

Short Course: Krivec

Sunday July 05 2020 08:30

08:30

10:30 Coffee break

Short Course: Raghavan

Sunday July 05 2020 10:45

10:45

Short Course: Krivec

Sunday July 05 2020 10:45

10:45

13:00 Lunch

Short Course: Wilcoxon

Sunday July 05 2020 14:00

14:00

Sunday July 05 2020

Short Course: Suhling

14:00 Sunday July 05 2020

14:00

Short Course: Pressel

14:00 Sunday July 05 2020

14:00

16:00 Coffee break

Short Course: Suhling

16:15 Sunday July 05 2020

16:15

Short Course: Rao

16:15 Sunday July 05 2020

16:15

09:00 Welcome by W. van Driel

Industry keynotes

Monday July 06 2020 09:15

09:15 Mohak Shah (Intel) - Latest advances in AI/ML

09:45 Shubhada Sahasrabudhe (LG) - Challenges and advances in use-condition-based reliability testing

10:15 Thomas Krivec (AT&S) - The long road towards Virtual Prototyping in PCB Manufacturing - A Status Review

10:45 Coffee break

Session 1 — Technical Keynotes

Monday July 06 2020 11:15

11:15 Advanced FinFET Circuit design by considering multi physics and multi scale stress interactions
30mn

Corresp. author: Richard (Shiguo) Rao

11:45 Trade-offs in Electronics Reliability: meeting thermal and solder joint integrity requirements
30mn

Corresp. author: Ross Wilcoxon

12:45 Lunch

Chip Package Interaction — Session 2

14:00 Monday July 06 2020

14:00 Multi-Physical Numerical Modelling of Hybrid Flexible Sensor

30mn

Corresp. author: Zhuangjian LIU

14:30 Chip Package Interaction Stress Modelling

20mn

Corresp. author: Kashi Vishwanath Machan

14:50 Simulation of Fatigue Damage in Clusters of DMOS-cells Subjected to Non-Uniform Transient Thermo-Mechanical Loading

20mn

Corresp. author: Paul Hoffmann

15:10 Semi-empirical law for fatigue resistance of redistribution layers in chip-scale packages

20mn

Corresp. author: Michiel van Soestbergen

15:30 Comparison of Mechanical Modelling Approaches on Fan-Out Panel-Level Packaging for Warpage Estimation

20mn

Corresp. author: Chang-Chun Lee

Session 3 — IPCEI on Microelectronics - 1

Monday July 06 2020 14:00

14:00 Introduction to the Important Project of Common European Interest (IPCEI)

20mn

Corresp. author: R. Pforr (Zeiss) and Klaus Pressel (Infineon)

14:20 Differential Reflective Metrology: An innovative variability measurement for advanced FDSOI material

20mn

Corresp. author: JM Billiez, W Schwarzenbach (Soitec, France)

14:40 Thermal-electric modelling of thermoelectric and electrocaloric on-chip cooling devices

20mn

Corresp. author: C. Schwinge, S. Kolodinsky, M. Wiatr (Globalfoundries and Fraunhofer)

15:00 Finite Element Simulation for High Frequency Automotive Package Developments

20mn

Corresp. author: K. Meier et al, (Globalfoundries and TU Dresden)

15:20 Power Module Ceramic Substrates: mechanical characterization and modeling

20mn

Corresp. author: Michele Calabretta (STMicroelectronics Italy)

15:40 Reliability Requirements of Advanced Packaging in the Era of Electrified, Automated and Connected Driving

20mn

Corresp. author: P. Gromala (Bosch)

Thermal Behavioral Modelling and — Session 4 Characterization

14:00 Monday July 06 2020

**14:00 Thermal resistance characterization of GaN power HEMTs on Si, SOI, and
30mn poly-AlN substrates**

Corresp. author: Alessandro Magnani

**14:30 Comparing prediction methods for LED failure measured with Transient
20mn Thermal Analysis**

Corresp. author: Andreas Zippelius

**14:50 Compact Thermal Modelling of Nanostructures Containing Thin Film
20mn Platinum Resistors**

Corresp. author: Marcin Janicki

**15:10 Structure Function Assisted Thermal Coupling Analysis for Paralleling
20mn Power Semiconductor Chips**

Corresp. author: Daniel Pottage

**15:30 Thermal On-Board Spectroscopy
20mn**

Corresp. author: Mohamad El Khatib

15:50 Coffee break

Session 5 — Thermo-Mechanical Simulation

Monday July 06 2020 16:30

16:30 A Review of Stress/Strain Measurement using Micro-Raman Spectroscopy in Electronic Packaging
30mn

Lulu Ma ¹, Wei Qiu ¹, Xuejun Fan ²

¹ *Tianjin University, Tianjin, China*

² *Lamar University, Beaumont, Texas, USA*

17:00 Nonlinear FEM Global and local models for damage propagation in optoelectronic lead-free components with thermal loading with SEM observations validations
20mn
Corresp. author: Safa NOCAIRI

17:20 Estimation of position dependent solder joint capacity based on explicit PCB modelling
20mn

Corresp. author: Michael Schmidt

17:40 Bi-Directional Coupled Thermal-Electric Analysis Using Modified Contact Elements for Semiconductor Junctions
20mn

Corresp. author: Martin Hanke

MEMS Simulation — Session 6

16:30 Monday July 06 2020

16:30 Using equivalent material characteristics in FE analysis

30mn

Corresp. author: Chang-Chun Lee

17:00 Design of a micro-opto-mechanical ultrasound sensor for a photoacoustic imaging setup

20mn

Corresp. author: Veronique Rochus

17:20 Numerical Toolbox for Assessing and Evaluating the Efficiency of Flow Field Generation and Energy Transfer of a Bionic Microflapper

20mn

Corresp. author: Wolfgang Hölzl

17:40 Numerical analysis of impact induced failure for MEMS membranes during guided free fall tests

20mn

Corresp. author: Alberto Corigliano

18:00 Towards a System-Level Model of a Tunable Dual-Frequency Piezoelectric Energy Harvester

20mn

Corresp. author: Yongchen Rao

Session 7 — Thermal Characterization

Monday July 06 2020 16:30

16:30 Analysis of SiC Schottky diodes after thermal vacuum test by means of lock-30mn in infrared thermography

Corresp. author: Miquel Vellvehi

17:00 Condensation characteristics of a propylene loop heat pipe working in 19320mn K-283 K

Corresp. author: Rongjian Xie

17:20 Power Cycling of TO-247 Packaged SiC Devices

20mn

Corresp. author: Andreas Lövberg

17:40 Study on the Application of New Refrigerant Working Fluid in Loop Heat20mn Pipes and the Best Charge Ratio

Corresp. author: Rongjian Xie

18:00 Hydrolytic resistant performance characterization for Y3Al5O12:Ce3+20mn yellow phosphor used in white LED packaging

Corresp. author: Jiajie Fan

19:15 Dinner downtown

**Advanced packaging thermo-mechanical — Session 8
analysis and simulation
09:00 Tuesday July 07 2020**

09:00 Vibrational fatigue calculation of solder joints with FEMFAT spectral
30mn

Corresp. author: Harald Ziegelwanger

09:30 Simulation challenges of warpage for wafer- and panel-level packaging
20mn

Corresp. author: Marius van Dijk

09:50 An integrated approach to optimize solder joint reliability
20mn

Corresp. author: Michele Calabretta

10:10 Reliability assessment of Au metallisation on released Parylene membranes
20mn

Corresp. author: Uwe Zschenderlein

Session 9 — Thermal Analysis

Tuesday July 07 2020 09:00

09:00 Optimal Thermal Design of a Miniaturized Thermoelectric Generator

30mn

Corresp. author: Cheng Dong Yuan

09:30 Optimization of Thermal Vias Design in PCB-Based Power Circuits

20mn

Corresp. author: Antonio Pio Catalano

09:50 Identification of influencing PCB design parameters on thermal performance of a QFN

20mn

Corresp. author: Kai Hollstein

AI assisted thermo-mechanical simulations — Session 10 (provisional)

09:00 Tuesday July 07 2020

09:00 AI Assisted Package Design for Improved Warpage Control of Ultra-Thin Packages
30mn

Corresp. author: Nagarajan Raghavan

09:30 BGA solder strain prediction using a Neural Network regressor
20mn

Corresp. author: Pablo Ferrando-Villalba

09:50 Reliability Prognostics for Encapsulated Standard Packages by Neural Networks Using Data from in-situ Condition Monitoring during Thermal Shock Tests
20mn

Corresp. author: Peter Meszmer

10:10 Solder joint reliability risk estimation by AI modeling
20mn

Corresp. author: Cadmus Yuan

10:30 Coffee break

Session 11 — Dialog Session (Posters)

Tuesday July 07 2020 10:30

PID 9 **Comparison of different visco-plastic models for SAC305 solder material in simulation of cyclic four point bending (4-PB) test**

Corresp. author: ZhangMaofen

PID 11 **Identification and improvement of failure mechanism of the plate heater**

PID 11

Corresp. author: Hyoungseuk Choi

PID 17 **Assessment of cracking risk in BEOL due to stress transition of Ti/TiN liner**

PID 17

Corresp. author: Sergey ANANIEV

PID 18 **A method to estimate device thermal performance at the early design stage**

PID 18

Corresp. author: Michal Musial

PID 20 **The LED's phosphor color quality estimation by predictive method of light spectral composition in the range of working temperatures**

PID 20

Corresp. author: Irena Fryc

PID 21 **Finite element analysis: A tool for investigation of sharpness changes in automotive cameras**

PID 21

Corresp. author: Amit Pandey

PID 27 **Panel level warpage simulation of printed circuit boards comprising electrical components**

PID 27

Corresp. author: Julia Zündel

PID 28 **Healing property investigations of mechanically fatigued Sn-35Bi solder**

PID 28

Corresp. author: David Melinc

- PID 29 **3-D FEM Investigation on Electrical Ruggedness of Double-Sided Cooling Power Modules**
Corresp. author: Vincenzo d'Alessandro
-
- PID 30 **A Data-Driven Approach for Modeling Environmental Radar Clutter**
Corresp. author: Thomas Eder
-
- PID 38 **Stress-induced Vertical Deformations in state-of-the-art Power Modules: an Improved Electro-thermo-mechanical Approach**
Corresp. author: Antonio Pio Catalano
-
- PID 41 **Influence of Substrate Materials on Tensile vs. Shear Fatigue Durability of Solder Joints**
Corresp. author: Abhishek Deshpande
-
- PID 48 **A Study on the Influence of TSV Protrusion on BEoL Cracking and Delamination Risk**
Corresp. author: Juergen Auersperg
-
- PID 54 **Correlation between Microstructure and Mechanical Properties for Fatigue Investigations of Aluminum Nitride based piezoelectric MEMS**
Corresp. author: Martin Stiebing
-
- PID 55 **Thermal cycling solder joint reliability reduction due to PCB bending introduced during product assembly**
Corresp. author: Marek Wojcik
-
- PID 59 **Mechanical design of a 3D CMOS compatible microelectrode array for neural interfacing**
Corresp. author: Bart Weekers
-
- PID 60 **A Reliability Assessment Approach for Neurons of Spike Neural Networks**
Corresp. author: Bo Sun
-
- PID 62 **Analysis of Pitot tube's Behavior in Blockage Situations**
Corresp. author: Murat Kaya Yapici
-
- PID 64 **Wavy Cantilever RF-MEMS Switch based on Bidirectional Control of Intrinsic Stress**
Corresp. author: Murat Kaya Yapici
-

PID 67 **A new multistep characterization method of moisture diffusion in epoxy mold compound**

Corresp. author: Zhang Maofen

PID 68 **A novel and automatic assembly-able conductive silicone rubber key by placement machine**

Corresp. author: Xiaosong MA

PID 69 **Passive micromixer with sharp edges: Simulation and Optimization**

Corresp. author: Moein Talebian Gevari

PID 70 **An ISFET Sensor-Integrated Micromixer for pH Measurements**

Corresp. author: Murat Kaya Yapici

PID 71 **Characterization of Gurson-Tvergaard-Needleman-Model Material Parameters for Sintered Silver Using Instrumented Indentation**

Corresp. author: Simon Kuttler

PID 72 **Methodology for Analyzing Thermal Induced Mechanical Faults in Bond Wire-Pad Assemblies**

Corresp. author: Bojita Ioan-Adrian

PID 74 **The new levels of light-emitting diodes luminance**

Corresp. author: Dariusz Czyżewski

PID 75 **Nanoindentation as part of material characterization of thin metal films**

Corresp. author: Nathanael Jöhrmann

PID 77 **Modeling and Simulation of a Low voltage Electroosmotic Micropump for Non-Newtonian fluids**

Mohamed Fathy Badran, Mechanical Engineering Department, Future University in Egypt, Cairo, Egypt

PID 84 **Test set-up development for accelerated testing of solder joints under coupled thermal and mechanical cycling load**

Corresp. author: Jonas Gleichauf

Impact of PCB-housing-interaction on QFN solder joint reliability

PID 90

Corresp. author: Bart Vandeveldde

Simulation-based analysis of thermo-mechanical constraints in packages for diamond power devices

PID 98

Corresp. author: Naüm Fusté

Mechanical characterization and modeling of different pad structures

PID 99

Corresp. author: Gaetano Sequenzia

Self-powered pressure sensor based on triboelectric nanogenerator

PID 104

Corresp. author: Kai Tao

A sea snake structure wave power generator for efficiently harvesting ocean wave energy with flexible structure

PID 105

Corresp. author: Kai Tao

12:45 Lunch

Session 12 — Advanced Technologies

Tuesday July 07 2020 14:00

14:00 Analysis of Handling Stresses in Thin Silicon Wafers

30mn

Corresp. author: Torsten HAuck

14:30 Modeling of Thermo-Mechanical Stress Transmission from Packaging for Piezoresistive Sensors

20mn

Corresp. author: Roseanne Duca

14:50 Virtual Prototyping, Design for Reliability, and Qualification for a Full SiP Product Portfolio of a FOWLP Line

20mn

Corresp. author: Ghanshyam Gadhiya

15:10 Analytical multi-step homogenization methodology for a stack of thin films in microelectronics

20mn

Corresp. author: Hassine MILED

IPCEI on Microelectronics - 2 — Session 13

14:00 Tuesday July 07 2020

**14:00 Determination of Fracture Properties of Thin Dielectric Films by
20mn Nanoindentation**

Corresp. author: Sergey Ananiev et al. (Infineon)

**14:20 FEM simulation applied to Thermal Laser Separation (TLS) with Deep Scribe
20mn for Silicon Wafer Dicing**

Corresp. author: Cristian Belgardt (3D Micromac)

**14:40 Trends and future challenges in designing and simulating high performance
20mn MEMS**

Corresp. author: Cristian Belgardt (3D Micromac)

**15:00 Transient Thermoelastic Structure Analysis to quantify the Thermal
20mn Stability of Extreme-Ultraviolet (EUV) Projection Systems**

Corresp. author: Tim Laufer (Zeiss)

**15:20 Towards efficiency increase and automation in FEM Modeling
20mn**

Corresp. author: Jürgen Moosburger, Harald Laux, Dr. Martin Straßburg (OSRAM)

15:30 Coffee break

Session 14 — Manufacturing Process Models

Tuesday July 07 2020 16:00

16:00 CFD Simulations of Reactive Multi-Layer Usage in Joining Processes

20mn

Corresp. author: Steffen Wiese

16:20 DSM Reballing Ball Height Prediction Model

20mn

Corresp. author: Chao-Wei Liu

16:40 Co-simulation in MATLAB and ANSYS for ultrasonic wire bonding process optimization

20mn

Corresp. author: Reinhard Schemmel

17:00 The Improvement of the Life Time Performance Estimation for Interconnect Stacks in Realistic Layouts

20mn

Corresp. author: Kirsten Weide-Zaage

Material Characterisation — Session 15

16:00 Tuesday July 07 2020

16:00 Characterization of toughness of epoxy based molding compound and its implementation in FEM code
30mn

Corresp. author: Przemyslaw Gromala

16:30 Elastoplastic and fatigue properties of copper in printed circuit boards: from experimental characterization to numerical simulations
20mn

Gautier Girard, Marion Martiny, Sébastien Mercier, *LEM3, Metz, France*

16:50 Assessing the Reliability of Aerosol Jet Printed Nano-Particle Traces on Flex Under Realistic Use Conditions
20mn

Corresp. author: Peter Borgesen

17:10 Extraction of Isotropic Uniaxial Mechanical Properties using Nanoindentation: A Critical Evaluation of Data Analyses Methods based on Experiments and Finite Element Simulation
20mn

Corresp. author: Jan Albrecht

Session 16 — Power Electronics

Tuesday July 07 2020 16:00

**16:00 Reliability Assessment of Ag Sintered Joints Using a SiC Semiconductor and
30mn Determination of Failure Mechanism in the Field of Power Electronics**

Corresp. author: Marco Schaal

**16:30 The Effect of Low Temperature Conditions on Vibration Durability of SAC105
20mn Interconnects**

Corresp. author: Maximilian Ochmann

**16:50 Mechanical simulation of the laser lift off process of GaN from the sapphire
20mn substrate**

Corresp. author: Muyuan Li

**17:10 Three-Dimensional Finite Element Analysis of Boundary Condition Effect on
20mn Void Formation in Electromigration of Interconnect Via Structure**

Corresp. author: Zhen Cui

**17:30 Solder Crack Improvement for a Power Package during TCT and PTC by
20mn Simulation**

Corresp. author: Haibo Fan

Exhibitor and Sponsor special session

18:00 Tuesday July 07 2020

19:15 Dinner-cocktail party at venue

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

Tuesday July 07 2020 19:45

Session 17 — Advanced session

Wednesday July 08 2020 08:30

08:30 System Software Reliability

30mn

Corresp. author: Willem van Driel

09:00 Mitigation of Aging Induced Reliability Degradations Using SAC+Bi Lead Free Solder Alloys

30mn

Corresp. author: Jeffrey C. Suhling

09:30 Thermal aspects of integrated Silicon photonic devices for co-packaged optics

30mn

Corresp. author: Herman Oprins

Awards ceremony

10:00 Wednesday July 08 2020

10:30 Coffee break

Solder Joint Reliability – Session 18

11:00 Wednesday July 08 2020

11:00 Healing solders: A numerical investigation of damage-healing experiments

20mn

Corresp. author: Georg Siroky

11:20 Residual Stress Characterisation of Thin Sputtered Copper Films on Silicon exploiting Membrane Resonance within a Specimen-Centred Approach

20mn

Corresp. author: Bernhard Wunderle

11:40 Characterization of Anisotropic Secondary Creep Behavior of β -Sn Single Crystal

20mn

Corresp. author: Qian Jiang

12:00 Analysis of Solder Fatigue on Mounted Test Assemblies under Thermal Cycling Loads

20mn

Corresp. author: Rainer Dudek

12:20 FEM-study for Solder Model Comparison on Solder Joints Stress-Strain Effects

20mn

Corresp. author: Robert Schwerz

Session 19 — Modelling for Heterogenous Integration and the Roadmap

Wednesday July 08 2020 11:00

11:00 Simulation of Dielectrophoresis based Separation of Red Blood Cells (RBC) from Bacteria Cells
20mn

Corresp. author: Murat Kaya Yapici

11:20 Determining adhesion of critical interfaces in microelectronics - a Reverse Finite Element Modelling approach based on nanoindentation
20mn

Corresp. author: Georg Reuther

11:40 Lateral charge partitioning across the internal base resistance for modeling distributed dynamic lateral effects in SiGe HBTs during large-signal switching
20mn

Corresp. author: Raffaele Salvato

12:00 HIR Chapter - Modelling and Simulation. Next steps for 2020 edition.
40mn

Corresp. author: Chris Bailey

12:45 Lunch