors to BEOL to RDL to bumps. It is a chip-scale package with chip and package sizes nearly the same. This is the best package electrically. But it is limited to small ICs and to small packages, typically below 5mm. As such, it is limited in external I/Os to connect to the board, typically at 400 microns and above in pitch.

To eliminate this I/O limitation issue, fan-out technology was initially developed in 1980s by GE followed by many others including Intel, Freescale and more recently further developed into production by Infineon. But this technology is not a wafer-level packaging, as the above. It is not a continuum of transistors to bumps. While it addresses the I/O limitation, it is also an embedded packaging technology to reduce package thickness and improve interconnect performance. It is an embedded fan-out technology with many great packaging attributes such as not requiring assembly, since the wiring is deposited directly on the face of the ICs with shortest interconnections between ICs and the RDL wiring layers. Many IC companies refer to it as wafer fan-out, since it is made of reconstituted ICs to form the wafer and since it is processed as round wafers. There are many variations of this by IC companies such as TSMC using wafer BEOL tools and by OSATs using packaging tools and processes. This technology, however, has three strategic limitations: 1) high cost for larger packages, 2) molding compound-driven limitations in lithography, and 3) board-level reliability. Many of these are being addressed and improved by emerging Panel Fan-out and Embedding Technologies, currently in organic or laminate technologies and in future in inorganic technologies

This presentation will describe the historical evolution and future of embedding and fan-out technologies.

Biography: Prof. Rao Tummala is a Distinguished and Endowed Chair Professor at Georgia Tech USA. He is well known as an industrial technologist, technology pioneer, and educator. Prior to joining Georgia Tech, he was an IBM Fellow, pioneering such major technologies as the industry's first plasma display and the first and next three generations of 100 chip multi-chip packaging. He is the father of LTCC and System-on-Package technologies. As an educator, Prof. Tummala was instrumental in setting up the largest Academic Center in Electronic Systems at Georgia Tech involving more than 100 PhD and MS students, 25 faculty from ECE, ME, MSE and CHE, and 70 companies from the U.S., Europe and Asia, all working together with an integrated approach to research, education and industry collaborations. He has published 700 technical papers and invented 98 patents, wrote the first textbook in packaging, Microelectronics Packaging Handbook, wrote the 1st undergrad textbook Fundamentals of Microsystem Packaging and the 1st book introducing the System-On-Package Concept.

Keynote Talks - Tuesday

Tuesday, 12 September 2017, 9:45-10:30

Large scale sustainable production of graphene for real-life applications

Krzysztof Koziol, Cranfield University, FGV Cambridge Nanosystems, United Kingdom

Abstract: In order to achieve industrial scale deployment of advanced nanomaterials like graphene, it is important to manufacture them at the quality and quantity levels required to satisfy their expected performance. The large scale graphene manufacturing process developed by FGV Cambridge Nanosystems in United Kingdom is capable of making the material without the need of catalyst, substrate, solvents and any liquid processing. We are able to engineer graphene at the molecular level to achieve the desired material quality with maximum performance on macroscopic scale. The continuous large scale production of pure graphene is carried out by direct conversion of natural gas, like methane or biomethane, achieving highest quality and purity level of the material. Due to the scale of the production and the nature of precursors used, the graphene generated on a very large scale is very affordable and capable of serving the large volume demand required by many industries. Graphene has been demonstrating its usefulness in a plethora of applications, it will enable technologies which otherwise would be impossible, it will revolutionise our industry and manufacturing processes of many products. Selected applications in, automotive, aerospace and construction will be discussed with some of the immediate prototypes presented.

Biography: Professor Krzysztof Koziol is the Head of Enhanced Composites and Structures Centre at Cranfield University, Director of Studies at Pembroke College, President of The International Society of Nanoscience and Founding Director of FGV Cambridge Nanosystems. Prof. Koziol graduated with a first class degree in Chemistry and Chemical Engineering from Silesian University of Technology in Poland in 2001, and subsequently with a PhD in Materials Science from Cambridge University. At the University of Cambridge he was Oppenheimer Research Fellow and Royal Society University Research Fellow until end of September 2016. He worked extensively on new synthesis approach to carbon nanotubes, graphene, post production methods of purification, chemical modification and fabrication of highly aligned nanotube based macrostructures, including formation and control of the structure of carbon nanotube fibres and wires. His areas of expertise are: nanotechnology, carbon nanotubes, graphene, synthesis of carbon nanotubes and graphene, design of catalysts for carbon nanotube formation, chirality control of carbon nanotubes, carbon nanotube fibres, carbon nanotube wires. Prof. Koziol published over 130 peer reviewed scientific articles, 2 book contributions and 20 patents. H-index: 29, i10-index: 58. RG score: 41

Keynote Talks - Wednesday

Wednesday, 13 September 2017, 9:00-9:45

Developing Damage Models for Solder Joints Exposed to Complex Stress States: Influence of Potting, Coating, BGA Mirroring, and Housing on Solder Joint Fatigue
Craig Hillman, DfR Solutions, United States of America

Abstract: Existing stress and damage models designed to capture solder fatigue behavior are almost exclusively based on a pure shear condition at the solder joint. While these assumptions were generally valid under early generation, low-density designs, more complex systems are driving multi-axial loading into an increasing number of electronic packages. The result is unexpected results once coupon testing is migrated into product validation testing, with early life failures and limitations on promising mitigations (such as underfill). This paper will discuss the experimental, analytical and theoretical efforts to develop a universal low-cycle solder fatigue model that accounts for tri-axial loading. Initial experiments focused on developing a zero shear stress test coupon so as to isolate tensile and compressive stress effects. Influence of loading conditions and possible effects of mean stress state were observed. Further experimentation on BGAs underfilled with conformal coating provided opportunities to correlate time to failure to magnitude of stress vectors. Based on these experimental observations and review of mechanics literature, a new damage law approach that partitions directionality of strain energy was developed. Execution of this new damage law through the use of FEA-based elastic strain analysis is described and validation data is presented. The talk will conclude with a demonstration of this new approach on the prediction of the most common tri-axial drivers, including coating, mirroring, and over-constrained boards.

Biography: Dr. Craig Hillman is the Chief Executive Officer of DfR Solutions. DfR Solutions provides engineering services and tools that allow the electronic supply chain to meet customer expectations in regards to quality, reliability, and safety. Over the past twelve years, Dr. Hillman has put together an a comprehensive group of subject matter experts in a number of different fields, including semiconductors, electronic design and fabrication, batteries, and systems engineering, and has overseen the release and unparalleled success of the first Automated Design Analysis software to the EDA/CAE marketplace. DfR Solutions is now the largest organization of its kind in the world and has offices across North America. Dr. Hillman's specific expertise is in the development and incorporation of best-in-class product development processes that optimize existing resources and result in strong customer satisfaction. Dr. Hillman holds two patents, has over 100 publications, is a guest columnist for Global SMT & Packaging, has been a course instructor at IPC, SMTA, IMAPS and IEEE conferences, was identified by the US DoD as a subject matter expert in Pb-free technology, and has presented on a wide variety of quality and reliability issues to over 500 companies and organizations. He holds a B.S. from Carnegie Mellon in Metallurgical Engineering and Materials Science and Engineering and Public Policy and a PhD from University of California –Santa Barbara in Materials Science and received a research fellowship at Cambridge University in England.

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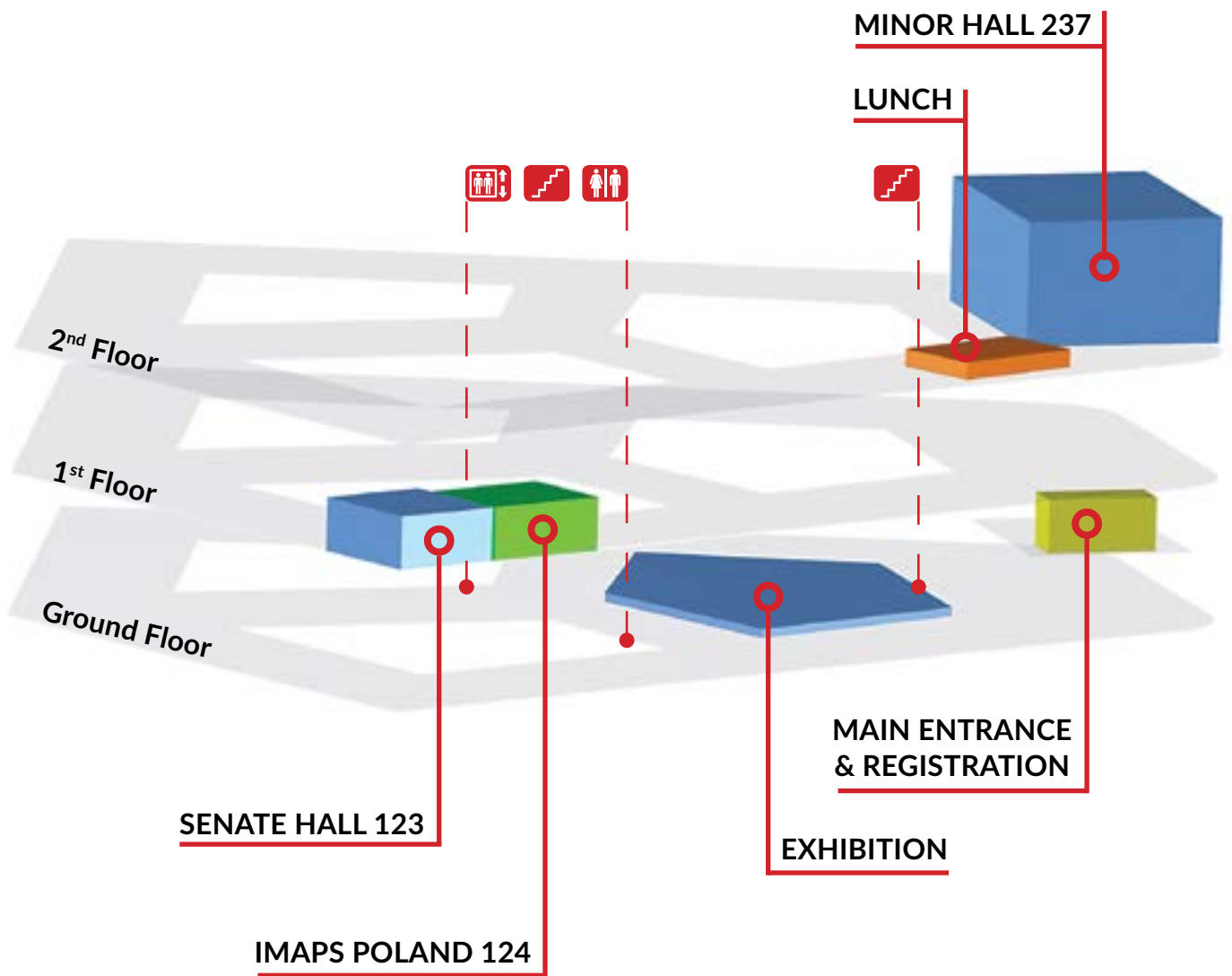
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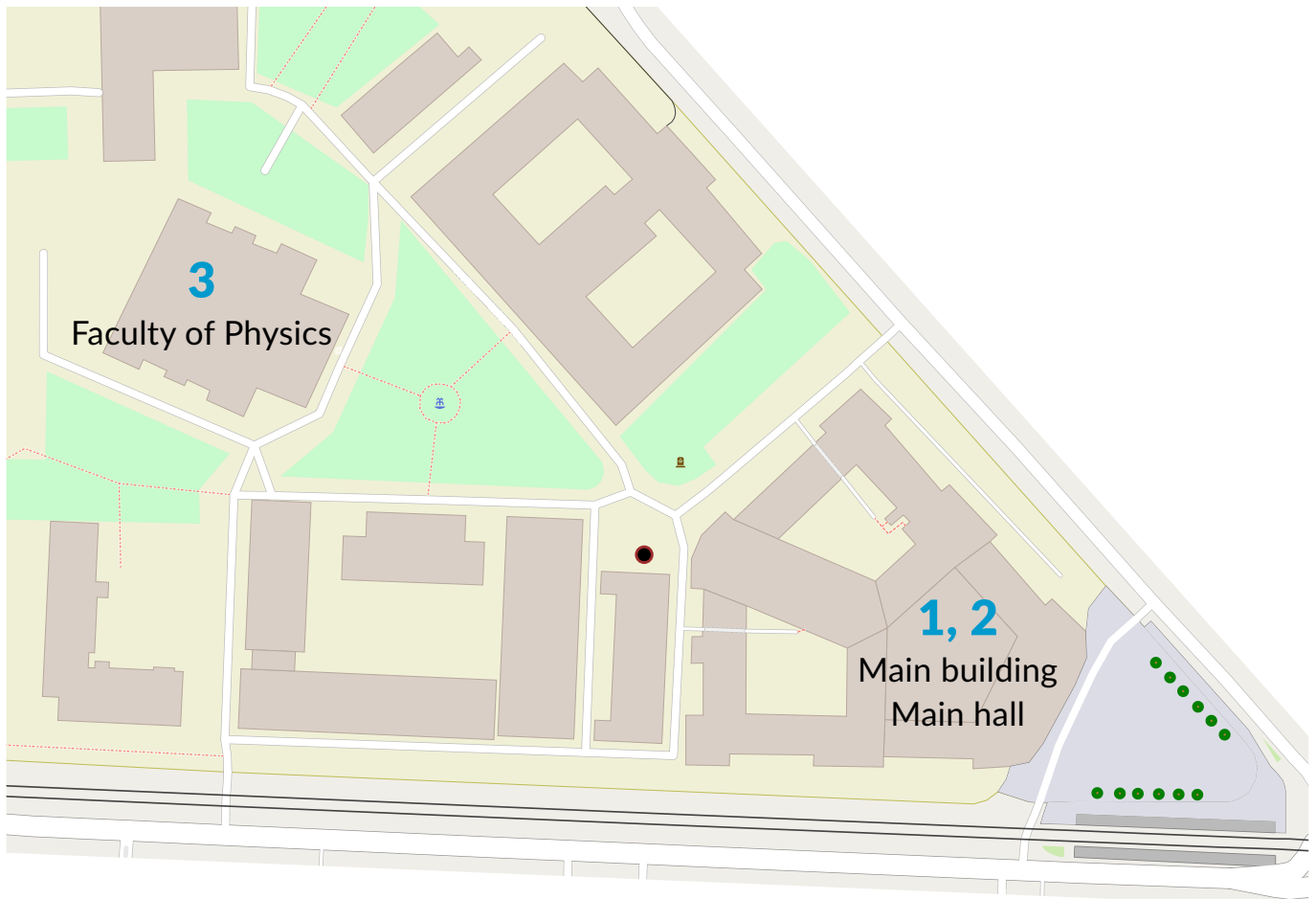
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Conference and Exhibition Rooms



Social events

1. Get-Together Party - 10 September 2017 - 18:00-20:00, Main building, Main hall
2. Welcome Reception - 11 September 2017 - 19:00-21:00, Main building, Main hall
3. Gala Dinner - 12 September 2017 - 19:00-22:30, Faculty of Physics hall



Main building, Main hall



Faculty of Physics

Agenda

Sunday, 10 September 2017

| | |
|-------------|--|
| 15:00-20:00 | REGISTRATION (Main Building) |
| 18:00-20:00 | GET-TOGETHER PARTY (Main Building – Main Hall) |

Monday, 11 September 2017

| | | |
|-------------|--|---|
| 8:45-10:30 | Plenary session 1 (Main Building – Minor Hall 237) Session chairs: Małgorzata Jakubowska (Warsaw University of Technology, Poland) Martin Schneider-Ramelow (Fraunhofer IZM, Berlin, Germany) | |
| 8:45-9:00 | Conference opening | |
| 9:00-9:45 | 201 | 3D System Integration. An Interconnect Hierarchy driven Technology Landscape <u>Eric Beyne</u> , Imec Leuven, Belgium |
| 9:45-10:30 | 202 | Printed stretchable electronics – enabler of unobtrusive biosignal monitoring <u>Matti Mäntyselä</u> , Tampere University of Technology, Finland |
| 10:30-11:00 | Coffee break (Main Hall) | |
| 11:00-13:00 | Session 1: Advanced packaging and interconnects (Main Building – Minor Hall 237) Session chairs: Andrzej Dzedzic (Wrocław Univ. of Science and Technology) and John Lipp (STFC Rutherford Appleton Laboratory, UK) | Session 2: Printed, hybrid and flexible electronics (Main Building – Senate Hall 124) Session chairs: Karlheinz Bock (TU Dresden, Germany) and Agata Skwarek (Inst. of Electron Technology, Krakow division, Poland) |
| 11:00-11:20 | 102 | Small Form-Factor, Liquid-Cooled SiPM Module for PET/MRI Applications <u>Rainer Dohle</u> ¹ , Thomas Rittweg ² , Ilaria Sacco ³ ¹ Micro Systems Engineering GmbH, 95180 Berg, Germany; ² Micro Systems Engineering GmbH, ENS, 95180 Berg, Germany; ³ Institut für Technische Informatik der Universität Heidelberg, B6, 26, 68131 Mannheim, Germany |
| 11:00-11:20 | 111 | Experimental Investigation on 3D Metal Interconnection for HySiF (hybrid system in flexible) Devices Using ElectroHydroDynamic (EHD) System Joon Yub Song, <u>Yongjin Kim</u> , Jae Hak Lee, Seung Man Kim Korea Institute of Machinery and Materials, Republic of Korea (South Korea) |
| 11:20-11:40 | 110 | Direct copper metallization on TGV (Thru-Glass-Via) for high performance glass substrate <u>Kotoku Inoue</u> , Tsubasa Fujimura, Masatoshi Takayama, Sigeo Onitake Koto Electric Co., Ltd., Japan |
| 11:20-11:40 | 123 | 3D printed flexible substrate with pneumatic driven electrodes for health monitoring <u>Martin Schubert</u> ¹ , Daniel Wedekind ² , Sebastian Zauneder ² , Sabine Friedrich ¹ , Hagen Malberg ² , Karlheinz Bock ¹ ¹ TU Dresden, Electronics Packaging Laboratory, Germany; ² TU Dresden, Institute of Biomedical Engineering, Germany |
| 11:40-12:00 | 112 | Impact of the combination of a stress buffer layer and a wafer level underfill on 3D IC assembly using thermal compression bonding <u>Fabrice F.C. Duval</u> , Teng Wang, Pieter Bex, C. Gerets, Melina Lofrano, Kenneth J. Rebibis, Erik Sleenckx, Eric Beyne Imec Leuven, Belgium |
| 11:40-12:00 | 128 | Optimized Adaptive Layout Technique for Hybrid System in Foil <u>Golzar Alavi</u> ¹ , Holger Sailer ² , Bjoern Albrecht ² , Christine Harendt ² , Joachim N. Burghartz ^{1,2} ¹ Institute for Nano and Microelectronic System, Stuttgart, Germany; ² Institute for Microelectronics, Stuttgart (IMS CHIPS), Stuttgart, Germany |
| 12:00-12:20 | 115 | Experimental LTCC platform for millimeter-wave applications Camilla R.G. Kärfelt ^{1,2} , <u>François Gallée</u> ^{1,2} , Vincent Castel ^{1,2} , Malika Tlili ¹ , Maïna Sinou ¹ , Pascal Coant ^{1,2} ¹ Institut Mines-Telecom/IMT Atlantique, France; ² Lab-STICC UMR CNRS 6285, France |
| 12:00-12:20 | 137 | Additive waveguide manufacturing for optical bus couplers by aerosol jet printing using conditioned flexible substrates Lukas Lorenz ¹ , <u>Krzysztof Niewegłowski</u> ¹ , Klaus-Jürgen Wolter ¹ , Gerd-Albert Hoffmann ² , Ludger Overmeyer ² , Thomas Reitberger ³ , Jörg Franke ³ , Karlheinz Bock ¹ ¹ Technische Universität Dresden, Germany; ² Leibniz Universität Hannover, Germany; ³ Friedrich Alexander Universität Erlangen-Nürnberg, Germany |
| 12:20-12:40 | 121 | Hot bar joining method for medical applications <u>David Wagner</u> , Kai Pitschmann, Ulrich Schumann, Sebastian Freidank, Bertram Schmidt, Markus Detert Otto-von-Guericke-Universität Magdeburg, Germany |
| 12:20-12:40 | 141 | Data and Power Distribution via Printed Electronics in Aerospace Applications <u>Daniel Gräf</u> ¹ , Nils Ischdonat ² , Martin Hedges ³ , Johannes Hörber ³ , Jörg Franke ¹ ¹ Friedrich-Alexander-University of Erlangen-Nuremberg, Germany; ² Fraunhofer Institute for Applied Polymer Research IAP, Germany; ³ Neotech AMT – Advanced Manufacturing Technologies, Germany |
| 12:40-13:00 | 124 | Fine Pitch High Bandwidth Flip Chip Package-on-Package Development <u>Ming-Che Hsieh</u> ¹ , Stanley Lin ² , Ian Hsu ² , Chi-Yuan Chen ² , NamJu Cho ³ ¹ STATS ChipPAC Pte. Ltd.; ² MediaTek, Inc.; ³ STATS ChipPAC Korea Ltd., Republic of Korea (South Korea) |
| 12:40-13:00 | 152 | Pads and microscale vias with aerosol jet printing technique <u>Jakub Krzemiński</u> ¹ , Akhil Kanthamneni ² , David Wagner ² , Markus Detert ² , Bertram Schmidt ² , Małgorzata Jakubowska ¹ ¹ Warsaw Univ. of Tech., Faculty Mechatronics, Poland; ² Otto-von-Guericke- Universität Magdeburg, Institut für Mikro- und Sensorsysteme, Germany |
| 13:00-14:00 | Lunch (Main Building – 206) | |

Agenda

| | | |
|-------------|---|--|
| 14:00-15:40 | Session 3: Materials and processes (Main Building – Minor Hall 237) Session chairs: Małgorzata Jakubowska (Warsaw Univ. of Technology, Poland) and Uwe Partsch (Fraunhofer IKTS, Dresden, Germany) | Session 4: Functional systems (actuators, sensors, photovoltaics and related) (Main Building – Senate Hall 124) Session chairs: Jerzy Potenci (Rzeszów Univ. of Technology, Poland) and Janusz Sitek (Tele and Radio Research Inst., Warsaw, Poland) |
| 14:00-14:20 | 105 The importance of shear thinning, thixotropic and viscoelastic properties of thick film pastes to predict effects on printing performance <u>Kathrin Reinhardt</u> , Nancy Hofmann, Markus Eberstein Fraunhofer IKTS, Dresden, Germany | 184 Flexible optical waveguide-based interconnects for electro-optical system integration <u>Krzysztof Niewegłowski</u> , Lukas Lorenz, Sebastian Lungen, Tobias Tiedje, Klaus-Jürgen Wolter, Karlheinz Bock Technische Universität Dresden, Germany |
| 14:20-14:40 | 114 Passive component development in LTCC <u>Camilla R.G. Kärfelt</u> ^{1,2} ¹ Institut Mines-Telecom/IMT Atlantique, France; ² Lab-STICC UMR CNRS 6285, France | 185 Temperature modulated semiconductor gas sensor under humidity interference <u>Łukasz Woźniak</u> , Paweł Kalinowski, Grzegorz Jasiński, Piotr Jasiński Gdansk University of Technology, Poland |
| 14:40-15:00 | 122 Evaluation of Piezoelectric Parameters of Several Commercial Thick Film Capacitor Dielectrics <u>Artem Ivanov</u> University of Applied Sciences Landshut, Germany | 196 Distribution of relaxation times as a method of separation and identification of complex processes measured by impedance spectroscopy <u>Justyna Bartoszek</u> ¹ , Jakub Karczewski ¹ , Aleksander Mroziński ¹ , Yi-Xin Liu, Sea-Fue Wang ² , Piotr Jasiński ¹ ¹ Gdansk University of Technology, Poland; ² National Taipei University of Technology, Taiwan, R.O.C. |
| 15:00-15:20 | 126 Thermal Peak Management using Organic Phase Change Materials for Latent Heat Storage in Electronic Applications <u>Jacob Maxa</u> , Andrej Novikov, Mathias Nowotnick Rostock University, Germany | 118 Signal analyses of airbag sensor by side impact <u>Yeong K. Kim</u> , Sojin Shin Inha University, Republic of Korea (South Korea) |
| 15:20-15:40 | 127 Solvent-free fluxing underfill film for electrical interconnection <u>Keon-Soo Jang</u> , Yong-Sung Eom, Kwang-Seong Choi, Hyun-Cheol Bae Electronics and Telecommunications Research Institute, Republic of Korea (South Korea) | 119 Reliability evaluation of solder joints in electronics assemblies <u>Enrico Galbiati</u> SEM Communication & GESTLABS, Italy |
| 15:40-16:10 | Coffee break (Main Hall) | |
| 16:10-17:30 | Session 5: Materials and processes (Main Building – Minor Hall 237) Session Chairs: Andrzej Dziedzic (Wrocław Univ. of Science and Technology, Poland) and Darko Belavic (Jozef Stefan Inst., Ljubljana, Slovenia) | Session 6: Modeling, design test & reliability (Main Building – Senate Hall 124) Session Chairs: Knut E. Aasmundtveit (Univ. College of Southeast Norway, Norway) and Krzysztof Górecki (Gdynia Maritime Univ., Poland) |
| 16:10-16:30 | 135 Residual Free Solder Processes for Fluxless Solder Pastes <u>Alexander Hanss</u> , Gordon Elger Technische Hochschule Ingolstadt, Germany | 113 The influence of humidity, temperature and electrical fields on the insulating properties of power electronics housing materials <u>Bianca Böttge</u> ¹ , Rico Bernhardt ¹ , Sandy Klengel ¹ , Sebastian Wells ² , Albert Claudi ² ¹ Fraunhofer IMMS, Halle, Germany; ² Univeristy of Kassel, Germany |
| 16:30-16:50 | 142 3D printed ceramic structures based on LTCC: Materials, Processes and Characterizations <u>Alexander Schulz</u> ¹ , Ourania Menti Goudouri ² , Wolfgang Kollenberg ² , Tilo Welker ¹ , Nam Gutzeit ¹ , Dieter Nikolay ² , Niklas Kemmling ² , Jens Müller ¹ ¹ TU Ilmenau, Germany; ² WZR Ceramic Solutions GmbH, Germany | 116 Investigation of the influence of voids on the reliability of LED solder joints by computer tomography and forward voltage measurements <u>Christian Schwarzer</u> ¹ , Dennis Fuchs ² , Miriam Rauer ² , Kurt-Juergen Lang ³ , Andreas Krügelstein ⁴ , Michael Kaloudis ² , Jörg Franke ⁴ ¹ Fraunhofer-Anwendungszentrum Ressourceneffizienz, Germany; ² Hochschule Aschaffenburg, Germany; ³ OSRAM OS GmbH, Germany; ⁴ Lehrstuhl für Fertigungsautomatisierung und Produktionssystematik, Germany |
| 16:50-17:10 | 144 Multilayer thick-film ceramic for MCM with laser microvias <u>Sebastian Löffler</u> , Nico Richter, Christopher Mauermann, Angela Rebs, Günter Reppe Cicor Advanced Microelectronics & Substrates - RHe Microsystems GmbH, Radeberg, Germany | 198 Advances in X-ray for Semicon Applications Keith Bryant, <u>Ragnar Vaga</u> YXLON International GmbH |
| 17:10-17:30 | 134 Technological Innovations for the Manufacturing of Multilayer Ceramic Micro-Electro-Mechanical-Systems <u>Steffen Ziesche</u> Fraunhofer IKTS, Dresden, Germany | 210 Gaze controlled prosthetic arm with EMG and EEG input interface <u>Tomasz Koceiko</u> Gdansk University of Technology, Poland |
| 17:30-18:30 | Exhibitors' session I (Main Building – Minor Hall 237) | |

| 17:30-19:00 | Poster Session 1 (Main Building – Main Hall) Session Chair: Nihal Sinnadurai (ATTAC, London, UK) | IMAPS Poland Poster Session 1 (Main Building – Main Hall) Session chair: Ryszard Kisiel (Warsaw Univ. of Techn., Poland) |
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| Each poster needs to be overviewed in 3 minutes presentation at the beginning of poster session. | 129 Time evolution of strain distribution during ultrasonic bonding of Cu wire: Impact of bonding temperature <u>Mamoru Sakamoto</u> , Kenichi Nakadozono, Keiichiro Iwanabe, Tanemasa Asano Kyushu University, Japan | i104 Influence of ammonium tungstate (NH ₄) ₂ WO ₄ additive in metallization baths on Ni-Cu-P resistive layer properties Zbigniew Prusowski ¹ , <u>Wojciech Filipowski</u> ¹ , Krzysztof Waczyński ¹ , Piotr Kowalik ¹ , Andrzej Czerwiński ² , Mariusz Pluska ² , Jan Kulawik ³ , Natalia Waczyńska-Niemiec ¹ ¹ Institute of Electronics, Silesian Univ. of Technology, Poland; ² Institute of Electron Technology, Warsaw, Poland; ³ Institute of Electron Technology, Kraków Division, Krakow, Poland |
| | 149 High-precision picosecond laser structuring on LTCC for silicon chip assembly with high electrical contact density <u>Nam Gutzeit</u> , Alexander Schulz, Tilo Welker, Christoph Wagner, Eric Schäfer, Jens Müller Technische Universität Ilmenau, Germany | i115 Measurements of transient thermal impedance of ferrite cores Kalina Detka, <u>Krzysztof Górecki</u> Gdynia Maritime University, Poland |
| | 151 Optical pressure sensors for harsh environment <u>Jakub Somer</u> , Frantisek Urban, Ivan Szendiuch Brno University of Technology, Czech Republic | i114 Non-linear compact thermal model of IGBTs Paweł Górecki, <u>Krzysztof Górecki</u> Gdynia Maritime University, Poland |
| | 130 Investigations of temperature resistance of memory BGA components during multi-reflow processes for Circular Economy applications <u>Janusz Sitek</u> ¹ , Marek Koscielski ¹ , Piotr Dawidowicz ² , Piotr Ciszewski ² , Maria Khramova ³ , Duc Nguyen Quang ³ , Sergio Martinez ³ ¹ Tele and Radio Research Institute, Poland; ² Semicon Sp. z o.o., Poland; ³ Blancco Technology Group IP Oy, Finland | i122 Parameters Estimation of SPICE Models for Silicon Carbide Devices <u>Damian Bisewski</u> Gdynia Maritime University, Poland |
| | 165 Influence of Heating Direction on BGA Solder Balls Structure <u>Alexandr Otáhal</u> , Jakub Somer, Ivan Szendiuch Brno University of Technology, Czech Republic | i110 The rheology of aqueous, graphene inks for ink-jet printing <u>Łucja Dybowska-Sarapuk</u> , Olga Świętoń, Jerzy Szałapak, Marcin Stoma, Daniel Janczak, Jakub Krzemiński, Małgorzata Jakubowska Warsaw University of Technology, Poland |
| | 106 Fabrication of dry-patching superhydrophobic flexible platform for HySiF (hybrid system in flexible) applications <u>Yongjin Kim</u> , Syed Asad Ali Zaidi, Jae Hak Lee, Seung Man Kim, Joon Yeob Song Korea Institute of Machinery and Materials, Republic of Korea (South Korea) | i137 Method and Laboratory Stand for Testing of RFID Systems in Static and Dynamic States <u>Jerzy Potencki</u> , Mariusz Skoczylas Department of Electronic and Telecommunications Systems, Rzeszow University Of Technology, Rzeszow, Poland |
| | 108 Low-temperature Sintering Behavior of Ternary Solder and Copper Powder for High-Power Device Packaging <u>Yong-Sung Eom</u> , Keon-Soo Jang, Ji-Hye Son, Hyun-Cheol Bae, Kwang-Seong Choi ETRI, Republic of Korea (South Korea) | i109 Modelling of Silicon Carbide JFET in SPICE <u>Kamil Bargieł</u> , Damian Bisewski Gdynia Maritime University, Poland |
| | 140 Enhanced Heat Spreading in LTCC Packages utilizing Thick Silver Tape in the Co-fire Process <u>Tilo Welker</u> , Nam Gutzeit, Jens Müller Technische Universität Ilmenau, Germany | i118 Application of RFID Technology in Navigation of Mobile Robot Marcin Konieczny ¹ , <u>Bartosz Pawłowicz</u> ² , Jerzy Potencki ² , Mariusz Skoczylas ² ¹ Faculty of Electrical and Computer Engineering, Rzeszow University of Technology, Rzeszow, Poland; ² Department of Electronic and Telecommunications Systems, Rzeszow University of Technology, Rzeszow, Poland |
| | 148 The Transmittance Properties of Optical Adhesives in Humid Environmental Aging <u>Sanna Lahokallio</u> , Janne Kiilunen, Laura Frisk Trelic Ltd, Finland | i112 Mathematical model of the process of creating film resistors with a Ni-P resistive layer <u>Piotr Kowalik</u> , Wojciech Filipowski, Zbigniew Prusowski Silesian University of Technology, Poland |
| | 172 High voltage WireLED powered directly by mains 230 Volts <u>Ait Mani Abdenacer</u> ¹ , Bouillard Boris ¹ , Gasse Adrien ¹ , Volpert Marion ¹ , Soulier Brigitte ¹ , Henry David ¹ , Vandeneynde Aurelie ¹ , Chambion Bertrand ¹ , Rueda Pamela ² , Mercier Frederic ² , Beix Vincent ² , Lacave Thomas ² ¹ CEA GRENOBLE, France; ² ALEDIA SAS, France | i116 Non-linear thermal model of a planar transformer <u>Krzysztof Górecki</u> , Krzysztof Górski Gdynia Maritime University, Poland |

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| Each poster needs to be overviewed in 3 minutes presentation at the beginning of poster session. | 180 Preforms based diffusion soldering process to be used under conventional soldering process conditions <u>Haneen Daoud</u> , Stephan Reichelt, Angela Loidolt Pfarr Stanztechnik GmbH, Germany | i134 Hydrogen Sensing Properties of SnO ₂ Nanocrystalline Thin Films Weronika Izydorczyk, Natalia Niemiec, <u>Krzysztof Waczyński</u> , Jerzy Uljanow Silesian University of Technology, Poland |
| | 199 Sintered Ag joints on copper lead frame TO-220 by pressure sintering process with improved reliability and bonding strength <u>Ly May Chew</u> , Wolfgang Schmitt, Jens Nachreiner, Daniel Schnee Heraeus Deutschland GmbH & Co. KG, Germany | i144 Analysis of propagation process of conductive electromagnetic disturbances in AC/DC low power converter Wiesław Sabat, <u>Dariusz Klepacki</u> , Kazimierz Kuryto, Kazimierz Kamuda Rzeszów University of Technology, Poland |
| | 209 Flexiramics: Flexible ceramics to tackle thermal management problems in electronics <u>Gerard Cadafalch</u> , Roger Brunet, Marcel ten Hove, Ruta Stankeviciute, Ties Lubbers Eurekite, Netherlands | i143 Mechanisms of radio-electric conductive disturbances on example of LED lamp Kazimierz Kuryto, Wiesław Sabat, <u>Dariusz Klepacki</u> , Kazimierz Kamuda Rzeszów University of Technology, Poland |
| | | i121 ISFET structures with chemically modified membrane for bovine serum albumin detection <u>Piotr Firek</u> ¹ , Michał Cichowski ² , Michał Waśkiewicz ¹ , Ireneusz Piwoński ² , Aneta Kisielewska ² ¹ Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Poland; ² Department of Materials Technology and Chemistry, Faculty of Chemistry, University of Lodz, Poland |
| | | i147 Long time stability of backlight lamps with nanostructural carbon field emission cathodes <u>Jerzy Kalenik</u> ¹ , Piotr Firek ¹ , Jan Szmud ¹ , Elżbieta Czerwos ² , Mirosław Kozłowski ² , Izabela Stępińska ² , Tomasz Wódka ² ¹ Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Warsaw, Poland; ² Tele and Radio Research Institute, Warsaw, Poland |
| | | i148 The influence of Al ₂ O ₃ thickness on antireflective and passivation properties of a photovoltaic structure <u>Barbara Swatowska</u> ¹ , Piotr Panek ² , Katarzyna Gawlińska ² , Rafał Pietruszka ³ ¹ AGH University of Science and Technology, Poland; ² Institute of Metallurgy and Material Science PAS, Poland; ³ Institute of Physics PAS, Poland |
| | | i117 Packing Density of Inkjet Printed Paths <u>Grzegorz Tomaszewski</u> , Jerzy Potencki, Tadeusz Watach Rzeszów University of Technology, Poland |
| 19:00-21:00 | Welcome reception (Main Building – Main Hall) | |

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Tuesday, 12 September 2017

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| 9:00-10:30 | Plenary session 2 (Main Building – Minor Hall 237) Session Chairs: Piotr Jasiński (Gdańsk University of Technology, Poland) and Nihal Sinnadurai (ATTAC, London, UK) | | |
| 9:00-9:45 | 203 Future of Embedding and Fanout Packaging Technologies <u>Rao Tummala</u> , Georgia Institute of Technology, United States of America | | |
| 9:45-10:30 | 204 Large scale sustainable production of graphene for real-life applications <u>Krzysztof Koziol</u> , University of Cambridge, United Kingdom | | |
| 10:30-11:00 | Coffee break (Main Hall) | | |
| 11:00-13:00 | Session 7: Materials and processes (Main Building – Minor Hall 237) Session Chairs: Achim Bittner (Hahn-Schickard, Germany) and Yves Ousten (IMS Bordeaux, France) | Session 8: Functional systems (actuators, sensors, photovoltaics and related) (Main Building – Senate Hall 124) Session Chairs: Rolf Aschenbrenner (Fraunhofer IZM, Berlin, Germany) and Matti Mantysalo (Tampere Univ. of Technology, Finland) | IMAPS Poland Oral Session 1 (Main Building – 123) Session Chairs: Jan Felba (Wrocław Univ. of Science and Technology, Poland) and Jarosław Kita (Univ. of Bayreuth, Germany) |
| 11:00-11:20 | 160 Development of Low-temperature Sintering Nano-silver Die Attach Materials for Bare Cu Application Akira Tsuno ¹ , S. Yagci ¹ , G. Kopp ¹ , <u>Koji Sasaki</u> ² , Noritsuka Mizumura ² ¹ Namics Europe GmbH, Germany; ² Namics Corporation, Japan | 117 Printed heater elements for smart sensor packages in LTCC <u>Heike Bartsch</u> ¹ , Artur Rydosz ² , Wojciech Maziarz ² , Tadeusz Pisarkiewicz ² , Dirk Stöpel ¹ , Jens Müller ¹ ¹ Technische Universität Ilmenau, Germany; ² AGH Univ. of Science and Technology, Poland | i101 Investigating the Attack Angle of Squeezes with Different Geometries <u>Oliver Krammer</u> , László Jakab, Balázs Illés Budapest University of Technology and Economics, Hungary |
| 11:20-11:40 | 161 Development of selective conformal coating process based on advanced packaging for harsh environments <u>Eric Cadalen</u> , Olivier Maire, David Manteigas MBDA, France | 132 LTCC-Based Micro Plasma Source for the Selective Treatment of Cell Cultures <u>Michael Fischer</u> ¹ , Mike Stubenrauch ¹ , Ady Naber ² , Nam Gutzeit ¹ , Maren Klett ¹ , Sukhdeep Singh ¹ , Andreas Schober ¹ , Hartmut Witte ¹ , Jens Müller ¹ ¹ Technische Universität Ilmenau, Germany; ² Karlsruher Institut für Technologie, Germany | i129 Influence of short voltage pulses on thick-film resistors at elevated temperature <u>Damian Nowak</u> , Konrad Idziorek Wrocław University of Science and Technology, Poland |
| 11:40-12:00 | 167 Are tin-rich solder alloys resistant to tin pest? <u>Agata Skwarek</u> ¹ , Piotr Zachariasz ¹ , Balázs Illés ² , Tomasz Czeppe ³ , Grzegorz Garzet ³ , Krzysztof Witek ¹ ¹ Institute of Electron Technology, Krakow, Poland; ² Budapest University of Technology and Economics, Department of Electronics Technology, Hungary; ³ Institute of Metallurgy and Materials Science, PAS, Krakow, Poland | 136 LTCC Technology for Active Eddy Current Turbocharger Speed Sensors <u>Martin Ihle</u> ¹ , Steffen Ziesche ¹ , Paul Gierth ¹ , Andreas Tuor ² , Jonathan Tigelaar ² , Oliver Hirsch ² ¹ Fraunhofer IKTS, Germany; ² JAQUET Technology Group AG / TE Connectivity, Basel, Switzerland | i135 Resistance Development on Embedded Heating Layers during Climatic Test <u>Dirk Seehase</u> , Andrej Novikov, Mathias Nowottnick Institute of Electronic Appliances and Circuits, Faculty of Computer Science and Electrical Engineering/University of Rostock, Rostock, Germany |
| 12:00-12:20 | 169 Acceleration Measurements during Reactive Bonding Processes <u>Irina Spies</u> ¹ , Axel Schumacher ¹ , Stephan Knappmann ¹ , Bastian Rheingans ² , Jolanta Janczak-Rusch ² , Lars P.H. Jeurgens ² ¹ Hahn-Schickard, Villingen-Schwenningen, Germany; ² EMPA, Dübendorf, Switzerland | 168 Influence of various micro channels integrated in LTCC multilayer module on the thermal resistance <u>Tomas Girasek</u> ¹ , Alena Pietrikova ¹ , Tilo Welker ² , Jens Muller ² ¹ Technical University of Kosice, Slovak Republic; ² Ilmenau University of Ilmenau, Germany | i136 Depositing of conductive silver nanoparticles layer on cellulose fibers <u>Olga Rac-Rumijowska</u> ¹ , Marta Fiedot ¹ , Patrycja Suchorska-Woźniak ¹ , Iwona Karbownik ² , Helena Teterycz ¹ ¹ Wrocław University of Science and Technology, Poland; ² Faculty of Material Technologies and Textile Design, Technical University of Łódź, Łódź, Poland |
| 12:20-12:40 | 147 Low temperature sintering of silver micro-particles induced by organic accelerators in epoxy-based binders <u>Masahiro Inoue</u> , Masaki Iida, Yoshiaki Sakaniwa Gunma University, Japan | 175 Basic microfluidic elements in the LTCC structures <u>Darko Belavic</u> ^{1,2,3} , Andraž Bradeško ^{2,5} , Kostja Makarovič ^{2,3,4} , Marjan Hodnik ¹ , Hana Uršič ² ¹ HIPOT-RR c/o Jožef Stefan Institute, Slovenia; ² Jožef Stefan Institute, Slovenia; ³ Centre of Excellence NAMASTE, Slovenia; ⁴ KEKO Equipment, Slovenia; ⁵ Jožef Stefan International Postgraduate School, Slovenia | i102 Effect of the Vapour Concentration Decrease on the Solder Joints Temperature in a Vacuum Vapour Phase Soldering System <u>Balázs Illés</u> ¹ , Agata Skwarek ² , Attila Géczy ¹ , László Jakab ¹ ¹ Budapest University of Technology and Economics, Hungary; ² Department of Microelectronics, Institute of Electron Technology, Krakow, Poland |

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| 12:40-13:00 | 159 Solderability and Reliability Evolution of No-Clean Solder Fluxes <u>Jonathan Cetier</u> Inventec Performance Chemicals, France | 190 Comparison of an electronic noses based on the semiconducting and electrochemical gas sensors performance for an analysis of toxic gas concentration <u>Grzegorz Jasiński</u> , Paweł Kalinowski, Łukasz Woźniak, Piotr Jasiński Gdańsk University of Technology, Poland | i128 Borosilicate spray-on glass solutions for fabrication silicon solar cell back surface field <u>Wojciech Filipowski</u> ¹ , Kazimierz Drabczyk ² , Edyta Wróbel ¹ , Krzysztof Waczyński ¹ , Piotr Sobik ³ , Natalia Waczyńska-Niemiec ¹ ¹ Silesian University of Technology, Poland; ² Institute of Metallurgy and Materials Science, Krakow, Poland; ³ Helioenergia sp. z o.o., Czerwonka-Leszczyny, Poland |
| 13:00-14:00 | Lunch (Main Building – 206) | | |
| 14:00-15:40 | Session 9: Advanced packaging and interconnects (Main Building – Minor Hall 237) Session Chairs: Johann Nicolics (Vienna Univ. of Technology, Austria) and Klaus Juergen Wolter (TU Dresden, Germany) | Session 10: Modeling, design test & reliability (Main Building – Senate Hall 124) Session Chairs: Luigi Calligarich (Electron-Mec Srl., Italy) and Rainer Dudek (Fraunhofer ENAS, Chemnitz, Germany) | IMAPS Poland Oral Session 2 (Main Building – 123) Sessions chairs: Dariusz Klepacki (Rzeszów Univ. of Technology, Poland) and Piotr Markowski (Wrocław Univ. of Science and Technology, Poland) |
| 14:00-14:20 | 125 Newly Developed High Reliability Palladium Coated Cu Wire for Automotive Application <u>Motoki Eto</u> ¹ , Teruo Haibara ¹ , Ryo Oishi ¹ , Takashi Yamada ¹ , Tomohiro Uno ² , Tetsuya Oyamada ² ¹ Nippon Micrometal Corporation; ² Nippon Steel & Sumitomo Metal Corporation, Japan | 183 Modelling the 3D-Printing Process for Electronic Packaging <u>Chris Bailey</u> , Stoyan Stoyanov, Tim Tilford University of Greenwich, United Kingdom | i140 The sintering of nanosilver particles – the low-temperature joining technique for electronic packaging <u>Jan Felba</u> Wrocław University of Science and Technology, Poland |
| 14:20-14:40 | 143 In-line Metrology for Cu Pillar Applications in Interposer based Packages for 2.5D Integration Iuliana Panchenko ^{1,2} , Martin Kunz ³ , <u>Lothar Lehmann</u> ⁴ , Tanya Atanasova ⁴ , Mathias Boettcher ² , Marcel Wieland ⁴ , Juergen M. Wolf ² ¹ Institute of Electronic Packaging Technology, TU Dresden, Dresden, Germany; ² Fraunhofer Institute for Reliability and Microintegration IZM, ASSID, Moritzburg, Germany; ³ NanoFocus AG, Oberhausen, Germany; ⁴ Globalfoundries, Dresden, Germany | 138 A new method for prediction of corrosion processes in aluminum housing materials for electronic components <u>Sandy Klengel</u> , Tino Stephan, Bolko Mühs-Portius Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Germany | i113 Aerosol Deposition Method vs. Screen-Printing Technique – Novel Manufacturing Process for NTCR Thermistor Devices Michaela Bruckner ¹ , <u>Jaroslav Kita</u> ¹ , Christian Muench ² , Ralf Moos ¹ ¹ Functional Materials, University of Bayreuth, Germany; ² Vishay Electronic GmbH, Selb, Germany |
| 14:40-15:00 | 145 Flip-chip bonding: how to meet the high accuracy requirements? <u>Caroline Avrillier</u> , Pascal Metzger SET, France | 150 Comparative FEM thermo-mechanical simulations for built-in reliability: surface mounted technology versus embedded technology for silicon dies <u>Mickaël Balmont</u> , Isabelle Bord-Majek, Yves Ousten IMS Bordeaux, France | i125 Thermal stability analysis of passive devices embedded into printed circuit boards <u>Wojciech Steplewski</u> ¹ , Andrzej Dziedzic ² , Kamil Janeczek ¹ , Aneta Araźna ¹ , Krzysztof Lipiec ¹ , Janusz Borecki ¹ , Tomasz Serzysko ¹ ¹ Tele and Radio Research Institute, Poland; ² Wrocław University of Science and Technology, Faculty of Microsystem Electronics and Photonics, Poland |
| 15:00-15:20 | 146 High Efficient Mid Power Modules by Next Generation Chip Embedding Technology <u>Kay Stefan Essig</u> ¹ , C.T Chiu ² , Jarris Kuo ² , Phidia Chen ² , Jean-Marc Yaonnou ¹ ¹ ASE (Europe) Inc. Belgium; ² ASE Group, Taiwan | 177 Pulse stability of low ohmic thick-film resistors <u>Arkadiusz Dąbrowski</u> , Andrzej Dziedzic, Jakub Czarachowicz Wrocław University of Science and Technology, Poland | |

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| 15:20-15:40 | 153 Characterisation of Cu/Cu bonding using self-assembled monolayer as oxidation inhibitor <u>Maria Lykova</u> ¹ , Iuliana Panchenko ^{1,2} , Marion Geidel ³ , Johanna Reif ³ , Ulrich Künzelmann ³ , M. Jürgen Wolf ² , Klaus-Dieter Lang ⁴ ¹ Institute of Electronic Packaging Technology (IAVT), TU Dresden, Dresden, Germany; ² All Silicon System Integration Dresden (ASSID), Fraunhofer Institute for Reliability and Microintegration (IZM), Dresden, Germany; ³ Institute of Semiconductors and Microsystems (IHM), TU Dresden, Dresden, Germany; ⁴ Fraunhofer Institute for Reliability and Microintegration (IZM), Berlin, Germany | 131 Reliability of Embedded Wafer Level Ball Grid Arrays in Automotive Applications <u>Michael Novak</u> ¹ , Wolfgang Gröbl ¹ , Bernhard Schuch ¹ , Peter Ossimitz ² ¹ Continental, Germany; ² Infineon Technologies AG, Germany | |
| 15:40-16:10 | Coffee break (Main Hall) | | |
| 16:10-17:30 | Session 11: Advanced packaging and interconnects (Main Building – Minor Hall 237) Session Chairs: Eric Beyne (IMEC Leuven, Belgium) and Martin Schneider-Ramelow (Fraunhofer IZM, Berlin, Germany) | Session 12: Electronics components assembly and PCB solutions (Main Building – Senate Hall 124) Session Chairs: Alena Pietrikova (Technical Univ. Kosice, Slovakia) and Thomas Zerna (TU Dresden, Germany) | |
| 16:10-16:30 | 154 Comparison of Microvia HDI PCBs with ACF interconnections in accelerated life testing <u>Laura Frisk</u> , Sanna Lahokallio, Janne Kiilunen Trelis Ltd, Finland | 103 Embedded mini Heat Pipes as Thermal Solution for PCBs <u>Jonathan Silvano de Sousa</u> ¹ , Paul Fulmek ² , Michael Unger ² , Peter Haumer ² , Johann Nicolics ² ¹ AT&S AG, Austria; ² Vienna University of Technology (TU Wien), Austria | |
| 16:30-16:50 | 164 In-Bi Low-Temperature SLID Bonding for piezoelectric materials <u>Knut E Aasmundtveit</u> ¹ , Trym Eggen ^{1,2} , Tung Manh ¹ , Hoang-Vu Nguyen ¹ ¹ University College of Southeast Norway, Norway; ² GE Vingmed Ultrasound, Norway | 166 Embedding technologies for heterogeneous integration of components in PCBs - an innovative modularisation approach with environmental impact <u>Dionysios Manassis</u> ¹ , Jakub Pawlikowski ¹ , Andreas Ostmann ¹ , Karsten Schischke ¹ , Thomas Krivec ² , Gerhard Podhradsky ³ , Rolf Aschenbrenner ¹ , Martin Ramelow-Schneider ¹ , K-D. Lang ⁴ ¹ Fraunhofer IZM Berlin, Germany; ² AT&S AG, Leoben, Austria; ³ SPEECH, Speech Processing Solutions GmbH, Vienna, Austria; ⁴ Technical University of Berlin, Berlin, Germany | |
| 16:50-17:10 | 176 Liquid Solid Diffusion (LSD) Bonding – A novel joining technology <u>Andreas Larsson</u> ^{1,2} , Torleif A Tollefsen ³ , Ole Martin Løvvik ⁴ , Knut E. Aasmundtveit ² ¹ TECHNI AS, Norway; ² University College of Southeast Norway, Norway; ³ TEGma AS, Norway; ⁴ SINTEF Materials and Chemistry, Norway | 156 The Mechanical Strength of Microvias in Reflow Cycling and Environmental Aging Janne Kiilunen, <u>Laura Frisk</u> Trelis Ltd, Finland | |
| 17:10-17:30 | 192 Polyimide Foil Flip-Chip Direct Bonding <u>Martin Deckert</u> ¹ , Michael Thomas Lippert ² , Jakub Krzemiński ³ , Kentaroh Takagaki ² , Frank W. Ohl ² , Bertram Schmidt ¹ ¹ Otto von Guericke University Magdeburg, Germany; ² Leibniz Institute for Neurobiology, Magdeburg, Germany; ³ Warsaw University of Technology, Poland | 212 BAMFIT – Accelerated Lifetime Tests for Heavy Wire Bonds <u>Josef Sedlmair</u> ¹ , Golta Khatibi ² , Bernhard Czerny ² ¹ F&S Bondtec Semiconductor GmbH, Austria; ² Technical University Vienna, Austria | |
| 17:30-18:30 | Exhibitors' session II (Main Building – Minor Hall 237) | | |



| 17:30-19:00 | Poster Session 2 (Main Building – Main Hall) Session Chairs: Paul Collander (Poltronic, Espoo, Finland) | IMAPS Poland Poster Session 2 (Main Building – Main Hall) Session chair: Leszek Golonka (Wrocław Univ. of Science and Technology, Poland) |
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| Each poster needs to be overviewed in 3 minutes presentation at the beginning of poster session. | 104 Development of PEB Face-Down Interconnection Process for Ultra Thin Flexible Package <u>Jae Hak Lee</u> , Chung Woo Lee, Yong Jin Kim, Seung Man Kim, Jun-Yeob Song Korea Institute of Machinery and Materials, Republic of Korea (South Korea) | i132 Non-enzymatic glucose sensor based on poly(3,4-ethylenedioxythiophene) decorated with Cu nanoparticles <u>Aleksander Mroziński</u> , Karolina Cysewska, Justyna Bartoszek, Piotr Jasiński Gdańsk University of Technology, Faculty of Electronics Telecommunications and Informatics, Poland |
| | 158 Integration of Screen-Printed Electroluminescent Matrix Displays in Smart Textile Items – Implementation and Evaluation <u>Artem Ivanov</u> , Maximilian Wurzer University of Applied Sciences Landshut, Germany | i103 Effects of high current load on lead-free solder joints of small scale passive SMD components <u>Attila Géczy</u> ¹ , Dániel Straubinger ¹ , Olivér Krammer ¹ , András Kovács ¹ , David Busek ² , Gábor Harsányi ¹ ¹ Budapest University of Technology and Economics, Hungary; ² Czech Technical University in Prague, Faculty of Electrical Engineering, Czech Republic |
| | 155 Physical reliability of textile electronics <u>Hartmann Hieber</u> ICR, Germany | i100 Novel Oxidoreductase-based Sensor for Optical Neurotransmitters Detection <u>Sylwia Baluta</u> , Joanna Cabaj, Karol Malecha Wrocław University of Science and Technology, Poland |
| | 157 High speed interfaces for chip to chip communication on interposer based integration Muhammad Waqas Chaudhary, <u>Andy Heinig</u> Fraunhofer IIS/EAS, Germany | i130 The influence of corner bonding and underfilling techniques on the reliability of 3D TMV PoP structures in SMT assembly <u>Marek Kościelski</u> , Janusz Sitek, Janusz Borecki, Tomasz Serzysko Tele and Radio Reserch Institute, Poland |
| | 170 Image approximation using B-Spline surfaces Zbigniew Suszyński, <u>Robert Świta</u> Koszalin Technical University, Poland | i107 The Materials and Technology Parameters Influenced on the Mechanical Properties of Low Temperature Sintered Silver Joints <u>Krzysztof Jakub Stojek</u> ¹ , Jan Felba ¹ , Tomasz Fałat ¹ , Andrzej Mościcki ² ¹ Wrocław University of Science and Technology, Poland; ² Amepox Microelectronics LTD, Łódź, Poland |
| | 173 Modelling power LEDs in the COB case with thermal phenomena taken into account <u>Krzysztof Górecki</u> , Przemysław Ptak Gdynia Maritime University, Poland | i131 Quality assessment and failures analysis in assembled printed circuit boards <u>Wojciech Steplewski</u> , Kamil Janeczek, Aneta Araźna, Krzysztof Lipiec Tele and Radio Research Institute, Poland |
| | 187 Capacitive touch sensor <u>Samuel Zuk</u> , Alena Pietrikova, Igor Vehec Department of Technologies in Electronics, Technical University of Kosice, Slovak Republic | i111 Measurements and Simulations of Silicon Carbide Current-Controlled Transistors <u>Joanna Patrzyk</u> , Damian Bisewski Gdynia Maritime University, Poland |
| | 178 Ceramic packaging of PiezoMEMS devices <u>Darko Belavic</u> ^{1,2,3} , Katarina Vojisavljevic ² , Danjela Kušcer ² , Tanja Pečnik ² , Jerzy Zając ⁴ , Adrian Anghelescu ⁵ , George Muscalu ⁵ , Marjan Hodnik ¹ , Tomaž Kos ² , Silvio Drnovšek ² , Barbara Malič ² ¹ HIPOT-RR c/o Jožef Stefan Institute, Slovenia; ² Jožef Stefan Institute, Slovenia; ³ Centre of Excellence NAMASTE, Slovenia; ⁴ Institute of Electron Technology, Poland; ⁵ National Inst. for R&D in Microtechnologies, Bucharest, Romania | i108 The influence of a soldering manner on thermal properties of LED modules <u>Krzysztof Górecki</u> ¹ , Barbara Dziurdzia ² , Przemysław Ptak ¹ ¹ Gdynia Maritime University, Poland; ² University of Science and Technology, Kraków |
| | 179 Thick film resistive sensors based on Pr _{0.9} Sr _{0.1} CoO _{3-δ} and Sm _{0.9} Sr _{0.1} CoO _{3-δ} cobaltites for carbon monoxide and nitric oxide detection <u>Piotr Zachariasz</u> , Katarina Cvejic, Dorota Szwagierczak, Agata Stoch Institute of Electron Technology, Poland | i133 Temperature Transducer with Frequency Output made in LTCC Technology Witold Malikowski ² , Jerzy Potencki ¹ , <u>Grzegorz Tomaszewski</u> ¹ , Tadeusz Wałach ¹ ¹ Rzeszów University of Technology, Poland; ² Faculty of Electrical and Computer Engineering, Poland |
| | 186 Time window based features extraction from temperature modulated gas sensors for prediction of ammonia concentration <u>Paweł Jan Kalinowski</u> , Łukasz Rafał Woźniak, Grzegorz Paweł Jasiński, Piotr Zbigniew Jasiński Gdańsk University of Technology, Poland | i138 Au wire and ribbon thermosonic bonding for high temperature applications <u>Marcin Myśliwiec</u> ^{1,2} , Ryszard Kisiel ¹ ¹ Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Poland; ² Central Laboratory of CEZAMAT, Warsaw University of Technology, Poland |

Agenda

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| Each poster needs to be overviewed in 3 minutes presentation at the beginning of poster session. | 191 Influence of operation temperature instability on gas sensor performance <u>Grzegorz Jasiński</u> Gdańsk University of Technology, Poland | i141 Dielectric characterization of selected LTCC materials for microwave applications <u>Laura Jasińska</u> , Jan Macioszczyk, Piotr Słobodzian, Karol Malecha Wrocław University of Science and Technology, Poland |
| | 213 Laserbonding: Combining wire bonding and laser welding <u>Josef Sedlmair</u> ¹ , Benjamin Mehlmann ¹ , Alexander Olowinsky ² ¹ F&K Delvotec Bondtechnik GmbH, Germany; ² Fraunhofer-Institut für Lasertechnik, Aachen, Germany | i126 Electrodeposition of copper on screen printed fine line front electrodes of solar cells <u>Kazimierz Drabczyk</u> ¹ , Bigos Agnieszka ¹ , Skwarek Agata ² , Sobik Piotr ³ ¹ Institute of Metallurgy and Materials Science of PAS, Poland; ² Institute of Electron Technology, Krakow, Poland; ³ Helioenergia sp. z o.o., Czerwionka-Leszczyny, Poland |
| | | i120 Application of microwave heating in ceramic-based microfluidic module <u>Karol Malecha</u> ¹ , Jan Macioszczyk ¹ , Piotr Słobodzian ² , Jacek Sobków ¹ ¹ Faculty of Microsystem Electronics and Photonics, Wrocław University of Science and Technology, Poland; ² Faculty of Electronics, Wrocław University of Science and Technology, Poland |
| | | i124 Reliability studies of InnoLot and SnBi joints soldered on DBC substrate <u>Agata Skwarek</u> ¹ , Balázs Illés ² , Krzysztof Witek ¹ , Sebastian Wroński ³ , Tamás Hurtony ² , Beata Synkiewicz Synkiewicz ¹ ¹ Institute of Electron Technology, Poland; ² Budapest University of Technology and Economics, Hungary; ³ AGH University of Science and Technology, Poland |
| | | i142 Convection vs vapour phase reflow in LED assembly <u>Barbara Dziurdzia</u> ¹ , Maciej Sobolewski ² , Janusz Mikołajek ³ ¹ AGH University of Science and Technology, Poland; ² Fideltronik SA; ³ Fideltronik Poland Ltd, Poland |
| | | i145 Influence of platinum as a dopant in resistive gas sensor <u>Marta Fiedot</u> , Patrycja Suchorska-Woźniak, Olga Rac-Rumijowska, Andrzej Stafniak, Helena Teterycz Wrocław University of Science and Technology, Poland |
| | | i123 Implementation of alternative fabrication routes for developing vertical stacked All-inkjet-printed Thin Film-transistors suitable for flexible electronic applications Kalyan Yoti Mitra, <u>Sunil Kapadia</u> , V.A. Gopi Dinesh Challa, Reinhard R. Baumann Technical University of Chemnitz, Germany |
| 19:00-22:30 | Gala Dinner (Faculty of Physics - Main Hall) | |

Wednesday, 13 September 2017

| | | | |
|-------------|--|---|---|
| 9:00-9:45 | Plenary session 3 (Main Building – Minor Hall 237) Session Chair: Jerzy Potencki (Rzeszów University of Technology, Rzeszów, Poland) | | |
| 9:00-9:45 | Developing Damage Models for Solder Joints Exposed to Complex Stress States: Influence of Potting, Coating, BGA Mirroring, and Housing on Solder Joint Fatigue <u>Craig Hillman</u> , DfR Solutions, United States of America | | |
| 9:45-10:15 | Coffee break (Main Hall) | | |
| 10:15-12:15 | Session 13: Materials and processes (Main Building – Minor Hall 237) Session Chairs: Jens Mueller (TU Ilmenau, Germany) and Marcin Słoma (Warsaw Univ. of Technology, Poland) | Session 14: Modeling, design test & reliability (Main Building – Senate Hall 124) Session Chairs: Chris Bailey (University of Greenwich, UK) and Piotr Jasiński (Gdańsk Univ. of Technology, Poland) | IMAPS Poland Oral Session 3 (Main Building – 123) Sessions Chairs: Jerzy Potencki (Rzeszów Univ. of Technology, Poland) and Piotr Firek (Warsaw Univ. of Technology, Poland) |
| 10:15-10:35 | 181 Effect of bonding conditions on shear strength of joints at 200 °C using Sn-coated Cu particle <u>Hiroshi Nishikawa</u> , Xiangdong Liu Osaka University, Japan | 163 A novel experimental approach to calibrating cohesive zone elements for advanced risk analysis of interface delamination in semiconductor packages <u>Georg M. Reuther</u> ¹ , <u>Nadine Pflügler</u> ¹ , <u>Dominik Udiljak</u> ¹ , <u>Reinhard Pufall</u> ¹ , <u>Bernhard Wunderle</u> ² ¹ Infineon Technologies AG, Germany; ² Technische Univ. Chemnitz, Germany | i106 Reliability of Cu-based interconnections for Power Devices <u>Marek Guziejewicz</u> ¹ , <u>Karolina Pagowska</u> ¹ , <u>Adam Laszcz</u> ¹ , <u>Marcin Mysliwiec</u> ² ¹ Institute of Electron Technology, Warsaw; ² Laboratory of CEZAMAT and Institute of Microelectronics and Optoelectronics, Warsaw University of Technology, Poland |
| 10:35-10:55 | 193 Mechanical properties and life time of high Pb-containing solder joints <u>Golta Khatibi</u> , <u>Agnieszka Betzwar Kotas</u> TU Wien, Austria | 171 A Combined Simulation and Optical Measurement Technique for Investigation of System Effects on Components Solder Fatigue <u>Rainer Dudek</u> ¹ , <u>M. Hildebrand</u> ¹ , <u>S. Rzepka</u> ¹ , <u>Th. Fries</u> ² , <u>R. Döring</u> ³ , <u>B. Seiler</u> ³ , <u>A. Gerl</u> ⁴ , <u>R.W. Ortmann</u> ⁵ ¹ Fraunhofer ENAS, Germany; ² FRT GmbH Bergisch-Gladbach, Germany; ³ CWM GmbH, Chemnitz, Germany; ⁴ Continental, Nuremberg, Germany; ⁵ Continental Automotive France, Toulouse, France | i139 High voltage applications of Low Temperature Co-fired Ceramics <u>Arkadiusz Dabrowski</u> ¹ , <u>Przemysław Rydygier</u> ² , <u>Mateusz Czok</u> ¹ , <u>Leszek Golonka</u> ¹ ¹ Wrocław University of Science and Technology, Poland; ² ABB Corporate Research Centre Krakow, Poland |
| 10:55-11:15 | 194 Low Temperature Co-fired Ceramics: Physical and Electrical Properties as a Function of Firing Temperature. <u>Jim Walker</u> , <u>Jim Henry</u> , <u>Ed Graddy</u> , <u>Barbara Adrian</u> Ferro GmbH, Hanau, Germany | 174 Influence of thermal phenomena on characteristics of components of the IGBT module <u>Paweł Górecki</u> , <u>Krzysztof Górecki</u> Gdynia Maritime University, Poland | i119 PDMS – LTCC Lab on Chip for Photocatalytic Effect Analysis <u>Witold Nawrot</u> , <u>Marta Fiedot</u> , <u>Karol Malecha</u> Faculty of Microsystem Electronics and Photonics, Wrocław University of Science and Technology, Poland |
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| 11:35-11:55 | 200 Silver sinter paste for SiC bonding with improved mechanical properties <u>Wolfgang Schmitt</u> , <u>Ly May Chew</u> , <u>Daniel Schnee</u> Heraeus Deutschland GmbH & Co. KG, Hanau, Germany | 197 A delamination study on metallization stacks of power semiconductors <u>Thomas Walter</u> , <u>Golta Khatibi</u> Christian Doppler Laboratory for Lifetime and Reliability of Interfaces in Complex Multi-Material Electronics, CTA, TU Vienna, Austria | i146 LTCC-based Temperature Difference Sensor <u>Piotr Markowski</u> Wrocław University of Science and Technology, Poland |
| 11:55-12:15 | 189 Benchmark Study of Screen Printable Silver Inks on a PPE Based Substrate <u>Riikka Maria Mikkonen</u> , <u>Matti Mäntysalo</u> Tampere University of Technology, Finland | 188 Crystal plasticity modeling of the heat affected zone of copper micro-wires <u>Ali Mazloum-Nejadari</u> ^{1,2} , <u>Martin Lederer</u> ³ , <u>Golta Khatibi</u> ³ , <u>Johann Nicolics</u> ² ¹ Infineon AG, Neubiberg, Germany; ² Institute of Sensor and Actuator Systems, TU Wien, Austria; ³ Christian Doppler Laboratory for Lifetime and Reliability of Interfaces in Complex Multi-Material Electronic, CTA, TU Wien, Austria | |
| 12:15-12:45 | Closing session - Awards - Advance information on ESTC 2018 and EMPC 2019 (Main Building – Minor Hall 237) Sessions chairs: Małgorzata Jakubowska (Warsaw University of Technology, Poland), Karlheinz Bock (TU Dresden, Germany) and Luigi Calligaris (Electron-Mec Srl., Italy) | | |
| 12:45-13:30 | Lunch (Main Building – 206) | | |
| 13:45-15:00 | General Assembly Meeting of IMAPS Poland (Main Building – 123) | | |

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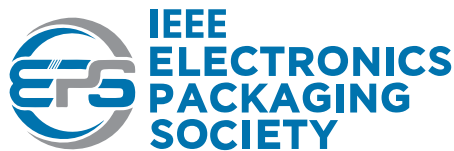
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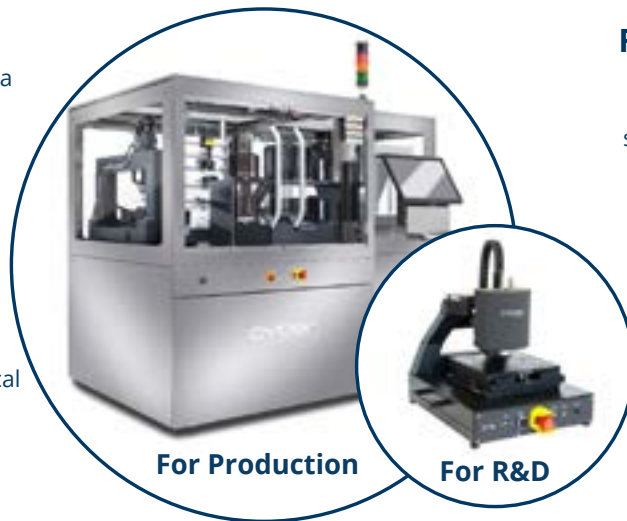
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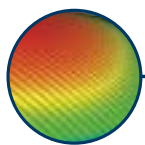
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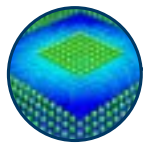
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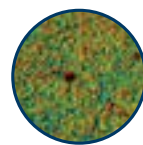
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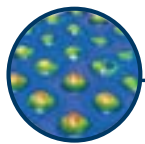
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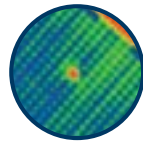
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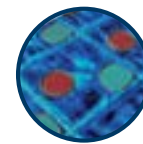
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Ferro provides a full range of thick-film packaging materials, thick-film component materials and glass powders such as thick-film paste conductors, dielectrics and resistors (also known as thick-film inks, paints or coatings), ceramic tape systems, and fired parts such as porous alumina and zirconia cover plates, solid oxide fuel cell substrates, multi-electrode arrays, and both anode-supported and electrolyte-supported fuel cells. These advanced materials find application in hybrid microcircuits and multilayer microelectronics, electronic components such as inductors, capacitors and transformers, heaters on steel or other substrates, plus low and high temperature co-fired ceramics (LTCC and HTCC).

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Haiku Tech helps manufacturers around the world capitalize on the evolving opportunities in multilayer ceramics and tape casting technology. We offer smart, cost-effective solutions to the manufacturing challenges in producing ceramic multilayer components. Our special areas of expertise include LTCC, MLCC, multilayer piezo-actuator and SOFC fuel cell manufacturing with laboratory and full-scale factory lines.



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Certifications in ISO 9001 and ISO 13485 are witnesses to our process excellence - as well as the numerous, successful customer audits.

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For further details visit www.microdul.com [1]

Microdul AG
Grubenstrasse 9
CH-8045 Zürich

Micross components

Micross Components, Inc. ("Micross") is the leading one-source, one-solution provider of Bare Die & Wafers, Advanced Interconnect Technology, Custom Packaging & Assembly, Component Modification Services, Electrical & Environmental Testing and Standard Products to manufacturers and users of semiconductor devices. In business for more than 35 years, our comprehensive array of high-reliability capabilities serve the global Defence, Space, Medical, Industrial and Fabless Semiconductor markets. Micross possesses the sourcing, packaging, assembly, test and logistics expertise needed to support an application throughout its entire program cycle.



Micro Systems Engineering (MSE)

Micro Systems Engineering (MSE) in Berg, Germany specializes in customized solutions for advanced microelectronics. After continuous growth over more than 30 years, the company is now among Europe's technological leaders in the field of LTCC and advanced assembly technologies.



LTCC standing for Low Temperature Co-fired Ceramics is a multilayer ceramic technology. The low sintering temperature allows the usage of noble high conductivity metals as silver and gold for high reliability applications and an excellent HF performance. The technology supports the embedding of resistors and capacitors contributing to further miniaturization, 3-dimensional structures like micro fluidic channels, cavities (stepped/circular), windows and thermal vias for thermal management. MSE's production capabilities include multilayer stack-ups of 20 layers and more, fine line patterning down to 30µm in selected areas and brazing of heat sinks, frames and nail head pins.

In addition to the extensive know-how in the field of ceramic multilayer, MSE's development and production capabilities for assembly and packaging cover the full portfolio from SMT assembly including flip chip and CSP over die attach and wire bonding to the finished module. MSE also offers transfer molded BGA packages including die stacking as well as very special, partially proprietary packaging technologies.

MSE covers the full range from design support over substrate manufacturing to advanced assembly and packaging out of one hand at the highest quality level, offering solutions for high frequency packages, sensors packages, multi-chip modules and high reliability substrates and modules in medical, avionic, space, radar and sensor applications.

MSE is an MST company.
www.mst.com/msegmbh

Namics

NAMICS Europe GmbH is a 100% subsidiary of Namics Corporation, Japan and acting as the sales organization for the EMEA region.

Namics Corporation, Japan located in the Niigata prefecture is a manufacturer of material formulations used in the micro-electronic and electronics industry.



The product portfolio comprises semiconductor packaging materials such as Dam & Fill Encapsulants, FlipChip and BGA/CSP Underfills and a variety of Die Attach Adhesives.

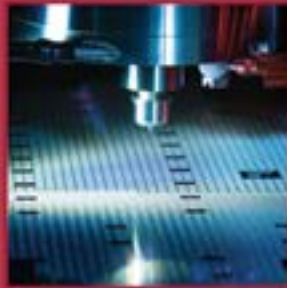
NAMICS is the world leading supplier of FlipChip Underfills and the prime supplier of Low Temperature, Pressureless Sintering Die Attach Adhesives.

In addition, Namics is well established as supplier for Passive Component materials such as Termination Pastes based on Silver-Glass and Epoxy-Silver.

Last but not least, NAMICS supplies major manufactures of crystalline and amorphous Solar Cells with Contacting Pastes.

Equipment Manufacturing & Subcontracting Services

Global Services for Quick-Turn & Mass Production

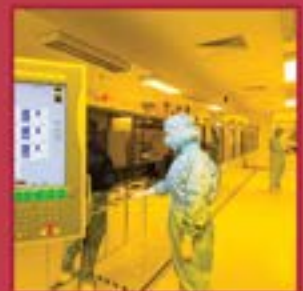


Advanced Packaging Equipment

- Laser Solder Jetting Systems „SB²“
- Wafer Level Solder Balling „Ultra-SB² 200/300“
- Wafer Level Rework „Ultra-SB² 200/300 WLR“
- Electroless Plating Line „PacLine 200/300 A50“
- Cantilever Bonding „LAPLACE-Can“
- Laser Flip Chip Bonding „LAPLACE-FC“
- Diode/LED Bonding „LAPLACE HT“
- Spin Coating „SpinPac ASC 200/300“

Wafer Backend Services

- Electroless NiAu & NiPdAu UBM
- Cu & Au Electroplating
- Wafer Backside Metallization
- Solder Ball Placement for BGA, LGA, cLCC, PCB, CSP, MEMS, Wafer Level etc.
- Solder Rework & Reballing
- Wafer Level Redistribution
- Wafer Thinning & Wafer Dicing










PacTech
member of nagase group

Need to find the right technology...
or new customers to your technology?

We bring people, companies and technologies together.

Topicals:

| | | |
|--|-------------|---|
| Atomic layer deposition (ALD) coatings for PCBA's and modules | Picosun Oy |  |
| Metal plating on glass, LCP, polymers. UV equipment and hermetic seals | KOTO |  |
| Management, planning and training for project and quality management | Mepromation |  |
| Proximal connectivity middleware and applications, MESH network | Terranet AB |  |
| Impedance analysis technology (Quadra), In-door positioning (Kio) | ELIKO |  |
| IoT and city lighting control system (SmartCity) | ELIKO |  |
| Equipment for production and quality assurance in microelectronics | Microtronic |  |



Services:

We offer help in novel technology and business development. Our main task is to find and connect people and organisations and assist them to collaborate in order to increase their business, to create new business, to create or enhance new technologies and even to create new companies.

We have experience both from OEM and subcontracting perspectives in electronics manufacturing, microelectronics packaging technology, printed circuit boards, modules and large systems. We are monitoring novel and emerging technologies and we have participated in many national and international development programmes in managerial and specialist roles.

We are active in organising international conferences, recruiting top speakers and sharing and gaining information through conference participating.



Operating world wide



Roots in the Nordic Countries

Safina

About us

SAFINA, a.s. has a long tradition in the complex processing and manufacture of products from precious and nonferrous metals. SAFINA is a company with significant influence and scope in the European, North American, and Asian markets.

Today Safina, a.s. acts on the international market under the brand Plaurum, which appearance is a result of joint efforts of two well-known manufacturers Safina a.s and its partner JSC EZOCCM, a.s., well-known in the precious metals industry for more than 100 years. Plaurum unites production sites and sales offices in 8 countries, the products of Plaurum group are delivered to the consumers in 44 countries suggesting innovative solutions for its customers.



Product lines

Dental materials, industrial applications, semi-finished jewellery products, sputtering targets, platinum, chemicals, jointing materials, nitric acid, recycling.

Mission

Mission of SAFINA is to develop new advanced technologies, materials and components based particularly on precious metals that can bring new results when applied in numerous industries where its products and technologies are used, mainly in precious metal refining and recycling, metallurgy, glass, electronic and semiconductor industries, healthcare and fast growing applications of advanced metal powders and materials for additive technologies.

SAFINA is striving for sustainable growth following main strategic goals in the fields of:

- acquiring sustainable and adequate sources of raw material and materials for recycling
- continuous development of new technologies in precious metal processing and advanced material production
- long-term and close relationship with our customers on development of custom made solutions in specific field of their businesses
- systematic training of our staff and building a knowledge base in specific areas of our business

www.safina.cz

Sentec

Sentec Electro Ceramic & Device Group offers various substrate and IC packaging solutions. Process Technologies were transferred from Panasonic since year 1999.



Main Product:

- High Accuracy Multi-Layer LTCC Substrate (X,Y \pm 0.05%)
- Non-Shrinkage Ceramic Interposer
- Cu Slug in Ceramic Substrate (>300W/m²k)
- Cavity Package (QFN, Custom Lead Frame)
- Direct Plating Technology on Al₂O₃ & AlN Substrate
- Hermetic Ceramic Package (10⁻⁸)
- Custom Thin/Thick Film Process Service
- Turnkey IC Packaging Service

SET

SET is a world leading supplier of High Accuracy Die-to-Die and Die-to-Wafer Flip-Chip Bonders. With more than 300 equipment installed worldwide, SET is globally renowned for the unsurpassed accuracy and the flexibility of its flip-chip bonders. The SET bonders adapt to all main bonding techniques: fluxless reflow, thermo-compression, adhesive joining compression, thermosonic... SET's newest generation of bonder, the ACC μ RA100, guarantees the highest bonding accuracy ($\pm 0.5 \mu\text{m}$) and quality for the most demanding applications: IR imagers, 3D IC with high density TSV, MEMS and optoelectronics applications.



Visit SET Website for more information: www.set-sas.fr

TechSearch International

About TechSearch International

TechSearch International, Inc. was founded in Austin, Texas, in 1987 by E. Jan Vardaman as a technology licensing and consulting firm specializing in the electronics industry.



We are recognized around the world as a leading consulting company in the field of advanced semiconductor packaging technology.

Our Mission

Provide tools that enable success:

- Authentic technical and economic analysis of market and technology trends in semiconductor packaging, assembly, and materials
- Frequent updates on the latest technology developments
- Strategic planning and execution assistance
- Technology licensing and connecting partners for joint development
- Authentic technical and economic analysis of market and technology trends in semiconductor packaging, assembly, and materials

Participate directly with client teams in providing an understanding of changes and drivers in the marketplace.

Provide competitive analysis of semiconductor packages, materials, equipment, and assembly marketplaces to aid new product introductions.

www.techsearchinc.com

Trelic Oy

Trelic Oy (Ltd) is a spin-off company from Tampere University of Technology, Finland. We provide consultation and experimental work on electronics materials, packaging technologies and reliability analysis. Additionally, we offer courses in several areas.



Trelic works in many industrial areas including consumer electronics, industrial electronics, medical electronics and power electronics. We have expertise for example in miniaturization, flip chip and flex on board technologies, sensor and RFID packaging technologies, and industrial electronics packaging. Additionally, we offer small scale production for challenging packaging technologies.

Material characterization and materials selection are key areas for us. These include for example various interconnection materials, such as lead-free solders and electrically conductive adhesives, and protective materials, such as coatings, glob tops and over molds. An important work area for Trelic is reliability analysis including reliability models, tailored accelerated life test methods and in-depth failure analysis. We have experience in development of new testing and characterization methods to assess reliability of a product.

Our main motivation is to help client companies to adapt old and new electronics packaging technologies and materials, and verify their usability and reliability with an agile one-stop-shop principle.

www.trelic.fi

YXLON International

YXLON International is the worldwide leading manufacturer and supplier of Industrial X-ray inspection systems and Industrial Computed Tomography (CT) systems.



We design and produce radiosopic and CT inspection systems for a broad variety of industrial applications and fields. Whether in the semiconductors or electronics industry, aviation and aerospace, automotive, our customers are among the largest manufacturers in the world – major enterprises that place their confidence in our outstanding quality.

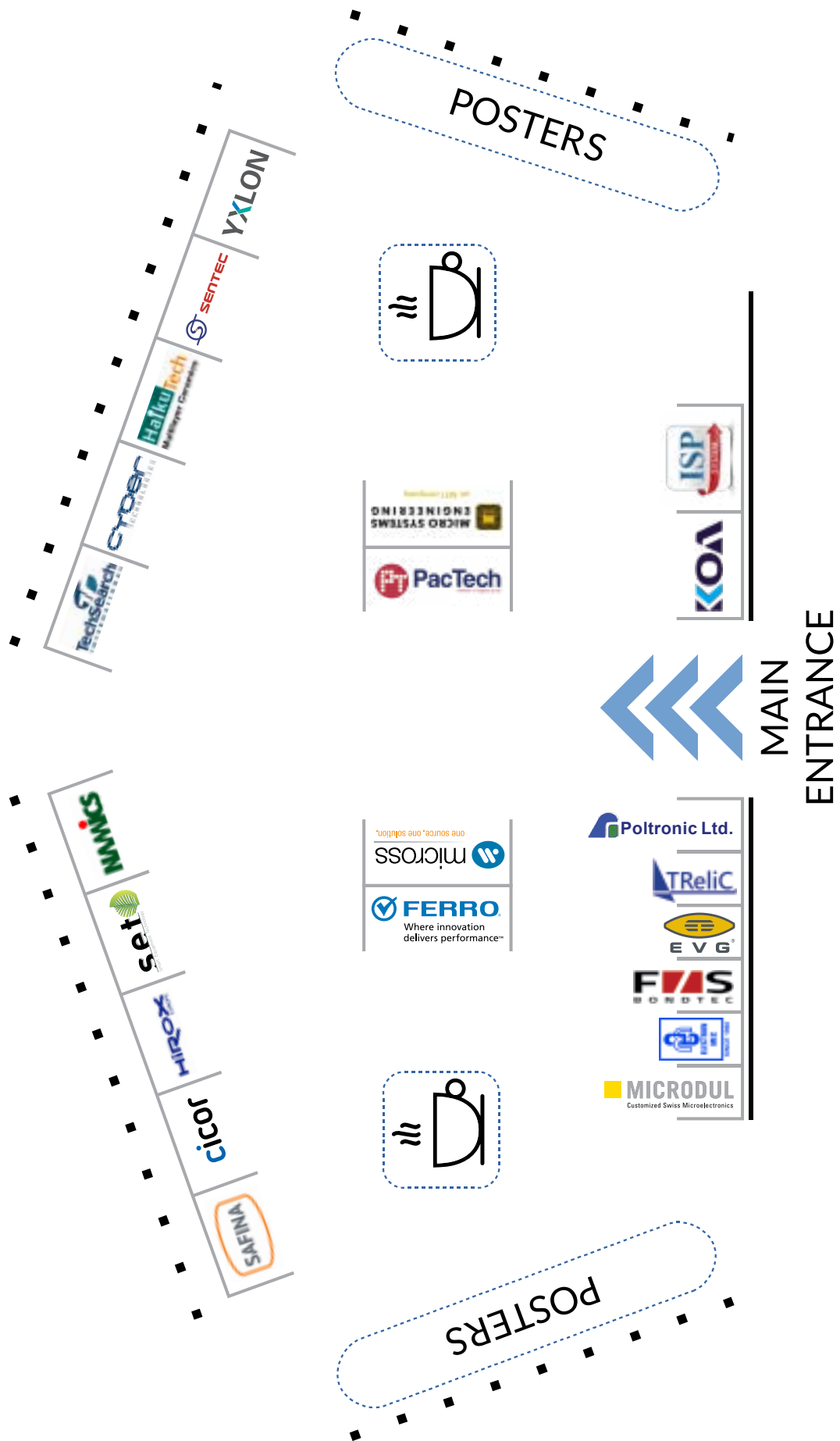
The name YXLON stands for quality assurance for all types of parts. Our product portfolio includes X-ray systems for installation in radiological inspection envelopes, universal X-ray inspection systems on the basis of fully shielded devices, as well as solutions specific to individual customers.

Computed tomography systems have been an integral part of our product portfolio since 2003. CT provides a three-dimensional insight into inspection items thus enabling the analysis of inner structures, dimensional measurement tasks in metrology applications, or actual-to-nominal comparisons to CAD data, to name a few. Besides delivering a more precise inspection evaluation (when compared with radiography), computed tomography also provides valuable information about the production process. Above and beyond such advantages, our micro- and nanofocus systems permit highly detailed views into the most intricate structures and tiniest components.

With headquarters in Hamburg, we have sales and service locations in Tokyo, Hudson (Ohio), San Jose (California), Beijing, Shanghai, Hattingen and Heilbronn, as well as a network of representatives in over 50 countries. At YXLON we are local for our customers all over the world.

www.yxlon.com

Floor plan of the exhibition hall



Next conferences



IEEE-EPS Electronics System-Integration Technology Conference is a premier venue for academics and industry to present and discuss the latest developments in assembly and interconnection technology and new applications.

WHERE?

Dresden, Germany
The Westin Bellevue Hotel

WHEN?

September 18th to 20th, 2018



For more information: www.estc-conference.net

EMPC 2019
Pisa, Italy
Sept 16-19
2019



22nd European Microelectronics and Packaging Conference & Exhibition

The aim of IMAPS is to take to Pisa, charming city in the famous Tuscany region, the best of Microelectronics and Packaging, thus offering a top quality coverage of technological innovation related to microelectronic packaging and Interconnection technologies.

WHERE

Pisa, Tuscany
Italy

WHEN

September
16-19, 2019



Secretariat: IMAPS Italy - info@imaps-italy.it / www.imaps-italy.it

Your personal notes pad

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EMPC 2017

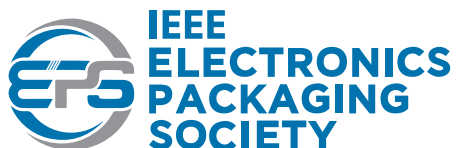
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