

Short Course: Power Electronics Packaging (C-Liu part 1)

Boardroom

Instructed by Prof. Sheng Liu

Sunday March 24 2019 08:30

08:30 Part 1

Short Course: Design for Reliability in MEMS (C-Corigliano

Salon 4

Part 1)

Instructed by Prof. Alberto Corigliano

Sunday March 24 2019 08:30

08:30 Part 1

10:30 Coffee break

Short Course: Power Electronics Packaging (C-Liu part 2)

Boardroom

Instructed by Prof. Sheng Liu

Sunday March 24 2019 10:45

10:45 Part 2

Short Course: Design for Reliability in MEMS (C-Corigliano

Salon 4

part 2)

Instructed by Prof. Alberto Corigliano

Sunday March 24 2019 10:45

10:45 Part 2

13:00 Lunch in Bankett Foyer

Short Course: System-Level Simulation of Microsystems-MOR (C-Bechtold Part 1)

Boardroom

14:00 Sunday March 24 2019

Instructed by Prof. Dr.-Ing. Tamara Bechtold

14:00 Part 1

Short Course: Reliability of Semiconductor Devices (C-Pufall)

Salon 4

14:00 Sunday March 24 2019

Instructed by Prof. Reinhard Pufall

14:00 2 hour course

Short Course: Molecular Modelling (C-Iwamoto Part 1)

Salon 2 & 3

14:00 Sunday March 24 2019

Instructed by Dr. Nancy Iwamoto

14:00 Part 1

16:00 Coffee break

Short Course: Applications of test chips (C-Suhling)

Salon 4

16:15 Sunday March 24 2019

Instructed by Prof. Jeffrey C. Suhling

16:15 2h course

**Short Course: System-Level Simulation of Microsystems-
MOR (C-Bechtold Part 2)**

Boardroom

Instructed by Prof. Dr.-Ing. Tamara Bechtold

Sunday March 24 2019 16:15

16:15 Part 2

Short Course: Molecular Modelling (C-Iwamoto Part 2)

Salon 2 & 3

Instructed by Dr. Nancy Iwamoto

Sunday March 24 2019 16:15

16:15 Part 2

09:00 Welcome by W. van Driel

Industry keynotes

Salon 5 & 6

09:15 Monday March 25 2019 *Chaired by Willem van Driel and Kouchi Zhang*

09:15 Pushing the limits of MEMS - Success factors design and simulation - **Udo-Martin Gómez**, Robert Bosch GmbH

09:45 Package Developments at Qualcomm - **Ahmer Syed**, Qualcomm

10:15 Package Development for Autonomous Driving - **Darrel Frear**, NXP

10:45 Coffee break

Technical Keynotes - I — Session 1

11:15 Monday March 25 2019

Salon 5-6

Chaired by Chris Bailey and Peter Rodgers

11:15 Future Challenges related to Thermo-Mechanics, Multi-Physics, Thermal and Reliability in Microelectronics and Microsystems
60mn

C. Bailey, University of Greenwich, London, UK

B. Vandeveld, imec, Leuven, Belgium

W. van Driel, Signify, Eindhoven, The Netherlands

Peter Rodgers, Khalifa University, Abu Dhabi, UAE

12:15 Past, present and future of EuroSimE

30mn

Prof. G.Q. Zhang, Delft University of Technology, The Netherlands

12:45 Lunch

Session 2 — Solder joint reliability

Monday March 25 2019 14:00

Chaired by Torsten Hauck and Piet Watté

Salon 5-6

14:00 Numerical study on local effects of composition and geometry in self-healing solders

30mn

Georg Siroky¹, Elke Kraker², Julien Magnien², Ernst Kozeschnik³, Dietmar Kieslinger⁴, Werner Ecker²

¹ Technical University Vienna / Materials Center Leoben GmbH

² Materials Center Leoben GmbH

³ Technical University Vienna

⁴ ZKW Electronics GmbH

14:30 Transgranular Crack Propagation in Thermal Cycling of SnAgCu Solder Joints

20mn

Andreas Lövberg, Per-Erik Tegehall, RISE IVF, Mölndal, Sweden

14:50 Improved QFN thermal cycling reliability using low melting temperature SnBi based solder paste LMPA-Q

20mn

Bart Vandeveld¹, Riet Labie¹, Ralph Lauwaert², Daniel Werkhoven², Daniel Vanderstraeten³, Eddy Blansaer³, Jonas Lannoo⁴, Davy Pissoort⁴

¹ Imec, Leuven, Belgium

² Interflux Electronics, Gent, Belgium

³ ON Semiconductor Belgium, Oudenaarde, Belgium

⁴ KU Leuven Bruges Campus, Brugge, Belgium

15:10 Effect of Stress State on Fatigue Characterization of SAC305 Solder Joints

20mn

Abhishek Deshpande, Hannah Kaeser, Abhijit Dasgupta, University of Maryland, College Park, USA

15:30 Numerical Prediction of Failure in SnAgCu solder under shear and tensile-dominant cyclic loading

20mn

M. Kuczynska¹, Y. Maniar², N. Schafet³, U. Becker³, S. Weihe⁴

¹ Robert Bosch GmbH, Automotive Electronics Division, Stuttgart, Germany; Materials Testing Institute (MPA) University of Stuttgart, Stuttgart, Germany

² Robert Bosch GmbH, Corporate Research Division, Stuttgart, Germany; Institute for Materials Testing, Materials Science and Strength of Materials (IMWF) University Stuttgart, Stuttgart, Germany

³ Robert Bosch GmbH, Automotive Electronics Division, Stuttgart, Germany

⁴ Materials Testing Institute (MPA) University of Stuttgart, Stuttgart, Germany

MEMS structures - I — Session 3

14:00 Monday March 25 2019

Salon 4

Chaired by Alberto Corigliano and Nancy Iwamoto

14:00 Simulation and Design of an Optical Accelerometer

30mn

Veronique Rochus, Wouter Westerveld, Bruno Figeys, Xavier Rottenberg, Roelof Jansen, *imec*

14:30 Finite element method simulation of graphene phononic crystals with cross-shaped nanopores

20mn

Seiya Kubo¹, Marek E. Schmidt¹, Manoharan Muruganathan¹, Hiroshi Mizuta²

¹ *Japan Advanced Institute of Science and Technology*

² *Japan Advanced Institute of Science and Technology, Hitachi Cambridge Lab, UK*

14:50 Enhanced Fluid Flow by Wavelike Excitation of a Micromechanical Bending Actuator

20mn

Wolfgang Hölzl, Regine Behlert, Matthias Gehring, Gabriele Schrag, *Technical University of Munich, Munich, Germany*

15:10 Optical micro-machined ultrasound sensors with a silicon photonic resonator in a buckled acoustical membrane

20mn

Wouter J. Westerveld¹, Suzanne M. Leinders², Paul L. M. J. van Neer³, H. Paul Urbach², Nico de Jong², Martin D. Verweij², Xavier Rottenberg¹, Veronique Rochus¹

¹ *Imec, Leuven, Belgium*

² *Delft University of Technology, Delft, The Netherlands*

³ *TNO, Den Haag, The Netherlands*

15:30 Modelling of display-compatible piezoelectric micromachined ultrasonic transducers for haptic feedback

20mn

Alexandre Halbach, Pieter Gijzenbergh, Yongbin Jeong, Margo Billen, Christopher Chare, Hang Gao, Guilherme Brondani Torri, David Cheyns, Xavier Rottenberg, Veronique Rochus, *IMEC*

Session 4 — Thermal Behavioral Modelling

Monday March 25 2019 14:00

Chaired by René Metasch and Péter Pálovics

Salon 2-3

14:00 Analysis of Self Heating Effect in Vertical-channel Field Effect Transistor

30mn

Ilho Myeong¹, Jongwook Jeon², Myounggon Kang³, Hyungcheol Shin¹

¹ *Inter-University Semiconductor Research Center (ISRC) and School of Electrical Engineering, Seoul National University*

² *Department of Electronics Engineering, Konkuk University*

³ *Department of Electronic Engineering, Korea National University of Transportation*

14:30 Numerical simulation of reflow soldering

20mn

Michael Stadler, *Infineon*

14:50 Simulation of self-heating of printed interconnects for thermal design

20mn

Daniel Bülz, Petra Streit, Roman Forke, Thomas Otto, *Fraunhofer Institute For Electronic Nanosystems, Chemnitz, Germany*

15:10 Advanced Electro-Thermal Analysis of IGBT Modules in a Power Converter System

20mn

Xiang Li¹, Daohui Li¹, Fang Qi², Matthew Packwood¹, Haihui Luo², Guoyou Liu², Yangang Wang², Xiaoping Dai²

¹ *Power Semiconductor R*

² *CRRC Times Electric Co. Ltd, Zhuzhou, China*

15:30 Modelling of thermal processes in thin-film BAW resonators

20mn

Alexander Kozlov, *Omsk State Technical University, Omsk, Russia*

15:50 Coffee break

Prognostics and health monitoring — Session 5

16:30 Monday March 25 2019

Salon 5-6

Chaired by Abhijit Dasgupta and Jiajie Fan

16:30 Smart textiles: how electronics merge into our clothing

30mn

Kaspar Jansen, *Delft University of Technology, Department of Design Engineering, The Netherlands*

17:00 Degradation Prediction of Electronic Packages using Machine Learning

20mn

Alexandru Prisacaru¹, Ernesto Oquelis Guerrero¹, Przemyslaw Jakub Gromala¹, Bongtae Han², Guo Qi Zhang³
¹ *Robert Bosch GmbH*
² *University of Maryland College Park*
³ *Delft University of Technology*

17:20 A Combined Methodology to Include System Effects in Board-Level Stress Simulations

20mn

Rainer Dudek¹, Marcus Hildebrandt¹, Sven Rzepka¹, Ralf Döring², Lutz Scheiter², Bastian Tröger³, Mengjia Zhang⁴, Reinhold W. Ortmann⁵
¹ *Fraunhofer ENAS, Dept. MMC, Chemnitz, Germany*
² *CWM GmbH, Chemnitz, Germany*
³ *FRT GmbH, Bergisch-Gladbach, Germany*
⁴ *Robert Bosch GmbH, AE/ESI4.1, Reutlingen, Germany*
⁵ *Continental Automotive France SAS, France*

17:40 A Probabilistic approach to the robust thermo-mechanical analysis of Ball Grid Array Solder Joints

20mn

Ayda Halouani¹, Abel Cherouat², Mariem Miladi Chaabane³, Mohamed Haddar³
¹ *Charles Delaunay Institute, GAMMA3, University of Technology of Troyes, France and Laboratory of Mechanics, Modeling and Production, National School of Engineers of Sfax, Tunisia*
² *Charles Delaunay Institute, GAMMA3, University of Technology of Troyes, France*
³ *Laboratory of Mechanics, Modeling and Production, National School of Engineers of Sfax, Tunisia*

18:00 Development of a Modular Test Setup for Reliability Testing under Harsh Environment Conditions

20mn

Laura Wambera¹, Karsten Meier¹, Robert Höhne¹, Björn Böhme², Christian Götze², Jens Paul², Marcel Wieland², Karlheinz Bock¹
¹ *Technische Universität Dresden, Institute of Electronic Packaging Technology, Dresden, Germany*
² *GLOBALFOUNDRIES, Dresden Module One LLC*

Session 6 — Multi-Physics process models

Monday March 25 2019 16:30

Chaired by Dag Andersson and Cadmus Yuan

Salon 2-3

16:30 Micro-Transfer-Printing and Potential Process Optimizations by FEA

30mn

Kjell Buehler¹, Georg Lorenz¹, Marcel Mittag¹, Uwe Krieger², Niclas Heise², Sebastian Wicht², Ronny Gerbach³, Falk Naumann¹

¹ Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Halle (Saale), Germany

² X-FAB MEMS Foundry GmbH, Erfurt, Germany

³ Ernst-Abbe-Hochschule, Department of SciTec, Jena, Germany

17:00 Numerical modelling of magnetic nanoparticle dynamics in microfluidic devices

20mn

Péter Pálovics, Márta Rencz, Budapest University of Technology and Economics, Department of Electron Devices, Hungary

17:20 Modeling temperature dependent chemical reaction of intermetallic compound growth

20mn

Aleksandr Morozov¹, Alexander Freidin², Wolfgang Müller¹, Alexander Semencha², Mikhail Tribunskiy²

¹ Berlin Institute of Technology, Berlin, Germany

² Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

17:40 Virtual Prototyping and Simulation of Electro-Thermal Systems

20mn

Torsten Hauck, Vibhash Jha, NXP Semiconductors

Package level thermo-mechanical — Session 7 assessment

16:30 Monday March 25 2019

Salon 4

Chaired by Tamara Bechtold and Karsten Meier

16:30 Prediction of robustness of packages by cohesive zone finite element simulation and verification by non-destructive tests
30mn

Reinhard Pufall¹, Daniel May², Bernhard Wunderle², Georg M. Reuther¹, Nadine Pflügler¹, Dominik Udiljak¹

¹ Infineon Technologies AG, Am Campeon 1-15, 85579 Neubiberg, Germany

² Technische Universität Chemnitz, Reichenhainer Str. 70, 09126 Chemnitz, Germany

17:00 Advanced Mixed-Mode Bending Test: Influence of the Surface Topography on the Fracture Behaviour of an EMC to Copper Lead Frame Bi-Material Interface
20mn

M. Schulz¹, R. Mroßko¹, B. Wunderle², M. Abo Ras¹

¹ AMIC Angewandte Micro-Messtechnik GmbH

² Chemnitz University of Technology

17:20 Package Level Warpage Simulation of a Fan Out System in Board Module
20mn

M. Frewein¹, T. Krivec¹, Q. Tao¹, J. Zündel¹, J. Rosc², M. Gschwandl³, Peter F. Fuchs³

¹ ATS - Austria Technologie und Systemtechnik Aktiengesellschaft, Leoben, Austria

² Materials Center Leoben Forschungs GmbH, Leoben, Austria

³ Polymer Competence Center Leoben GmbH, Leoben, Austria

17:40 Numerical estimation of local load during manufacturing process in high temperature PCB resins based on viscoelastic material modelling
20mn

Michael Schmidt¹, Youssef Maniar¹, Alexander Kabakchiev¹, Roumen Ratchev¹, Michael Guyenot¹, Hans Walter², Martin Schneider-Ramelow³

¹ Robert Bosch GmbH, Corporate Sector Research and Advance Engineering, Renningen, Germany

² Fraunhofer IZM, Department System Integration and Interconnection Technologies, Berlin, Germany

³ Technical University of Berlin, Faculty IV – Electrical Engineering and Computer Science, Germany

18:00 Material Model and Simulation of Multilayer-AgSn-Foils for Transient-Liquid-Phase Bonding of Sensor Elements
20mn

Markus Feißt, Cong Li, Jürgen Wilde, University of Freiburg - IMTEK, Department of Microsystems Engineering, Laboratory of Assembly and Packaging

19:00 Dinner downtown

Session 8 — System level mechanical reliability

Tuesday March 26 2019 08:30

Chaired by Jeff Suhling and Alexandru Prisacaru

Salon 5-6

08:30 Accelerated Pump Out Testing for Thermal Greases

30mn

B. Wunderle¹, D. May¹, J. Heilmann¹, J. Arnold¹, J. Hirscheider¹, Y. Li¹, J. Bauer², R. Schacht³, M. Abo Ras⁴

¹ TU Chemnitz, Germany

² Fraunhofer IZM, Berlin, Germany

³ BTU Cottbus, Germany

⁴ Berliner Nanotest

09:00 Automated Method Using Finite Element Simulation to Identify Microvia Stacks at Risk of Separation in Complex PCB Designs

20mn

Kourosh Kalayeh, Natalie Hernandez, Craig Hillman, David Dang, Nathan Blattau, *DfR Solutions, Beltsville, MD, USA*

09:20 Layout Optimization for CMOS Interconnects for Heating, Cooling and Improved Stress Distribution

20mn

Verena Hein¹, Kirsten Weide-Zaage², Xi Yang²

¹ X-FAB Semiconductor Foundries AG, Erfurt Germany

² RESRI Group, Institute of Microelectronic Systems (IMS), Leibniz Universität Hannover, Germany

Thermal Modelling and Characterization — Session 9

08:30 Tuesday March 26 2019

Salon 4

Chaired by Marcus Schulz and Mahdi Sadeghinia

08:30 The effect of the thermal conductivity of room-temperature-vulcanizing silicone used for boiling heat transfer
30mn

Noriyuki Unno, Kazuhisa Yuki, Risako Kibushi, *Sanyo-Onoda City University, Japan*

09:00 Measurement and Simulation of Test Structures Dedicated to the Investigation of Heat Diffusion at Nanoscale
20mn

Marcin Janicki, Jędrzej Topilko, Artur Sobczak, Piotr Zajac, Piotr Pietrzak, Andrzej Napieralski, *Lodz University of Technology*

09:20 Migration of flow induced hotspot with heat spreader integrated microchannel subjected to asymmetric hot spots: A multiphysics approach
20mn

G Narendran, N Gnanasekaran, D Arumuga Perumal, *National Institute of Technology Karnataka, Surathkal, India*

09:40 New Method to Determine the Local Joule Heat Distribution in Fast Switching Device
20mn

Christian Römelsberger, Martin Hanke, *CADFEM GmbH*

Session 10 — Solid State Lighting

Tuesday March 26 2019 08:30

Chaired by Geneviève Martin and Bernd Schwarz

Salon 2-3

08:30 Solder interconnect degradation with irregular joint shape

30mn

X.J.Zhao¹, H. De Vries¹, R. Engelen¹, P. Watté², G. van Hees¹

¹ Signify (Philips Lighting) Research, Eindhoven, The Netherlands

² Signify LED Electronics, Eindhoven, The Netherlands

09:00 Lifetime Prediction of Ultraviolet light-emitting diodes with accelerated Wiener degradation process

20mn

Zhou Jing¹, Mesfin Seid Ibrahim², Jiajie Fan¹, Xuejun Fan³, Guoqi Zhang⁴

¹ College of Mechanical and Electrical Engineering, Hohai University, Changzhou 213022, China

² Department of Industrial and System Engineering, The Hong Kong Polytechnic University, Hung Hom, Hong Kong

³ Department of Mechanical Engineering, Lamar University, Beaumont, TX 77710, USA

⁴ EEMCS Faculty, Delft University of Technology, Delft 2628, the Netherlands

09:20 Modelling Thermo-mechanical Stress in GaN-LEDs Soldered on Copper Substrate with simulations validated by Raman experiments

20mn

Fosca Conti¹, Raffaella Signorini¹, Enrico Brugnolotto¹, Gordon Elger², Sri Krishna Bhogaraju², E Liu²

¹ Department of Chemical Sciences, University of Padova, Italy

² Institute of Innovative Mobility, Technische Hochschule Ingolstadt, Germany

09:40 Failure Identification in LED packages by Transient Thermal Analysis and Calibrated FE Models

20mn

Alexander Hanss, E Liu, Muhammad Rizwan Abdullah, Gordon Elger, Institute for Innovative Mobility, Technische Hochschule Ingolstadt

10:20 Coffee break

Dialog session (posters) — Session 11

10:20 Tuesday March 26 2019

Boardroom Chaired by Sven Rzepka and Mike Röllig. Vote for best poster.

Numerical Simulation of Top Metal Thickness on IMD Stress due to Probing

PID 8

Raj Sekar Sethu ¹, Lars Bergmann ¹, Marco Erstling ¹, Peter Lammert ¹, Angela Fahr ¹, Hansika Jayawardana ²

¹ X-FAB Semiconductor Foundries AG, Kuching Sarawak, Malaysia

² Swinburne University of Technology Sarawak, Kuching Sarawak, Malaysia

Determination of BEOL Aluminum-Copper Constitutive Equation using FEA Simulation and Response Surface Methodology

PID 9

Verena Hein ¹, Raj Sekar Sethu ², Hansika Jayawardana ³, Kok Heng Soon ³, Almon Wei-Yen Chai ³

¹ X-FAB Semiconductor Foundries AG, Erfurt, Germany

² X-FAB Semiconductor Foundries AG, Kuching, Malaysia

³ Swinburne University of Technology Sarawak Campus, Kuching, Malaysia

Electromigration Effects in Corroded BGA

PID 11

Kirsten Weide-Zaage ¹, Alexandrine Guédon-Gracia ², Hélène Frémont ²

¹ RESRI Group, Institute of Microelectronic Systems (IMS), Leibniz Universität Hannover, Hannover, Germany

² Laboratoire IMS, CNRS UMR 5218, Université de Bordeaux, Talence, France

High Power Terminal Vibrational Analysis in Response to Experimental Qualification Results

PID 13

Matt Packwood, Daohui Li, Paul Mumby-Croft, Xiang Li, Dynex Semiconductor, Lincoln, United Kingdom

A SPICE-based Transient Thermal-Electronic Model for LEDs

PID 27

Bo Sun, Guangdong University of Technology

Jiajie Fan, Hohai University

Xuejun Fan, Lamar University

Guoqi Zhang, Delft University of Technology

- PID 29 **Electrical and optical characterization of MoS₂ thin film transistors and the effect of strain on their performances**
Zuopeng Qu ¹, Hongyu Tang ², Huaiyu Ye ³, Xuejun Fan ⁴, Guoqi Zhang ²
¹ Renewable Energy School, North China Electric Power University, Beijing, China
² Delft Institute of Microsystems and Nanoelectronics, Delft University of Technology, Delft, The Netherlands
³ Key Laboratory of Optoelectronic Technology and Systems, Education Ministry of China, Chongqing University, Chongqing, China
⁴ Department of Mechanical Engineering, Lamar University, Beaumont, Texas, USA
-
- PID 32 **Online prognostication of remaining useful life for random discharge lithium-ion batteries using a gamma process model**
Zeyu Wu, Zili Wang, Cheng Qian, Bo Sun, Yi Ren, Qiang Feng, Dezhen Yang, School of Reliability and Systems Engineering, Beihang University, Beijing, China
-
- PID 39 **Comparison of the thermal-mechanical behavior of a soldered stack influenced by the choice of the solder**
Vargas Ramiro, Gonda Viktor, Obuda University
-
- PID 46 **Numerical and experimental study of a novel body-mounted piezoelectric energy harvester based on synchronized multi-magnet excitation**
Arunas Kleiva, Rolanas Dauksevicius, Kaunas University of Technology, Kaunas, Lithuania
-
- PID 47 **Modelling and Simulation of Glass Frit Bonding of Silicon Wafers**
Seyed Amir Fouad Farshchi Yazdi ¹, Matteo Garavaglia ², Aldo Ghisi ¹, Alberto Corigliano ¹
¹ Politecnico di Milano, Milan, Italy
² ST Microelectronics, Agrate Brianza, Italy
-
- PID 48 **Analytical modelling of MEMS Z-axis comb-drive accelerometer**
Cezary Maj, Michał Szermer, Piotr Zajac, Piotr Amrozik, Lodz University of Technology
-
- PID 65 **Coupled Electro-mechanical Simulation of Capacitive MEMS Accelerometer for Determining Optimal Parameters of Readout Circuit**
Piotr Zajac, Michał Szermer, Piotr Amrozik, Cezary Maj, Grzegorz Jabłoński, Lodz University of Technology
-
- PID 81 **Warpage Behavior Analysis of Semiconductor Package Including Chip**
Kento Kariya, Naoaki Tsurumi, Takuji Maekawa, Mitsuru Morimoto, Noriyuki Masago, Research and Development Center, ROHM Co., Ltd. Kyoto, Japan
-

Design for Package Miniaturization for a MEMS Pressure Sensor

PID 104

Roseanne Duca, *STMicroelectronics Malta (Ltd)*

Marco Omar Ghidoni, *STMicroelectronics Italy (Ltd)*

Degradation of Bisphenol-A-polycarbonate (BPA-PC) Optical Lenses under Simulated Harsh Environment Conditions

PID 109

Maryam Yazdan Mehr, Willem van Driel, Kouchi Zhang, *EEMCS Faculty, Delft University of Technology, The Netherlands*

12:30 Lunch

Session 12 — Electronics reliability under vibration loadings

Tuesday March 26 2019 14:00

Chaired by Ehmadi Poshtan and Susan Zhao

Salon 5-6

**14:00 Effect of Nonlinear Interactions of Electronic Assemblies in Response to
30mn Multiaxial Vibration Excitation**

Xiao Lin, [Abhijit Dasgupta](#), *University of Maryland, College Park, United States.*

**14:30 Effect of Material properties and Boundary condition on PCB frequencies in
20mn electronic control unit**

[Mahdi Sadeghinia](#)¹, Chalukya Chincholi², Alexander Udyansky³, Andreas Fischer¹

¹ *Robert Bosch GmbH*

² *Robert Bosch Engineering and business solutions private limited-India*

³ *Bosch Automotive Products (Suzhou) Co. Ltd-China*

**14:50 Harmonic Vibration Durability Tests on Lead-Free Solder Joints at Different
20mn Isothermal Conditions**

[Karsten Meier](#)¹, David Leslie², Tamara Storz², Abhijit Dasgupta², Karlheinz Bock¹

¹ *Technische Universität Dresden, Institute of Electronics Packaging Technology, Dresden, Germany*

² *Center for Advanced Life Cycle Engineering (CALCE), Mechanical Engineering Department, University of Maryland, College Park, USA*

Multiphysics / Scale analysis - including — Session 13 moisture, electromigration, etc.

14:00 Tuesday March 26 2019

Salon 4

Chaired by Bart Vandeveld and Gordon Elger

14:00 Resistor-Capacitor Approach for Modelling of Temperature and Humidity

30mn **Response Inside Electronic Enclosures**

Zygimantas Staliulionis¹, Sankhya Mohanty², Jesper Henri Hattel²

¹ FORCE Technology, Product Compliance, Hørsholm, Denmark

² Process Modelling Group, Department of Mechanical Engineering, Technical University of Denmark, Lyngby, Denmark

14:30 Computational Mechanics for Flexible and Wearable Electronics

20mn

Zhuangjian Liu, Institute of High Performance Computing, A*STAR Research Entities

14:50 Application of Artificial and recurrent neural network on the steady-state and transient finite element modeling

20mn

Cadmus Yuan¹, Yu-Jun Hong¹, Chang-Chi Lee¹, Kou-Ning Chiang², Jin-Huang Huang¹

¹ Department of Mechanical and Computer-aided Engineering, Feng Chia University, Taichung, Taiwan

² Department of Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan

15:15 Coffee break

Session 14 — MEMS structures - II

Tuesday March 26 2019 15:45

Chaired by Véronique Rochus and Rainer Dudek

Salon 2-3

15:45 Automatic assembly of multiscale models and its application to a family of homogenized models of wave propagation through interfaces having a periodic structure

30mn

Michel Lenczner, Walid Belkhir, Nicolas Ratier, Nhat Binh Trinh, Bruno Cavallier, FEMTO-ST Institute, University of Bourgogne Franche-Comté

16:15 Simulation Methodology for Active Semiconductor Devices in MEMS

20mn

Mike Schwarz, Volkmar Senz, Arne Dannenberg, Wolfgang Feiler, Friedjof Heuck, Thomas Friedrich, Christian Sorger, Jochen Franz, Robert Bosch GmbH

16:35 Simulation-Based Design of an Electrostatically Driven Microactuator for Fluid Transport in Mobile Applications

20mn

M. Seidl¹, M. Gehring¹, U. Krumbein², G. Schrag¹

¹ Chair for Physics of Electrotechnology, Technical University of Munich, Munich, Germany

² Infineon Technologies AG, Neubiberg, Germany

16:55 Reconstructing mid-air acoustic holograms using PMUT arrays: a simulation study

20mn

Hang Gao, Pieter Gijsenbergh, Shengping Mao, Alexandre Halbach, Yongbin Jeong, David Cheyns, Xavier Rottenberg, Veronique Rochus, Imec, Leuven, Belgium

17:15 Modelling, Simulations and Performance Analysis of MEMS vibrating Gyroscope in Coventor MEMS Environment

20mn

Jacek Nazdrowicz, Andrzej Napieralski, Lodz University of Technology, Lodz, Poland

EU projects — Session 15

15:45 Tuesday March 26 2019

Salon 5-6

Chaired by Kirsten Weide-Zaage

15:45 Delphi4LED EU project

30mn

Genevieve Martin, *Signify, Eindhoven, The Netherlands*

16:15 TRACE EU project

30mn

Rainer Dudek, *Fraunhofer ENAS, Dept. MMC, Chemnitz, Germany*

16:45 EuroPAT-MASIP

30mn

Sven Rzepka, *Fraunhofer Institute for Electronic Nano Systems, Chemnitz, Germany*

17:15 IoSense EU project

30mn

Willem van Driel, *Signify (Philips Lighting), Eindhoven, The Netherlands*

Session 16 — High power applications

Tuesday March 26 2019 15:45

Chaired by Kaspar Jansen and Hélène Frémont

Salon 4

15:45 Vacancy Transport, Mechanical Stress, and Self-Diffusion under 30mn Electromigration

Xuejun Fan¹, Zhen Cui², Kasemsak Kijkanjanapaiboon¹, G.Q. Zhang²

¹ Department of Mechanical Engineering, Lamar University, Beaumont, USA

² Department of Microelectronics, Delft University of Technology, The Netherlands

16:15 Simulative Comparison of Polymer and Ceramic Encapsulations on SiC- 20mn MOSFET Power Modules under Thermomechanical Load

Felix Wagner¹, Youssef Maniar¹, Martin Rittner¹, Stefan Kaessner¹, Michael Guyenot¹, Lukas Lang¹, Bernhard Wunderle²

¹ Robert Bosch GmbH, Corporate Research and Advance Engineering, Renningen, Germany

² TU Chemnitz, Institute for Materials and Reliability of Microtechnology Systems, Chemnitz, Germany

16:35 Micro Bending Test on Double Cantilever Beams: A specimen-centred 20mn approach to accurate determination of the visco-plastic properties of Sintered Silver for Power Electronics applications

Uwe Zschenderlein¹, Markus Klingler², Jörg Arnold¹, Mario Baum³, Marie Weißbach³, Marco Schaal², Bernhard Wunderle¹

¹ Chemnitz University of Technology, Chemnitz, Germany

² Robert Bosch GmbH Reutlingen, Germany

³ Fraunhofer Institute ENAS, Chemnitz, Germany

16:55 Methodology for Correlation of Porosity and Mechanical Properties of Silver 20mn Sintered Joints in Electronics

R. Metasch¹, M. Roellig¹, P. Knoch¹, C. Weinmann¹, K. Meier²

¹ Fraunhofer Institute for Ceramic Technologies and Systems

² Technische Universität Dresden, Institute of Electronic Packaging Technology

Exhibitor and Sponsor special session

Salon 5-6

18:00 Tuesday March 26 2019

Chaired by Willem van Driel

18:00 Bosch / CADFEM / Dynardo / FRT-CWM / Huawei / Siemens

19:15 Dinner-cocktail party at venue, until 21h15

**EuroSimE Steering Committee, open to everyone. 60mn
max, during the cocktail party.**

Salon 2+3

Willem van Driel

Tuesday March 26 2019 19:45

19:45 The EuroSimE Steering Committee is open to anybody. Among the addressed topics, it will select the local organiser and city where to hold EuroSimE 2020 (please prepare pitch)

Session 17 — Technical keynotes - II

Wednesday March 27 2019 08:30

Chaired by Bernhard Wunderle and Maryam Yazdan Mehr

Salon 4

08:30 Air-coupled array of PMUTS at 100 kHz with PZT Active Layer: Multiphysics 30mn Model and Experiments

Gianluca Massimino ¹, Alessandro Colombo ¹, Raffaele Ardito ¹, Fabio Quaglia ²,
Francesco Foncellino ³, Alberto Corigliano ¹

¹ Department of Civil and Environmental Engineering, Politecnico di Milano, Italy

² Analog, MEMS and Sensors Group, ST Microelectronics, Cornaredo, Italy

³ AMS, RnD Group, ST Microelectronics, Arzano, Italy

09:00 Modeling Based Development and Challenges of Key Electronic 30mn Manufacturing Chain Equipment

Sheng Liu, Zhiyin Gan, Bin Gao, Institute of Technological Sciences, Wuhan University,
China

09:30 Reliability of electronic materials when subjected to aging conditions 30mn

Mohammad Motalab, Bangladesh University of Engineering and Technology (BUET),
Dhaka, Bangladesh

Munshi M. Basit, Georgia Southern University, Statesboro, GA, USA

Jeffrey C. Suhling, Auburn University, Auburn, AL, USA

Awards ceremony

Salon 4

10:00 Wednesday March 27 2019

Chaired by Sven Rzepka

10:00 Best and outstanding papers and posters

10:30 Coffee break

IC level thermo-mechanical analysis — Session 18

11:00 Wednesday March 27 2019

Salon 4

Chaired by Reinhard Pufall and Cheng Qian

11:00 Simulations in Terms of Radiation Effects on different BEOL Material Systems
30mn

Kirsten Weide-Zaage ¹, [Guillermo Paya-Vaya](#) ², Philemon Eichin ¹

¹ RESRI Group, Institute of Microelectronic Systems (IMS), Leibniz Universität Hannover

² AS, Institute of Microelectronic Systems (IMS), Leibniz Universität Hannover

11:30 BEoL Cracking Risks due to Manufacturing Introduced Residual Stresses
20mn

[Juergen Auersperg](#) ¹, Ellen Auerswald ², Dietmar Vogel ², Sven Rzepka ²

¹ Micro Materials Center at Fraunhofer ENAS, Chemnitz and Berliner Nanotest und Design GmbH, Berlin und Chemnitz, Germany

² Micro Materials Center at Fraunhofer ENAS, Chemnitz, Germany

11:50 Study of wafer warpage for Fan-Out wafer level packaging: finite element modelling and experimental validation
20mn

[Abdellah Salahouelhadj](#), Mario Gonzalez, Kris Vanstreels, Arnita Podpod, Alain Phommahaxay, Kenneth June Rebibis, Eric Beyne, IMEC, Leuven, Belgium

12:10 Characterization of Stochastically Distributed Voids in Sintered Nano-Silver Joints
20mn

Zhongchao Sun, Zili Wang, [Cheng Qian](#), Yi Ren, Qiang Feng, Dezhen Yang, Bo Sun, Beihang University

Session 19 — Advanced experimental analysis techniques

Wednesday March 27 2019 11:00

Chaired by Michel Lenczner and Xuejun Fan

Salon 2-3

11:00 Direct Measurements of Underfill Local Strain Using Confocal Microscopy and Digital Image Correlation

30mn

Ying Yang, Papa Momar Souare, Julien Sylvestre, *Institut Interdisciplinaire d'Innovation Technologique (3iT), University of Sherbrooke, Canada*

11:30 Plastic deformation and failure modes of moulding compounds during indentation loading and their importance for the quantitative characterisation of adhesion

20mn

Nadine Pflügler¹, Georg M. Reuther¹, Michael Goroll¹, Reinhard Pufall¹, Bernhard Wunderle²

¹ *Infineon Technologies AG, Neubiberg, Germany*

² *Technische Universität Chemnitz, Chemnitz, Germany*

11:50 Measurements and Simulations of the Creep Strain in Flip Chip Dies

20mn

Florian Schindler-Saefkow¹, Florian Rost², Sven Rzepka¹

¹ *Fraunhofer ENAS, Micro Materials Center, Chemnitz, Germany*

² *TU Chemnitz, Germany*

12:10 Warpage Investigation of PCB Embedding Technology - Determination of Relevant Modelling Parameters by Means of FEM and Experiments

20mn

Florian Rost¹, Saskia Huber¹, Hans Walter¹, Marius van Dijk¹, Thomas Cramer², Johannes Jaeschke¹, Olaf Wittler¹, Martin Schneider-Ramelow³

¹ *Fraunhofer Institute for Reliability and Microintegration (IZM), Berlin, Germany*

² *ILFA Industrieelektronik und Leiterplattenfertigung aller Art GmbH, Hannover, Germany*

³ *Technische Universität Berlin, Berlin, Germany*

12:30 Lunch

Visit of Robert Bosch plant of Salzgitter

13:30 Wednesday March 27 2019

13:30 Departure by bus from venue

16:30 Return to venue