08:45 Opening- W. van Driel, D. Andersson, in Ballroom

Keynotes

Willem van Driel, Kouchi Zhang **Monday April 25 2022 09:00**

09:00 STMicroelectronics Malta journey to Advanced Manufacturing - **Laurent Filipozzi**, STMicroelectronics Malta

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09:30 Transport Phenomena in Multi-Scale, Heterogeneous Materials & Systems - **Amy Marconnet**, School of Mechanical Engineering, Purdue University, USA

10:00 Break

AI/ML Techniques - Session 1

10:20 Monday April 25 2022

Performance Assessment of different Machine Learning Algorithm for Life-Time Prediction of Solder Joints based on Synthetic Data

Stefan Muench [1], Darshankumar Bhat [1], Leonhard Heindel [2], Peter Hantschke [2], Mike Roellig [1], Markus Kaestner [2]
[1] Fraunhofer Institute for Ceramic Technologies and Systems IKTS, Dresden, Germany
[2] Technische Universität Dresden, Institute of Solid Mechanics, Dresden, Germany

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Data Augmentation for Improved Stress Prognostics for Encapsulated Standard Packages by Neural Networks Using Data from in-situ Condition Monitoring during Thermal Shock Tests

Peter Meszmer [1], Alexandru Prisacaru [2], Przemyslaw Jakub Gromala [3], Bernhard Wunderle [1]
[1] Chemnitz University of Technology, Faculty for electrical engineering and information technologies, Chair materials and reliability of microsystems, 09107 Chemnitz, Germany
[2] Robert Bosch GmbH, Manufacturing Digitalization - AI-Solutions, Simulation and WIP-Flow Optimization - Semiconductor Operations (RtP1/MFD2-SCO), 72703 Reutlingen, Germany
[3] Robert Bosch GmbH, Automotive Electronics, Engineering Product Owner Product Line 1 BRM (AE/ECH-PL1), 72703 Reutlingen, Germany

Finite Element Supported Data Augmentation for a Deep Learning Driven Intelligent Failure Analysis System Based on Infrared Thermography

Kaushal Arun Pareek [1], Kaushal Arun Pareek [2], Daniel May [1], Daniel May [2], Peter Meszmer [1], Mohamad Abo Ras [2], Bernhard Wunderle [1], Bernhard Wunderle [3]
[1] *Chemnitz University of Technology, Chemnitz, Germany*
[2] *Berliner Nanotest und Design GmbH, Berlin, Germany*
[3] *Fraunhofer ENAS, Chemnitz, Germany*

11:20 Break

Session 2 – Thermal Characterisation

Monday April 25 2022 11:40

In-situ reliability monitoring of power packages using a Thermal Test Chip

H. A. Martin [1], R. Sattari [2], E. C. P. Smits [1], H. W. van Zeijl [2], W. D. van Driel [2], G. Q. Zhang [2]
[1] *Chip Integration Technology Center (CITC), Nijmegen, The Netherlands*
[2] *Delft University of Technology (TUD), Delft, The Netherlands*

Liquid cooling solutions for Automotive HPC: Thermal path Characterisation

Tobias Grün [1], Daniel May [1], Hubert Straub [2], Gromala Przemyslaw Jakub [2], Bernhard Wunderle [1], Willem Verleysen [3]
[1] *Technische Universität Chemnitz Chemnitz, Germany*
[2] *Robert Bosch GmbH Reutlingen, Germany*
[3] *Materialise Leuven, Belgium*

Thermal Heat Path Signature of a Standard D2PAK Power Package by Transient Thermal Characterization and Modelling

Maik Sternberg [1], Kaushal Arun Pareek [2], Daniel May [2], Mohamad Abo Ras [1], Bernhard Wunderle [3]
[1] *Berliner Nanotest und Design GmbH, Berlin, Germany*
[2] *Berliner Nanotest und Design GmbH, Germany; Chemnitz University of Technology, Germany*
[3] *Chemnitz University of Technology, Germany; Fraunhofer ENAS, Germany*

12:40 Lunch Marketplace

Multi-Physics: Digital Twins and Machine Learning – Session 3

13:40 **Monday April 25 2022**

Deep Learning Modelling for Composite Properties of PCB Conductive Layers

Stoyan Stoyanov, Chris Bailey, *University of Greenwich, London, UK*

Digital twin for controlled generation of water-in-oil microdroplets with required size

Nafisat Gyimah, Ott Scheler, Tamas Rang, Tamas Pardy, *Tallinn University of Technology, Tallinn, Estonia*

Virtual Testing and Digital Twin Approaches for Response of Grain-scale Solder Interconnects to Multiaxial Loading

Qian Jiang [1], Abhishek Deshpande [1], Aniket Bharamgonda [1], Abhijit Dasgupta [1], Torsten Hauck [2], Michiel van Soestbergen [2]
[1] *CALCE, University of Maryland, College PArk, USA*
[2] *NXP Semiconductors*

14:40	**Break**

Reliability and life time simulations – Session 4

15:00 **Monday April 25 2022**

Numerical simulation of transient thermomechanical ageing effects

van Dijk, Marius [1], Huber, Saskia [1], Walter, Hans [1], Wittler, Olaf [1], Schneider-Ramelow, Martin [2]
[1] *Fraunhofer Institute for Reliability and Microintegration*
[2] *Research Center of Microperipheric Technologies, Technische Universität Berlin*

Investigation of the impact of thermal aging of molding compounds on the solder joint fatigue of a VQFN package

Maofen Zhang [1], Yuen Sing Chan [1], Niessner Martin Richard [1], Schuetz Gerhard [2], Altieri-Weimar Paola [2], Bernhard Wunderle [3]
[1] *Infineon Technologies AG, Munich, Germany*
[2] *Infineon Technologies AG, Regensburg, Germany*
[3] *Technische Universität Chemnitz, Chemnitz, Germany*

Modelling Thermal Fatigue in Power Electronics

Rainer Dudek, Ralf Döring, Anu Mathew, Alexander Otto, Sven Rzepka, *Fraunhofer ENAS, Dept. Micro Materials Center, Germany*

16:00	**Break**

Session 5 - Thermo-Mechanical material characterisation

Monday April 25 2022 **16:20**

Determination of Rate- and Temperature Dependent Inelastic Material Data for Sintered Silver Die Attach and Simulative Implementation

Freerik Forndran [1], Jens Heilmann [2], Martin Metzler [1], Markus Leicht [1], Bernhard Wunderle [2]
[1] *Vitesco Technologies Germany GmbH, Nuremberg, Germany*
[2] *Chemnitz University of Technology, Chemnitz, Germany*

Physicochemical-microstructural approach for modeling the crack passage at topside metallic parts in IGBT semiconductor power electronics

Mustafa Shqair [1], Zoubir Khatir [1], Ali Ibrahim [1], Mounira Berkani [2], Ayda Halouani [1], Tayssir Hamieh [3]
[1] *Gustave Eiffel University, Paris-Saclay Univ., ENS Paris-Saclay, CNRS, SATIE, 78000, Versailles, France*
[2] *Paris Est Créteil University, Paris-Saclay Univ.,CNRS, SATIE, 91190, GIF-SUR-YVETTE, France*
[3] *Faculty of Science and Engineering, Maastricht University, P.O. Box 616, 6200 MD, Maastricht, Netherlands*

Thermal Aging on Molding Compounds: Material Characterization and Modeling

Luca Grandi, Marco Rovitto, *STMicroelectronics*

17:20	**Overview EuroSimE 2023 in Graz, Austria**

18:30	**Leave Marriott by coach. Free walk in Mdina**

19:30	**Dinner at Bacchus**

Dialog session - Session 6 Posters

08:30 **Tuesday April 26 2022**

PID 1

Characterization and modeling of a typical curing material for photoresist films

Chongnan Peng [1], Matthias Morak [1], Andreas Thalhamer [1], Mario Gschwandl [1], Peter Fuchs [1], Qi Tao [2], Thomas Krivec [2], Thomas Antretter [3], Miguel Angel Celigueta [4]
[1] Polymer Competence Center Leoben GmbH
[2] Austria Technologie
[3] Institute of Mechanics, Montanuniversitaet Leoben
[4] International Center for Numerical Methods in Engineering

PID 5

Interaction of advanced copper metallization with the assembly and interconnection technology

Daniel Losbichler [1], Markus Klingler [1], Steffen Orso [1], Bernhard Wunderle [2]
[1] Robert Bosch GmbH, Reutlingen, Germany
[2] Chemnitz University of Technology, Chemnitz, Germany

PID 8

Analysis of stress in spherically bent thinned image sensors

Amit Pandey, Sri Krishna Bhogaraju, Kerstin Lux, Prof. Dr. Gordon Elger, *Technische Hochschule Ingolstadt*

PID 9

Novel method for modeling the local electro-thermal behavior of discrete power diode using Verilog-A in a standard CAD environment

Achraf Kaid [1], Jean-Baptiste Kammerer [2], Fabrice Roqueta [1], Luc Hébrard [2]
[1] STMicroelectronics, Tours, France.
[2] Université de Strasbourg, CNRS, ICube, FMTS, Strasbourg, France.

PID 13

High speed thermal mapping on six-pack SiC-based module for hybrid and electric vehicles

Giuliana Malta [1], Laura Anoldo [1], Buna Mazza [1], Giuseppe Gabriele Piccione [1], Alfio Russo [2], Michele Calabretta [2], Sebastiano Russo [2], Alessandro Sitta [2], Angelo Messina [2], Antonio Lionetto [2], Salvatore Patanè [1]
[1] Dipartimento di Scienze Matematiche e Informatiche, Scienze Fisiche e Scienze della Terra, University of Messina
[2] STMicroelectronics

PID 16

A capacitive MEMS energy harvester for shock-induced periodic excitations

Bogdan Vysotskyi, Veronique Rochus, *IMEC, Kapeldreef 75, 3001 Leuven, Belgium*

PID 17

Application of multi-Weibull probability density function to clustered die strength data

S. Ananiev, G.M. Reuther, K. Unterhofer, P. Altieri-Weimar, *Infineon Technologies AG, Germany*

PID 19

Low Cycle Fatigue of Thin Metal Films on Vibrating Silicon MEMS Cantilevers: Finite Element Modelling Facilitating Experimental Design

Nadine Pflügler [1], Sebastian Breitenreiner [1], Reinhard Pufall [1], Bernhard Wunderle [2]
[1] *Infineon Technologies AG, Neubiberg, Germany*
[2] *Technische Universität Chemnitz, Chemnitz, Germany*

PID 25

High power module GaN with integrated current sensor for fast short circuit protection

Thanh Long Le, Jean Sylvio Ngoua Teu, Toni Youssef, *Safran Tech*

PID 27

Pressing simulations within the PCB manufacturing framework

Christian Schipfer [1], Peter Fuchs [1], Qi Tao [2], Julia Zuendel [2], Matthias Morak [1]
[1] *Polymer Competence Center Leoben (PCCL), Leoben, Austria*
[2] *Austria Technologie und Systemtechnik AG, Leoben, Austria*

PID 31

Characterization of interfacial parameters for lifetime and reliability simulation in modern optical sensor package assemblies

R. Kniely, *ams OSRAM Group, AOS Packaging, Premstaetten, Austria; University of Technology Chemnitz, Germany*
F. Huber, *ams OSRAM Group, AOS Packaging, Premstaetten, Austria*
J. Heilmann, *University of Technology Chemnitz, Germany*
M. Schulz, *AMIC Angewandte Micro-Messtechnik GmbH, Germany*
B. Wunderle, *University of Technology Chemnitz, Germany; Fraunhofer ENAS, Chemnitz, Germany*

PID 32

Damage Evolution in SAC Solder Alloys

Yaxiong Chen [1], Torsten Hauck [1], Abdullah Fahim [1], Mohammad Ashraful Haq [2], Mohd Aminul Hoque [2], Jeffrey C. Suhling [2]
[1] *NXP Semiconductors*
[2] *CAVE3, Auburn University*

PID 34

Inline Failure Analysis of Sintered Layers in Power Modules using Infrared Thermography

Sara Panahandeh [1], Daniel May [1], Corinna Grosse-Kockert [1], Adrian Stelzer [2], Battist Rabay [2], Dirk Busse [3], Bernhard Wunderle [4], Mohamad Abo Ras [1]
[1] *Berliner Nanotest und Design GmbH, Berlin, Germany*
[2] *Nano-Join GmbH, Berlin, Germany*
[3] *budatec GmbH, Berlin, Germany*
[4] *Technische Universität Chemnitz, Chemnitz, Germany*

PID 36 **Finite Element Modelling of the Viscoplastic Shear Dominant Deformation Behaviour of a Creep-Resistant Sn-based Solder Alloy under TMF Testing**

Jonas Gleichauf [1], Youssef Maniar [1], Marta Kuczynska [2], René Metasch [3], Mike Roellig [3], Steffen Wiese [4]
[1] *Robert Bosch GmbH, Corporate Sector Research and Advance Engineering, Renningen, Germany*
[2] *Robert Bosch GmbH, Automotive Electronics Division, Schwieberdingen, Germany*
[3] *Fraunhofer Institute for Ceramic Technologies and Systems, Branch Materials Diagnostics, Dresden, Germany*
[4] *Saarland University, Institute for Microintegration and Reliability, Saarbruecken, Germany*

PID 38 **Wafer Bifurcation as a Spontaneous Symmetry Breaking**

Vincenzo Vinciguerra, Antonio Landi, Giuseppe Luigi Malgioglio, *STMicroelectronics*

PID 40 **Macro- and Microscopic DMA measurements - Complementary techniques to determine viscoelastic material properties of packaging polymers**

André Clausner [1], Simon Schlipf [2], Christoph Sander [1], Robert Schwerz [1], Mike Roellig [1]
[1] *Fraunhofer IKTS*
[2] *GLOBALFOUNDRIES*

PID 42 **Packaged Thermoelectric Generator with High-aspect-ratio Thermocouple Legs for Electrically Active Implants**

Yongchen Rao [1], Chu Xu [2], Tamara Bechtold [1], Dennis Hohlfeld [2]
[1] *Jade University of Applied Sciences*
[2] *University of Rostock*

PID 43 **Failure Strength Analysis vs. Young Modulus Assessment of 4H-SiC through a Ball on Ring Test**

Vincenzo Vinciguerra [1], Antonio Landi [1], Herbert Hintermaier [2], Paolo Badalà [1], Gerald Klug [2], Alessandro Sitta [1], Michele Calabretta [1], Anna Bassi [1], Marco Renna [1], Angelo Alberto Messina [1]
[1] *STMicroelectronics*
[2] *DISCO H-TEC*

PID 45 **Reliability Analysis with Fragility Surfaces and a Workflow for Antifragility**

Roland Niemeier, *Ansys*

PID 46 **Numerical Simulation of a Thermoelectric Generator Using the Open-Source Software FEniCS**

Gunasheela Sadashivaiah [1], Yongchen Rao [2], Dennis Hohlfeld [1]
[1] *University of Rostock, Rostock, Germany*
[2] *Jade University of Applied Science, Wilhelmshaven, Germany*

PID 47 **Durability of Copper Traces in Ball Grid Array (BGA) Assemblies under Sequential Harmonic Vibration and Temperature Cycling**

Idowu Olatunji [1], Abhishek Deshpande [1], Manuel Bascolo [1], Abhijit Dasgupta [1], Ulrich Becker [2], Gabor Jokai [3]
[1] CALCE, University of Maryland College Park, MD 20742, USA
[2] Robert Bosch GmbH Stuttgart, Germany
[3] Robert Bosch Hungary

PID 48 **In-Situ Method for Fatigue Life Assessment subjected to Surface Strain**

Markus Käß [1], Hendrik Schmidt [2], Roland Lichtinger [1]
[1] BMW AG, München, Germany
[2] TU Darmstadt, Darmstadt, Germany

PID 49 **Deep Learning-based Multiscale Modelling of Polysilicon MEMS**

José Pablo Quesada-Molina, Stefano Mariani, *Politecnico di Milano*

PID 52 **From wafer bifurcation to warpage die: a correlation method to determine the warpage of a metal-coated silicon substrate**

Vincenzo Vinciguerra, Giuseppe Luigi Malgioglio, Antonio Landi, Salvatore Valastro, Brunella Cafra, Marco Renna, *STMicroelectronics*

PID 53 **Inline Tilt Measurements of Sintered Dies by Opical Line Scanning as Quality Assessment Tool for Smart Production**

D. May [1], J. Heilmann [1], M. Schulz [2], E. Boschman [3], M. Abo Ras [2], B. Wunderle [1], D. May [2], B. Wunderle [4]
[1] Technische Universität Chemnitz, Chemnitz, Germany
[2] Berliner Nanotest und Design GmbH, Berlin, Germany
[3] Boschman Advanced Packaging Technologies, Duiven, Netherlands
[4] Fraunhofer ENAS, Chemnitz, Germany

PID 57 **Application of Finite Element Simulations for the Determination of Defects in Electrical Interconnections in Power Modules**

Haosu Huai, Nasibeh Naserizaker, Juergen Wilde, *IMTEK*

PID 60 **Interaction of advanced copper metallization with the assembly and interconnection technology**

Daniel Losbichler [1], Markus Klingler [1], Steffen Orso [1], Bernhard Wunderle [2]
[1] Robert Bosch GmbH
[2] Chemnitz University of Technology

PID 65

Dynamics of the corrosion for SAC305 solder alloy in salt environment

Komlan Elom AKODA [1], Alexandrine Guédon-Gracia [1], Eric Lebraud [2], Jean-Yves Delétage [1], Bernard Plano [1], Hélène Frémont [1]
[1] IMS: Laboratoire de l'intégration du matériau au système, Talence, France
[2] CNRS-ICMCB: Institut de Chimie de la Matière Condensée de Bordeaux, Pessac, France

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PID 66

Optimized TMF Measurement Setup for reproducible Lifetime Measurements on Solder Joints under accelerated thermal-mechanical conditions

R. Metasch [1], M. Roellig [1], R. Schwerz [1], J. Gleichauf [2], Y. Maniar [2], R. Ratchev [2], K. Meier [3]
[1] Fraunhofer Institute for Ceramic Technologies and Systems, Branch Materials Diagnostics, Dresden, Germany
[2] Robert Bosch GmbH, Corporate Sector Research and Advance Engineering, Renningen, Germany
[3] Technische Universitaet Dresden, Electronics Packaging Laboratory, Dresden, Germany

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PID 72

Numerical Simulation of a Wire Bond Shear Test using Nonlinear Adaptive Remeshing

Simon Kuttler [1], Olaf Wittler [2], Martin Schneider-Ramelow [1]
[1] Technical University of Berlin, Berlin, Germany
[2] Fraunhofer IZM, Berlin, Germany

PID 76

Effects of shell thickness on the thermal stability of Cu-Ag core-shell nanoparticles: a molecular dynamics study

Shizhen Li [1], Xu Liu [2], Jiang Jing [3], Chunjian Tan [2], Chenshan Gao [4], Yang Liu [5], Huaiyu Ye [4], Guoqi Zhang [6]
[1] School of Microelectronics, Southern University of Science and Technology, Shenzhen 518055, China
[2] School of Microelectronics, Southern University of Science and Technology, Shenzhen 518055, China; Department of Microelectronics, Delft University of Technology, 2628 CD Delft, the Netherlands
[3] Academy for Engineering
[4] School of Microelectronics, Southern University of Science and Technology, Shenzhen 518055, China; The Key Laboratory of Optoelectronic Technology
[5] School of Materials Science and Chemical Engineering, Harbin University of Science and Technology, Harbin, 150040, China
[6] Department of Microelectronics, Delft University of Technology, 2628 CD Delft, the Netherlands

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PID 78

2D Model for moisture diffusion in integrated Low-k dielectrics

Mischler Léo [1], Cartailler Vivien [2], Genevieve Duchamp [3], Hélène Fremont [3], Grégory Imbert [2], J.B Moulard [2], Olivier Kermarrec [2]
[1] STMicroelectronics, Crolles, France and Laboratoire IMS, Université de Bordeaux, France
[2] STMicroelectronics, Crolles, France
[3] Laboratoire IMS, Université de Bordeaux, France

PID 79

Investigation of FPGA and SRAM Cells Under Radiation Exposure

Kirsten Weide-Zaage [1], Guillermo Paya-Vaya [2], Katharina Schmidt [3], Dorian Hagenah [3]
[1] RESRI Group, Institute of Microelectronic Systems (IMS), Leibniz Universität Hannover, Hannover, Germany
[2] Chair for Chip Design for Embedded Computing, Technische Universität Braunschweig, Germany
[3] Bundeswehr Research Institute for Protective Technologies and NBC Protection (WIS), Munster, Germany

PID 80

A physics-based interpolation method for rapid dimensioning of PMUT designs

Aleksander Bajt [1], Aleksander Bajt [2], Gabriele Bosetti [1], Gabriele Schrag [1], Prajith Kumar Poongodan [2], Frank Vanselow [2]
[1] Chair of Physics of Electrotechnology, Technical University of Munich, Munich, Germany
[2] Fraunhofer Institute EMFT, Munich, Germany

PID 83

Epoxy Mold Compound Characterization for Modeling Packaging Reliability

Ariane Tomas [1], Benoit Lambert [2], Hélène Fremont [1], Nathalie Malbert [1], Nathalie Labat [1]
[1] IMS, Université de Bordeaux, Talence, France
[2] United Monolithic Semiconductors, Villebon-Sur-Yvette, France

PID 87

Exchanging Thermo-Mechanical Simulation Models independent on FEM Software Platform

Bart Vandevelde [1], Chinmay Nawghane [1], Rainer Dudek [2], Ralf Döring [2], Jens Schindele [3], Przemyslaw Gromala [3]
[1] imec
[2] Fraunhofer ENAS
[3] Robert Bosch

PID 89

Performance Comparison for Stable Compact Modelling of Piezoelectric Microactuator

Arwed Schütz, Tamara Bechtold, *Jade University of Applied Sciences, Wilhelmshaven, Germany*

PID 92

High-Voltage and High-Current IGBT Press-pack Module for Power Grid

Chunjian Tan [1], Shaogang Wang [1], Xu Liu [1], Jing Jiang [2], Guoqi Zhang [3], Huaiyu Ye [1]
[1] Southern University of Science and Technology, Shenzhen, China
[2] Fudan University, Shanghai, China
[3] Delft University of Technology, Delft, Netherlands

10:00 Break

Short Courses C3 C4 (2x3h)

Tuesday April 26 2022 10:10

10:10 C3 Ballroom - Transport Phenomena in Multi-Scale, Heterogeneous Materials & Systems. **Amy Marconnet**, Perry Academic Excellence Scholar School of Mechanical Engineering, Purdue University

10:10 C4 Amphitheatre - Chiplet Design and Heterogeneous Integration Packaging. **John H. Lau**, Unimicron Technology Corporation

13:10 Lunch Marketplace

Remote session – via Teams Session 7

14:10 Tuesday April 26 2022

Continous AI-aided learning to establish the digital twin models for predicting the individual reliability characteristics

Dr. Cadmus Yuan, *Department of Mechanical and Computer-aided Engineering, Feng Chia University, Taichung, Taiwan*

Heterogeneous Integration of Chiplets: Cost and Yield Tradeoff Analysis

Mudasir Ahmad, *Google*
Javi DeLaCruz, *ARM*
Anu Ramamurthy, *Anu.ramamurthy@microchip.com*

Design Optimization for Passivation Crack Improvement in Power Devices

Haibo Fan [1], Zhou Zhou [1], Yuning Shi [1], Ivan Shiu [2], Jun Yang [3], Haibin Chen [3]
[1] *Nexperia Hong Kong*
[2] *Nexperia Germany*
[3] *Hong Kong University of Science and Technology, Hong Kong*

Session 8 – Design and Modelling for Heterogeneous Systems

Tuesday April 26 2022 **14:10**

Efficient Modeling of Acoustic Channels - Towards Tailored Frequency Response of Airborne Ultrasonic MEMS Transducers

Gabriele Bosetti, Gabriele Schrag, *Chair of Physics of Electrotechnology, Technical University of Munich, Germany*

Design, fabrication and characterization of high-g acceleration sensors for automotive industry and test structures for the process characterization

Alexey Shaporin [1], Sebastian Weidlich [2], Dirk Wünsch [1], Susann Hahn [2], Roman Forke [1], Karla Hiller [3], Harald Kuhn [3]
[1] *Fraunhofer ENAS, Chemnitz, Germany*
[2] *Chemnitz University of Technology, Center for Microtechnologies, Chemnitz, Germany*
[3] *Fraunhofer ENAS, Chemnitz University of Technology, Center for Microtechnologies, Chemnitz, Germany*

Towards predictive system-level modelling of miniaturized photoacoustic gas sensors

Simon Essing [1], Gabriele Schrag [1], David Tumpold [2], Christoph Glacer [2], Michael Mihotek [2], Andrey Kravchenko [3]
[1] *Chair of Physics of Electrotechnology, Technical University of Munich, Germany*
[2] *Infineon Technologies AG, Neubiberg, Germany*
[3] *Infineon Technologies Dresden GmbH, Dresden, Germany*

15:10 **Break**

Session 9 – Advanced simulation techniques

Tuesday April 26 2022 **15:20**

Shift of die passivation by ratcheting of underlying aluminum bond pads

M. van Soestbergen, *NXP Semiconductors, Nijmegen, the Netherlands*
Y. Chen, *NXP Semiconductors, Austin, USA*
T. Hauck, *NXP Semiconductors, Munich, Germany*

Models of Bifurcation in a Semiconductor Wafer: A Comparison of the Analytical Solution vs. the ANSYS Finite Element Analysis

Vincenzo Vinciguerra, Giuseppe Luigi Malgioglio, Antonio Landi, *STMicroelectronics*

An advanced, systematic simulation approach for studying warpage drivers of an assembled printed circuit board in early development stage

M. Frewein [1], S. Stojanovic [1], Q. Tao [1], T. Krivec [1], J. Zuendel [1], M. Goessler [1], P. F. Fuchs [2], M. Gschwandl [2]
[1] *AT*
[2] *Polymer Competence Center Leoben GmbH, Leoben, Austria*

Thermal Modelling – Session 10

15:20 **Tuesday April 26 2022**

GaN HEMTS thermal time constants: Theory and Measurements

JAKANI Anass, SOMMET Raphael, KARRAME Khalil, NALLATAMBY Jean-Christophe, *XLIM University of Limoges, UMR7252 Campus universitaire de Brive, 16 rue Jules Vallès 19100 Brive la Gaillarde*

Apparent heat capacity model of the SiC MOSFET's Aluminium top surface for short-circuits simulations

Florent Loche-Moinet, Loic Theolier, Eric Woirgard, *Univ. Bordeaux, CNRS, Bordeaux INP, IMS, UMR 5218, F-33400 Talence, France*

Experimental study of transient heat transfer and temperature dynamics in the electronics enclosures

Z. Staliulionis, L. Paukštaitis, G. Miliauskas, *Department of Energy, Faculty of Mechanical Engineering and Design, Kaunas University of Technology, Kaunas, Lithuania*

16:20 **Break**

System and module level simulation – Session 11

16:30 **Tuesday April 26 2022**

Amphitheatre — Michiel van Soestbergen, Markus Klingler

Hard encapsulation of automotive power modules by epoxy potting – encapsulant selection assisted by thermomechanical simulation

Sprenger, Mario [1], Forndran, Freerik [2], Ottinger, Bettina [1], Dammann, Thomas [2], Erben, Bettina [2], Sippel, Marcel [3], Prof. Dr. Jörg, Franke [3]
[1] *Vitesco Technologies, Nuremberg, Germany; Friedrich-Alexander-Universität Erlangen-Nürnberg, Institute for Factory Automation and Production Systems, (FAPS), Erlangen, Germany*
[2] *Vitesco Technologies, Nuremberg, Germany*
[3] *Friedrich-Alexander-Universität Erlangen-Nürnberg, Institute for Factory Automation and Production Systems, (FAPS), Erlangen, Germany*

A PoF based methodology to assess the reliability of a sensor module operating in harsh industrial environments

Chinmay Nawghane [1], Bart Vandevelde [1], Riet Labie [1], Sam Michiels [2], Danny Hughes [2], Mengyao Liu [2]
[1] *Imec, Leuven, Belgium*
[2] *KU Leuven, Leuven, Belgium*

Increased Breakdown Voltage and robustness of Embedded power module

TABLATI Amina [1], ALAYLI Nadim [1], Arabi Faiçal [1], El BOUBAKARI Khalid [1], YOUSSEF Toni [2], THEOLIER Loic [3], WOIRGARD Eric [3]
[1] *Institut VEDECOM*
[2] *Safran Tech*
[3] *Univ. Bordeaux, CNRS, Bordeaux INP, IMS*

Session S12 – MEMS Simulation

Tuesday April 26 2022 16:30

Model Order Reduction of a Thermo-Mechanical Packaged Chip Model for Automotive MOSFET Applications

C. B. Umunnakwe [1], I. Zawra [1], C. Yuan [1], E. B. Rudnyi [2], D. Hohlfeld [3], M. Niessner [4], T. Bechtold [1]
[1] *Jade University of Applied Sciences, Wilhelmshaven, Germany; University of Rostock, Germany*
[2] *Cadfem GmbH, Munich, Germany*
[3] *University of Rostock, Germany*
[4] *Infineon Technologies AG, Neubiberg, Germany*

PMUT Array Design for mid-air Haptic feedback

Billen Margo [1], Gijsenbergh Pieter [1], Ferrer Eloi [2], Pandian Mohan [2], Rottenberg Xavier [1], Rochus Veronique [1]
[1] *imec*
[2] *Silterra*

Ultrasonic Piezoelectric MEMS Speakers for In-Ear Applications: Bubbles-like and Pistons-like Innovative Designs

Gianluca Massimino [1], Chiara Gazzola [1], Valentina Zega [1], Silvia Adorno [2], Alberto Corigliano [1]
[1] *Politecnico di Milano*
[2] *STMicroelectronics*

18:30 Cocktail dinner party, Panoramic Terrace 13th

EuroSimE Committee : 2023 and beyond. Open to anybody !

Tuesday April 26 2022 20:30

20:30 Open to anybody

HIR session

08:30 Wednesday April 27 2022

08:30	Introduction: M&S Overview & Plans – C Bailey – 10 mins
08:40	Reliability Overview & Plans – A. Dasgupta – 10 mins
08:50	Metrology Panel: Manufacturing Metrology – 15 mins
09:05	Metrology Panel: Material Metrology – 15 mins
09:20	Metrology Panel: Q&A – 10 mins
09:40	Joint TWG Discussion on 2022 goals -

Mixed Session 13 – Session 13

Wednesday April 27 2022 08:30

High-Cycle Fatigue Testing of thin Metal Films on MEMS Cantilever

N. Jöhrmann, *Chemnitz University of Technology, Germany*
C. Stöckel, *Fraunhofer ENAS, Chemnitz, Germany*
B. Wunderle, *Chemnitz University of Technology, Germany; Fraunhofer ENAS, Chemnitz, Germany*

Structural-Thermal-Optical-Performance (STOP) Analysis of a Lens Stack for Realization of a Digital Twin of an automotive LiDAR

Majid Tavakolibasti [1], Peter Meszmer [1], Marcel Kettelgerdes [2], Gunnar Bottger [3], Gordon Elger [2], Hüsseyin Erdogan [4], A. Seshaditya [5], Bernhard Wunderle [1]
[1] *Chemnitz University of Technology, Chemnitz, Germany*
[2] *Technische Hochschule Ingolstadt, Ingolstadt, Germany*
[3] *Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration IZM, Berlin, Germany*
[4] *Conti Temic microelectronic GmbH, Ingolstadt, Germany*
[5] *Ancud IT-Beratung GmbH, Berlin, Germany*

Reduced Order Modelling of a Neuron-Electrode Interface

Ulrike Fitzer [1], Dennis Hohlfeld [2], Tamara Bechtold [1]
[1] Department of Engineering, Jade University of Applied Sciences, Wilhelmshaven, Germany, Institute for Electronic Appliances and Circuits, University of Rostock, Rostock, Germany
[2] Institute for Electronic Appliances and Circuits, University of Rostock, Rostock, Germany

Short Courses C1 C2 (2x3h)

Wednesday April 27 2022 09:30

09:30 C1 Studio 13 - Application of statistics. **Ross Wilcoxon**, Collins Aerospace, Cedar Rapids, IA, USA

09:30 C2 Amphitheatre - AI/ML-The right algorithm for the right task. **Mahdi Tabassian**, Sirris, Belgium.

Solder joint reliability — Session 14

09:30 Wednesday April 27 2022

Electrical diagnostics of passive components failure during reliability testing

E. Wiss [1], R. Metasch [2], D. Barth [1], V. Serea [1], M. Roellig [2], S. Wiese [1]
[1] Saarland University, Dept. Systems Engineering Chair of Microintegration and Reliability, Saarbrucken, Germany
[2] Fraunhofer Institute for Ceramic Technologies and Systems, Dept. Testing of Electronics and Optical Methods, Dresden, Germany

Evaluation of SAC solder joint thermomechanical fatigue in different types of components

Emna Ben Romdhane [1], Pierre Roumanille [2], Alexandrine Guédon-Gracia [3], Samuel Pin [2], Patrick Nguyen [4], Hélène Frémont [3]
[1] Institut de Recherche Technologique Saint-Exupéry, Toulouse, France /IMS Laboratory, University of Bordeaux, Talence, France
[2] Institut de Recherche Technologique Saint-Exupéry, Toulouse, France
[3] IMS Laboratory, University of Bordeaux, Talence, France
[4] Elemca, Toulouse, France

A Numerical and experimental investigation on influential factors for solder joint reliability of power LEDs for automotive applications

Mehrdad Shaygi [1], Muyuan Li [2], Kurt-Jurgen Lang [2], Harald Laux [2], Bernhard Wunderle [3]
[1] ans OSRAM AG,Regensburg, Germany / Technische Universität Chemnitz, Germany
[2] ans OSRAM AG,Regensburg, Germany
[3] Technische Universität Chemnitz, Germany / Fraunhofer ENAS, Chemnitz, Germany

10:30 Break

Session 15 – Process Models and MEMS

Wednesday April 27 2022 10:45

A simulation-based assessment of print accuracy for microelectronic parts manufactured with DLP 3D printing process

Andreas Thalhamer, Peter Fuchs, Lara Strohmeier, Siegfried Hasil, Archim Wolfberger,
Polymer Competence Center Leoben GmbH, Leoben, Austria

Piezoelectric flexible haptic interface development

Romain Le Magueresse [1], Fabrice Casset [1], Frédéric Giraud [2], Brigitte Desloges [1], Nadine David [1], Anis Kaci [2], Adélaïde Berdagué [3], Mikael Colin [1]
[1] CEA, LETI, MINATEC Campus, Grenoble, France and Univ. Grenoble Alpes, Grenoble, France
[2] Univ. Lille, Arts et Metiers Institute of Technology, Centrale Lille, Junia, ULR 2697 - L2EP, F-59000 Lille, France
[3] Univ. Grenoble Alpes, CEA, Liten, DTNM, 38000 Grenoble, France

Vibration sensors with a high bandwidth and low SNR, enhanced with post processing gap reduction

Petra Streit [1], Roman Forke [1], Sven Voigt [1], Uwe Schwarz [2], Roman Ziegenhardt [2], Sebastian Weidlich [3], Detlef Billep [4], Markus Gaitzsch [4], Harald Kuhn [1]
[1] Fraunhofer Institute for Electronic Nano Systems (ENAS)
[2] X-FAB MEMS Foundry GmbH
[3] Center for Microtechnologies, Chemnitz University of Technology
[4] EDC Electronic Design Chemnitz GmbH

Session 16 – PoF based degradation simulation

Wednesday April 27 2022 11:45

Marius van Dijk, Adwait Inamdar — Ballroom

Novel methodology for 3D FEM modeling of wire bonding process by ball deformation reproduction

Lucrezia Guarino, Carolina Caglio, Riccardo Villa, Lucia Zullino, Luca Cecchetto,
STMicroelectronics, Agrate Brianza (MB), Italy

Humidity and corrosion susceptibility of molded packages under mechanical impact - Novel package level impact test to provoke micro-damage

Dominik Udiljak [1], Reinhard Pufall [1], Georg M. Reuther [1], Jamila Boudaden [2], Peter Ramm [2], Gabriele Schrag [3]
[1] *Infineon Technologies AG, Munich, Germany*
[2] *Fraunhofer Research Institution for Microsystems and Solid State Technology, Munich, Germany*
[3] *Technical University of Munich, Munich, Germany*

Awards ceremony

Sven Rzepka **Wednesday April 27 2022 12:25**

12:25 Best and outstanding oral and poster presentations

12:45 Lunch Marketplace

EU session

Georg Reuther **Wednesday April 27 2022 13:45**

13:45 Project IPCEI - Martin Niessner

13:50 Project iREL4.0 - Willem van Driel

14:20 Project COMPAS - Michiel van Soestbergen

14:50 Project SmartStar & Hiper - Przemek Gromala

15:20 Project UltimateGaN - Dag Andersson

Short Course C5 (3h)

14:00 Wednesday April 27 2022

14:00 Internet of Things (IoT) – Challenges and Opportunities for the Integrated Circuit Design Industry (held at the University of Malta - Department of Microelectronics and Nanoelectronics)

15:50 Closure - K. Zhang