

THERMINIC 2026

SEPTEMBER 16–18, 2026 | BERLIN, GERMANY

PROGRAM 2026

32nd International Workshop on Thermal Investigations of ICs and Systems (THERMINIC)

→ WELCOME

→ PAPERS BY SESSION

WELCOME TO THERMINIC 2026!

The 32nd THERMINIC Workshop once again brings together academics and industry professionals to share the latest advancements in thermal challenges and solutions for electronics, microelectronics and power electronics. Topics range from heat transfer, thermal testing and modelling to advanced cooling solutions, reliability and emerging thermal technologies. This year, we are delighted to welcome the THERMINIC community to Berlin-Köpenick from September 16–18, 2026. Located on the banks of the Dahme river, the NYX Hotel Berlin-Köpenick provides an ideal setting for three days of technical exchange, networking and personal interaction. THERMINIC 2026 features a strong technical programme with 48 oral presentations in 12 oral sessions and 42 poster presentations across two poster sessions. We are also particularly pleased that this year's workshop will feature the largest exhibition in the history of THERMINIC. The strong participation of companies and industry partners underlines the close connection between research and industrial application that has always been at the heart of the workshop.

We are delighted to welcome three distinguished keynote speakers. Bernd Gotsmann from IBM Research will discuss materials challenges for scaled electronics, Stefan Groetsch from ams-OSRAM will address thermal management in high-power optical systems, and Thorsten Meyer from Infineon Technologies will provide insights into packaging technology as an enabler for AI, automotive and IoT.

The programme is complemented by two Professional Development Courses on the day preceding the workshop. This booklet includes all sessions, presentations and social events to help you make the most of your time at THERMINIC 2026.

A particular highlight of the social programme will be the Conference Dinner on Thursday evening aboard the MS Alexander von Humboldt, offering an opportunity to continue conversations in a relaxed atmosphere while cruising through Berlin's southeastern waterways.

Our thanks go to all authors, the members of the Scientific Committee, and our supporters and exhibitors for their valuable contributions to THERMINIC 2026. We would also like to thank everyone involved in the organisation of this year's workshop.

The Chairs are especially pleased to finally welcome the THERMINIC community back to Berlin in person. As many of you will remember, the two previous workshops planned for Berlin, in 2020 and 2021, had to take place online due to the COVID-19 pandemic. We are therefore all the more excited to welcome you "live" to Berlin-Köpenick this year.

We look forward to three inspiring days of scientific exchange, new ideas and personal encounters at THERMINIC 2026.

Bernhard Wunderle
Program Chair



Bernhard Wunderle
Program Chair



Ralph Schacht
Program Committee



Mohamad Abo Ras
Program Committee

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↑ BACK TO MENU

Session 1: High-Performance Computing

🕐 09.45 am – 10.45 am

➔ *Session Chair: Bernhard Wunderle, TU Chemnitz*

09.45 am **Design and Development of Miniaturized Thermal Test Chip for Advanced Interconnect and Packaging Technologies**
Corinna Grosse-Kockert[1], Vikas Dubey[2], Maik Sternberg[1], Dirk Wünsch[2], Karla Hiller[3], Sven Rzepka[2], Mohamad Abo Ras[1]
[1]Berliner Nanotest und Design GmbH, Berlin, Germany; [2]Fraunhofer Institute for Electronic Nano Systems, Chemnitz, Germany; [3]TU Chemnitz, Center for Micro and Nano Technologies, Chemnitz, Germany

10.05 am **Technological Realisation and Validation of a New Overmoulded HPC Package Design Toward an Improved Thermal Interface**
Baris Erol[1], Mathias Koch[2], Marcus Voitel[2], Ole Hölck[2], Leonie Leadbetter[2], Karl-Friedrich Becker[2,3], Tanja Braun[2,3], Daniel May[1], Bernhard Wunderle[1,4]
[1]TU Chemnitz, Germany; [2]Fraunhofer IZM, Germany; [3]TU Berlin, Germany; [4]Fraunhofer ENAS, Germany

10.25 am **Experimental Investigation of Warpage-Induced Thermal Performance Degradation in HPC Packages Using Thermal Test Vehicles**
Dave Saums[1], Dan R. Wargulski[2], Maik Sternberg[2], Mohamad Abo Ras[2]
[1]DS&A LLC, United States of America; [2]NANOTEST, Berlin, Germany



Session 2A: Thermo-Mechanical Reliability 1

🕐 11.30 am – 12.50 pm

➔ *Session Chair: Peter Meszmer, TU Chemnitz*

11.30 am **Limits of Nickel Diffusion Barriers at High Operating Temperatures**
Mathias Nowottnick, Andrej Novikov, Simon Purschke
University of Rostock, Germany

11.50 am **Smart Evaluation of Interconnect Quality Test Methods in LED Packages using Controlled Defects**
Jennifer Rieder, Thomas Zahner, E Liu
ams-OSRAM international GmbH, Germany

12.10 am **Controlled Vibration of a Nonlinear Cantilever System for Tracking Interface Degradation in Advanced Electronic Packages**
David Walther[1], Jörg Arnold[1], Arash Mohammadi[1], Karl Friedrich Becker[2], Mathias Koch[2], Bernhard Wunderle[1,3,4,5]
[1]Chemnitz University of Technology, Germany; [2]Fraunhofer IZM, Berlin, Germany; [3]Fraunhofer ENAS, Chemnitz, Germany; [4]Centre for Micro- and Nanotechnologies (ZfM), Chemnitz, Germany; [5]Centre for Materials, Architectures and Integration of Nanomembranes (MAIN), Chemnitz, Germany

12.30 am **On the Electrical and Thermal Performance of Thermal Gap Pads Exposed to Constant Voltage and Cyclic Thermo-mechanical Loading**
Philip Matzick, Christian Mentin, Sandhya Burri, Stefan Mollov
Silicon Austria Labs, Austria

12.50 pm **Lunch**

Session 2B: Thermal Simulations 1

🕐 11.30 am – 12.50 pm

➔ *Session Chair: Kaushal Arun Pareek, Berliner Nanotest und Design*

11.30 am **Validated Parametric MOR Approach for Thermal Modelling of Semiconductor Switches**
Lorenzo Codecasa[1], Samuele Foresti[2], Luca Raciti[2], Thomas Masper[2], Enrico Ragaini[2], Paolo Maffezzoni[1], Dario D'Amore[1]
[1]Politecnico di Milano, Italy; [2]ABB S.p.A.

11.50 am **Deterministic, Solver-accurate Thermal and Warpage Analysis at Manufacturing Resolution for Advanced 2.5D HBM Packages**
Rahima Mohammed, Hardik Kabaria, Satish Radhakrishnan, Vincent Rerolle, William Stark, Sarah Osetonski, John Bruggeman, Matteo Frigo, Nimish Patil, Balaji Cherukuri
Vinci[4]d.ai, United States of America

12.10 am **Impact of Boundary Conditions on Topology Optimization of Fin Structures for PCM-based Battery Thermal Management**
Nicola Bianco, Andrea Fragnito, Marcello Iasiello, Vittorio Orlanducci, Francesco Piccirillo
Università degli Studi di Napoli Federico II, Italy

12.30 am **Analytically Benchmarked Spatial and Temporal Discretization Guidelines for Finite Element Simulation of Thermal Waves**
Kaushal Arun Pareek[1], Daniel May[2], Peter Meszmer[2,3], Bernhard Wunderle[2,3,4,5], Mohamad Abo Ras[1]
[1]Berliner Nanotest and Design, Berlin, Germany; [2]Chemnitz University of Technology, Chemnitz, Germany; [3]MAIN, Chemnitz University of Technology, Chemnitz, Germany; [4]MMC, Fraunhofer ENAS, Chemnitz, Germany; [5]ZfM, Chemnitz University of Technology, Chemnitz, Germany

12.50 pm **Lunch**

Session 3A: Thermo-Mechanical Reliability 2

🕐 02.00 pm – 03.40 pm

➔ *Session Chair: Mathias Nowottnick, University of Rostock*

02.00 pm **Identifying Failure Root Causes at Cu-Cu Interfaces of Vias using EBAC Analysis**
Lisa Mitterhuber[1], Verena Leitgeb[1], Julia Zündel[2], Maike Sagerer[2], Thomas Krivec[2], Elke Kraker[1]
[1]Materials Center Leoben Forschung GmbH, Austria; [2]AT & S Austria

02.20 pm **Stacked Si-on–GaN Architectures: Unlocking Reliability for Ultra-Compact Half-Bridge Designs**
Sri Sai Chandra Abhinay Nallam[1], Benjamin Fabian[1], Eric Hofmann[1], Christoph Heldt[1], Sebastian Fritzsche[1], Patrick Heinickel[1], Nick Liu[2], Anu Mathew[3]
[1]Heraeus Electronics GmbH; [2]Nexperia B. V.; [3]TU Chemnitz

02.40 pm **A Concept for In-situ Glass-transition Detection in Insulated Metal Substrates**
János Hegedüs[1], Gusztáv Hantos[1], Gyula Lipák[1], David Demian[2], Andrea Cavallini[2], András Poppe[1], Ferenc Ender[1]
[1]BME, Budapest, Hungary; [2]University of Bologna, Italy

03.00 pm **Experimental Investigation of In-situ Glass-transition Detection in Insulated Metal Substrates**
Gusztáv Hantos[1], János Hegedüs[1], Gyula Lipák[1], David Demian[2], Andrea Cavallini[2], András Poppe[1], Ferenc Ender[1]
[1]BME, Budapest, Hungary; [2]University of Bologna, Italy

03.20 pm **Two-dimensional Cryogenic Micro-raman Stress Mapping in Silicon Around Through-silicon Vias and SLID Bond Interface**
Maham Ayaz[1,2], Peter Meszmer[1,2,] Uwe Zschenderlein[1], Susana Richter Trummer[3], Matthias Prinz[3], Bernhard Wunderle[1,2,3,4,5]
[1]TU Chemnitz, Germany; [2]MAIN, TU Chemnitz, Germany; [3]Fraunhofer ENAS, Chemnitz, Germany; [4]ZfM, TU Chemnitz, Germany; [5]Joint Lab Berlin, Germany

Session 3B: Computational Fluid Dynamics

🕐 02.00 pm – 03.40 pm

➔ *Session Chair: Gabor Farkas, SIEMENS DISW*

02.00 pm **Enabling Flow Redistribution in Skived Heat Sinks for High-power Density Computing: An End-to-End Case Study**
Ine Vandebeek, Lieven Vervecken, Rui Vieira
MegaCool Technologies, Belgium

02.20 pm **A Systematic Study of Graphene-enhanced Heat Sinks for Lightweight Thermal Management Applications**
Markus Enmark[1], Lijie He[2], Muhammad Hassan[2], Sajjad Pashazadeh[1], Torbjörn M.J. Nilsson[3], Arian Kamal[4], Kai J. Kallio[4], Johan Liu[1]
[1]Chalmers University of Technology, Sweden; [2]SHT Smart High-Tech AB, Sweden; [3]Saab AB, Sweden; [4]Volvo Car Corporation, Sweden

02.40 pm **AI-driven, Non-parametric Geometry Optimization for Heat Sink Design**
Achref Rabhi, Daniel Haase, Sivasubramani Krishnaswamy, Julio Benavides Rodriguez, Tobias Berg
Synopsys Inc.

03.00 pm **Stainless Steel Thermosyphon and Pulsating Heat Pipe: Thermal Performance Comparison**
Larissa Krambeck[1,2], Kelvin G. Domiciano[1], Maria E. Beé[1], Marco Marengo[2], Marcia B. H. Mantelli[1]
[1] Federal University of Santa Catarina, Brazil; [2]University of Pavia, Pavia

03.20 pm **Transient CFD Modelling of Two Phase Microchannel Cooling in a Multi Chip Power Module**
Sadegh Sadeghi, Amir Sajjad Bahman
Aalborg University, Denmark

3.40 pm **Coffee Break**

Poster Session A

🕐 4.10 pm – 5.10 pm

➔ *Session Chair: John Janssen, NXP Semiconductors*

01 **Thermo-hydraulic Performance of Microchannel Heat Sinks with Square Pin-fin Geometries: A Numerical Investigation**
Ashraf Morsi[1], Mohammed Abdel Razzaq[2], Youssef Khalid[3], Mohamed Naser[1], Mohamed Elkholy[4], Ibrahim Elhagali[4,5], Osama Maklad[6,7]
[1]Alexandria University, Alexandria, Egypt; [2]The University of Texas at Austin, Austin, USA; [3]Cairo University, Cairo, Egypt; [4]Menoufia University, Menoufia, Egypt; [5]POWERlab, EPFL, Lausanne, Switzerland; [6]University of Greenwich, London, UK; [7]Mansoura University, Mansoura, Egypt

02 **A Comparative Study of Heat Conduction-Based Numerical Models for Vapor Chamber Thermal Analyses**
Ahmet Çömez[1], Sertaç Çadırcı[2], Ozan Atalay[1], Ali Eray Torun[1], Caner Demir[1], Hakan Uysal[1]
[1]ASELSAN, UGES Sector Directorate, Ankara, Turkey; [2]Istanbul Technical University, Istanbul, Turkey

03 **Hot Spot Prediction of a MOSFET Chip Using Machine Learning**
Alexandru-Dumitru Buburuzan[1], Georg Pelz[2], Andi Buzo[2], Roxana-Daniela Florescu[3], Marius-Ioan Purcar[1], Sebastian Wittmann[2]
[1]Technical University of Cluj-Napoca, Romania; [2]Infineon Technologies AG, Munich, Germany; [3]Infineon Technologies, Bucharest, Romania

04 **Efficient Electro-thermal Analysis of Power ICs Using a Hybrid Finite Element and Lumped-element Approach**
Luiza Dobre[1], Adrian Bojita[1], Marius Purcar[1], Daniel Tscharnuter[2], Manuel Petersmann[2], Cristian Boianceanu[3]
[1]Technical University of Cluj-Napoca, Romania; [2]KAI Kompetenzzentrum Automobil und Industrieelectronik GMBH,Austria; [3]Infineon Technologies Romania & Co, Romania

05 **Experimental Investigation of Metal-Foam Pore Density in a Phase Change Material-Based Passive Module for Thermal Control of Electronic Components**
Hala Salhab[1,2], Oronzio Manca[1,2], Bernardo Buonomo[1,2], Sergio Nardini[1,2]
[1]Università degli Studi della Campania 'Luigi Vanvitelli', Italy; [2]International Centre for Sustainable Energy Resource Management, UNICAMPANIA Division

06 **Electro-thermal Modelling of 26650-format LiFePO4 Cell for Maritime Applications**
Ane Sainz De La Maza[1,3], Ainhoa Odriozola[1], Enrique E. Valdés[2], Victor M. García[2], Elena Trancho[1], Edorta Ibarra[3], David Ansean[2]
[1]Tecnalia, Derio; [2]University of Oviedo (Uniovi); [3]University of the Basque Country (UPV/EHU)

07 **Experimental Validation of a Lumped Parameter Thermal Model for Spreading Resistance in Direct-Cooled Power Electronics**
Lander Lode Cnudde[1,2], Jana Rogiers[1,2], Michiel De Paepe[1,2], Jasper Nonneman[1,2,3], Michel De Paepe[1,2,4]
[1]Ghent University, Belgium; [2]FlandersMake@UGent – Core lab MIRO, Belgium; [3]University of Antwerp, Belgium; [4]University of Cape Town, South Africa

08 **Numerical Investigation on Thermal Behaviour of Inclined Plate Heat Sink with Metal Foam Fins and PCM for Electronic Cooling**
Aanandsundar Arumugam, Meriem Bounib, Bernardo Buonomo, Oronzio Manca, Sergio Nardini
Universita' degli Studi della Campania "Luigi Vanvitelli", Italy

09 **Thermal Runaway of Battery System Modeling**
Ranim Elogb, Safouene Ouenzerfi, Mustapha Mahdaoui, Souad Harmand
Université Polytechnique haut de France, France

10 **Why the Optimal Pin-Fin Geometry Depends on the Operating Point: A Separation-Based Analysis of Sinusoidal Meso-Channel Cold Plates**
Mahdi Vahidi Ferdousi[1,2], Hadrien Bauduin[1], Michael Maalouly[1], Ali Chehade[1], Fabien Bogard[2], Chadi Maalouf[2]
[1]OVHcloud, Croix, France; [2]ITheMM, University of Reims Champagne-Ardenne, Reims, France

11 **Thermal Investigation in Lock-in Thermography of Lateral Power GaN Transistor from the Backside Under Specific Driving Conditions**
Jeremie Burky, Thomas Grzes, Hugo Kerreneur, Laurent Guillot, Frederic Tilhac
ALTER TECHNOLOGY TUV NORD FRANCE, France

12 **A Low-thermal-Mass Direct-heating and Edge-AI-assisted Contact-thermocouple Platform for Transient Thermal Characterization of Vapor Chambers**
Yuanyuan Tao, Ling Li;
Durham University, United Kingdom

13 **Modeling of Spatially Varying Thermal Contact Conductance in Bolted Electronic Package Heat Sink Joints**
E Ajul[1,2], Muhammed Naseef V[2], Samarjeet Chanda[2]
[1]Indian Institute of Technology Kanpur, Kanpur, India; [2]Indian Institute of Technology Palakkad, Palakkad, India

14 **Non-destructive Defect Analysis of Through-glass Vias Using Transient Thermal Response**
Byongjin Ma, Juhee Baek, Guesuk Lee, Jemin Kim
Korea Electronics Technology Institute, Korea, Republic of (South Korea)

15 **Localized Upper-Zone Heat Extraction for Thermal Stratification Control in Hybrid Immersion-Cooled Servers**
Ayoub Ruichek[1,3], Michael Maalouly[1], Mohamad Hnayno[1], Ali Chehade[1], Farouk Fardoun[2], Tala Moussa[3], Guillaume Polidori[3], Chadi Maalouf[3]
[1]OVHcloud; [2]Doctoral School of Science and Technology Lebanese University; [3]: University of Reims Champagne-Ardenne, France

16 **Experimental Investigation on the Effects of Square Waveform Heat Flux Boundary Conditions Applied to Annular, Intermittent and Slug Flows**
Jana Rogiers[1,2], Jasper Nonnemann[1,2,3], Ilya T'Jollyn[3], Michel De Paepe[1,2,4]
[1]Ghent Universtity, Belgium; [2]FlandersMake@UGent – Core lab MIRO, Leuven, Belgium; [3]University of Antwerp, Belgium; [4]University of Cape Town, Cape Town, South Africa

17 **Bayesian Optimization of Implantable Thermoelectric Generators**
Philipp Hickisch, Dennis Hohlfeld
University of Rostock, Germany

18 **Supercritical CO2 as Working Fluid for Heat Spreader Applications in Thin Form Factor Electronics**
Ankita Pujahari[1], Mark Macdonald[2], Sunando DasGupta[1], Anandaroop Bhattacharya[1]
[1]Indian Institute of Technology Kharagpur, India; [2]Intel Corporation

19 **Pulsating Heat Pipe Passive Cooling for Photovoltaic Panel Distributed Optimizers**
Alex Musetti[1], Rachele Schiasselloni[2], Dario Javier Pavon Vargas[2], Roberto Menozzi[1], Giulio Lorenzini[2], Luca Cattani[2], Alessandro Soldati[1]
[1]Department of Engineering and Architecture, University of Parma, Italy; [2]Department of Engineering for Industrial Systems and Technologies, University of Parma, Italy

20 **Thermal Reduced-order Modelling of a SiC Power Module for Powertrain Cooling-system Design**
Karnon Koné[1,2], Matthieu Fénot[1], Etienne Videcocq[1], Amal Zeaiter[2], Sulivan Küttler[2]
[1]*Prime Institut/ENSMA, France;* [2]*Safran SA*

21 **Coupled Thermo-Mechanical Characterization of a Thermal Interface Material Gap Pad for Top-Side-Cooled Power Devices**
Ismail Recepi, Faruk Kapidzic, Philip Matzick, Stefan Mollov
Silicon Austria Labs GmbH, Austria

22 **Infrared Detection of Crack-Tip-Associated Thermal Signatures Under Cyclic Loading: From Bulk Plexiglas Specimens to Bimaterial Interfaces**
Daniel May[1], Marcus Schulz[2], Mohamad Abo Ras[2], Bernhard Wunderle[1]
[1]*University of Technology Chemnitz;* [2]*Berliner Nanotest und Design GmbH*

5.10 pm **Poster Viewing**
6.30 pm **Welcome Reception**



Session 4: Thermal Materials Innovations

🕐 9.15 am – 10.35 am

➔ *Session Chair: Mohamad Abo Ras, Berliner Nanotest und Design*

09.15 am **Laser Powder Bed Fusion (LPBF) of Copper-graphene Metal Matrix Composites for Enhanced Heat Transfer**

Wessel W. Wits[1,2], Hyunjong Lee[1], Leonore van Goor[1], Bernard Geurts[1], Davoud Jafari[1]

[1]*University of Twente, Netherlands;* [2]*Royal Netherlands Aerospace Centre (NLR), Marknesse, Netherlands*

09.35 am **Lightweight Thermal Management in Electric Vehicle Body Components: Injection-Molded Thermoplastic Sandwiches with Embedded Electronics**

Peter Meszmer[1], Sandy Klengel[2], Marcus Schulz[3], Steffen Müller[2], Ralph Schacht[4], Masoumeh Zarrabian[3], Mohamad Abo Ras[3], Bernhard Wunderle[1]

[1]*TU Chemnitz, Germany;* [2]*Fraunhofer IMWS, Halle, Germany;* [3]*Berliner Nanotest und Design GmbH, Germany;* [4]*Brandenburg University of Technology Cottbus-Senftenberg*

09.55 am **Influence of Surface Roughness on the Thermal and Reliability Performance of Thermal Interface Materials**

Aron Reinke, Antonio Harder, Santiago Campos, Teresa Bräuer, Mohamad Abo Ras, Pattric Zimon*Nanotest, Germany*

10.15 am **Temperature-dependent Switching Current Density and Thermal-shock Response of Patterned Niobium Thin-film Structures for Cryogenic 3D Integration**

Awais Qadir[1,3], Klaus Vogel[2], Nathanael Jöhrmann[1,2], Christian Hofmann[2], Uwe Zschenderlein[1], Matthias Prinz[2], Bernhard Wunderle[1,2,3]

[1]*TU Chemnitz, Germany;* [2]*Fraunhofer ENAS,Chemnitz, Germany;* [3]*MAIN, TU Chemnitz, Germany;*



Session 5: Cooling Concepts & Thermal Technologies

🕐 11.20 am – 1.00 pm

➔ *Session Chair: Ralph Schacht, BTU Cottbus-Senftenberg*

11.20 am **CuBrick: A Novel Vertical Dielectric Immersion Cooling Approach for Power Semiconductors**
Johann Renner, Cuong Hoang, Till Huesgen
University of Applied Sciences Kempten, Germany

11.40 am **Design and Implementation of an Autonomous Sensor-driven Control Framework for Benchmarking Air-based Server Cooling**
Eoin Oude Essink[1], Md Robiul Hossain[1,3], Ciara Ahern[1], Tim Persoons[2], Sajad Alimohammadi1
[1]*Technological University Dublin, Ireland;* [2]*Trinity College Dublin, the University of Dublin, Ireland;* [3]*Digital Futures Research Hub, Technological University Dublin, Ireland*

12.00 pm **Optimisation of Overmolded PowerModules for EV Energy Conversion**
Jérôme Hélie[1], Federicoie Ghioldi[2], Federico Piscaglia[2], Alexandre Marie[3], Jean-Pierre Fradin[3]
[1]*Schaeffler, France;* [2]*Politecnico di Milano, Milano, Italy;* [3]*ICAM, Toulouse, France*

12.20 pm **Development of a Test Bed to Analyse the Cooling Capability of an Air Amplifier for Data Centre Server Thermal Management**
David W. Salter[1], Tim Persoons[2], Sajad Alimohammadi[1]
[1]*School of Mechanical Engineering, Technological University Dublin, City Campus, Ireland;* [2]*Department of Mechanical, Manufacturing & Biomedical Engineering, Trinity College Dublin, Ireland*

12.40 pm **Packaging and Thermal Management Concept of Power Antenna-in-Substrate (AiS) Chip-on-flex Assemblies on Curved Surfaces**
Bernhard Wunderle[1,2,3,4], Jannik Haseloff[5], Jörg Arnold[1], Jens Heilmann[1], Dragos Dancila[6], George Konstantinidis[7], Afshin Ziaei[8], Mohamad Abo Ras[5]
[1]*TU Chemnitz, Germany;* [2]*Fraunhofer ENAS, Chemnitz, Germany;* [3]*Center for Materials, Architectures and Integration of Nanomembranes at TU Chemnitz, Germany;* [4]*Centre for Micro-and Nanotechnologies at TU Chemnitz, Germany;* [5]*Berliner Nanotest & Design GmbH, Germany;* [6]*Uppsala University, Sweden;* [7]*Foundation for Research and Technology Hellas (FORTH), Greece;* [8]*Thales Research and Technology, Palaiseau, France*

01.00 pm **Lunch**

Poster Session B

🕐 2.00 pm – 3.00 pm

➔ *Session Chair: András Poppe, Budapest University of Technology and Economics*

01 **Innovative Solution for Multiscale Warpage Measurement of Complex Integrated Packages**
Pierre Everaere, Nicolas Choisel, Pierre Vernhes
INSIDIX, France

02 **Lumped-parameter Modelling of PCM-integrated Heat Sinks with Experimental Validation**
Michiel De Paepe[1,2], Maité Goderis[1,2], Jana Rogiers[1,2], Wito Plas[1,2], Michel De Paepe[1,2,3]
[1]*Ghent University, Belgium;* [2]*FlandersMake@Ugent;* [3]*University of Cape Town, South Africa*

03 **Two-Phase Pool Boiling Immersion Cooling for Prismatic Lithium-Ion Batteries Subjected to Higher Discharge Rates**
Rajesh Nimmagadda, Kantharuphan Annathurai, Daniel Trimble, Seamus M. O'Shaughnessy
Trinity College Dublin, Ireland

04 **Electro-thermal Simulation of aSi0.33Ge0.665Sn0.005 Reconfigurable Field-effect Transistor**
Duru Bozkurt[1], Andrea Malignaggi[2], Ignatii Zaitsev[2], Masiar Sistani[3], Andreas Fuchsberger[3], Nikolas Thomas Knaller[3], Corrado Carta[2], Costanza Lucia Manganelli[2]
[1]*Sabanci University, Turkey;* [2]*IHP-Leibniz Institute for High Performance Microelectronics, Germany;* [3]*Institute of Solid State Electronics, Technische Universität Wien, Austria*

05 **Experimental and Numerical Investigation of an SLA-Manufactured Alumina Ceramic Heat Sink for Wide-Bandgap Power Modules.**
Lucie Teulet[1], Jean-Pierre Fradin[2], Ahmad Batikh[2], Alexandre Marie[2], Benjamin Périé[2], Virgile Puel[2], Emmanuel Marcault[1], Lucile Mage[1], Patrick Tounsi[3]
[1]*CEA, France;* [2]*ICAM, France;* [3]*LAAS-CNRS, France*

06 **Thermal Optimization of UVC LED Cooling Solutions Using a Combination of Thermal Simulations and Microthermography**
Zygimantas Staliulionis, Rita Plaipait-Nalivaiko, Marjan Monshi
Lithuanian university of Applied Engineering Sciences, Lithuania

07 **Parametric Model Order Reduction of an IGBT Module for System-level Electro-thermal Simulation**
Shashwat Kamal Gogoi[1], Aliakbar Taghdiri[1,2], Philipp Hickisch[1], Dennis Hohlfeld[1], Tamara Bechtold[1,2]
[1]*University of Rostock, Rostock, Germany;* [2]*Jade University of Applied Sciences, Wilhelmshaven, Germany*

08 **Thermal Performance Evaluation of Aluminum-ammonia Heat Pipes for High-power Electronics Cooling**
Reyhan Athalla, Van-Hoan Vu, Ho-Chuan Lin
EW JET PRODUCTS Co., Ltd., Taiwan

09 **CFD-Based Thermal Analysis of a TPMS-Integrated Cooling Architecture for Battery Thermal Management System**
Faisal Iqbal, Muhammad Sajid
University College Dublin, Ireland

10 **Harvesting Electricity using Thermoelectric Cells**
Przemyslaw Ptak, Piotr Arendt, Krzysztof Górecki
Gdynia Maritime University, Department of Power Electronics, Poland

11 **Environmental Impact on Server Computational Performance**
Eoin H. Oude Essink[1], Tim Persoons[2], Xiangjie Chen[3], Sajad Alimohammadi[1]
[1]Technological University Dublin, Ireland; [2]Trinity College Dublin, Ireland; [3]Loughborough University

12 **Analysis of Heat Transfer Coefficient Values and Temperature Distribution in Power Hybrid Electronic Circuits Cooled by Natural Convection**
Marcin Janicki
Lodz University of Technology, Poland

13 **High-Order ECM-Based Electro-Thermal Model for Lithium-Ion Batteries Incorporating Diffusion-Induced Concentration Polarization**
Samuel Yu[1], Eonhyo Kim[2], Seungmin Lee[1], Jinwon Seo[1], Kisoo Yoo[2], Bongkeon Choi[1]
[1]Future Technology Convergence Institute, Hyundai Mobis, Republic of Korea; [2]School of Mechanical Engineering, Yeungnam University, Republic of Korea

14 **A Method for Measuring Junction-to-Case Thermal Resistance in Bottom-Side-Cooling Packages**
Julio Brandelero, Robin Jung, Alfio Pappalardo, Christale Crouard
STMicroelectronics SA

15 **Experimental Thermo-Hydraulic Investigation of the Transition Toward Fully Direct Liquid-Cooled Server Architectures**
Hussein Charaf[1,2], Michael Maalouly[1], Ali Chehade[1], Henryk Klaba[1], Tala Moussa[2], Chadi Maalouf[2], Guillaume Polidori[2]
[1]OVHcloud, Croix, France; [2]: ITheMM, University of Reims Champagne-Ardenne, Reims, France

16 **Thermal-aware Floor-planning and Optimization Workflow**
Miroslav Valka
Synopsys Inc, Germany

17 **Numerical Study of the Self- and Mutual-heating in GaAs pHEMT for MMIC Low-noise Amplifiers**
Antonio Pio Catalano[1], Miriana Marino[2], Ciro Scognamillo[1], Salvatore Cimmino[2], Vincenzo d'Alessandro[1]
[1]Department of Electrical Engineering and Information Technology, University of Naples Federico II, Italy; [2]Microelectronics Division, MBDA Italia S.p.A., Bacoli, Italy

18 **Experimental Performance Validation of Flow Guider Structures for Direct Cooling of Prismatic Battery Cells Under Asymmetric Heating Conditions**
Lander Lode Cnudde[1,2], Jasper Nonneman[1,2,3], Jana Rogiers[1,2], Michiel De Paepe[1,2], Michel De Paepe[1,2,4]
[1]Ghent University, Belgium; [2]FlandersMake@UGent – Core lab MIRO, Belgium; [3]University of Antwerp, Belgium; [4]University of Cape Town, South Africa

19 **Thermo-hydraulic Performance of Tetrahedral Lattice Cores under Laminar Flow: Effects of Strut and End Wall Material and Coolant Media**
Ali Riaz, Mohammadreza Kadivar, John Lohan, David Tromey, Gerard Mc-Granaghan
Atlantic Technological University, Ireland

3.00 pm – **Coffee Break & Poster Viewing**

Session 6: Thermal Characterization Methods 1

🕐 4.40 pm – 06.00 pm

➔ *Session Chair: Daniel May, TU Chemnitz*

04.40 pm **Heat Spreading from a Small Source on a Thick Plate**
Wendy Luiten
WLC, Netherlands,

05.00 pm **Guideline for Thermal Characterization of Multi-chip Packages Using Linear Superposition – A New JEDEC Standard**
Dirk Schweitzer
Infineon Technologies AG, Germany

05.20 pm **Cryogenic 3-Omega Platform for Thermal Conductivity Measurement of Thermal Interface Materials**
Carlos Rincon-Ruiz[1,2], Corinna Grosse-Kockert[5], Daniel May[1,5], Nathanael Joehrmann[1,2], Uwe Zschenderlein[1], Sven Zimmermann[1,3,4], Marcel Melzer[1,3,4], Matthias Prinz[3], Bernhard Wunderle[1,2,3,4]
[1]*Technische Universität Chemnitz, Germany;* [2]*Research Center for Materials, Architectures and Integration of Nanomembranes (MAIN);* [3]*Fraunhofer ENAS, Chemnitz, Germany;* [4]*Center for Micro- and Nanotechnologies (ZfM), Chemnitz, Germany;* [5]*Berliner Nanotest und Design GmbH, Berlin, Germany*

05.40 pm **Two-Phase Pool Boiling Immersion Cooling for Prismatic Lithium-Ion Batteries Subjected to Higher Discharge Rates**
Rajesh Nimmagadda, Kantharuphan Annathurai, Daniel Trimble, Seamus M. O'Shaughnessy
Trinity College Dublin, Ireland



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→ VENDOR SESSION 3

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Session 7: Thermal Characterization Methods 2

🕐 9.15 am – 10.35 am

➔ *Session Chair: Pavel Makhnatch, Huawei Technologies Sweden AB*

09.15 am **Transient Thermal Response in AlGaN/GaN HEMT Transistor: Influence of Dissipated Power on Thermal Time Constants**
Anass Jakani[1], Jean-Claude Jacquet[2], Mohamed Bouslama[2], Benoit Lambert[3], Jean-Christophe Nallatamby[4], Raphael Sommet[4], Gildas Gauthier[2]
[1]Thales Research & Technology; [2]III-V Lab (Thales), France; [3]UMS - United Monolithic Semiconductors, France; [4]XLIM, France

09.35 am **Electrothermal Characterization and Simulation of GaAs Schottky Diodes for Terahertz (THz) Applications**
N'Doua Luc Arnaud Kakou[1], Nicolas Zerounian[2], Frédéric Aniel[2], Raphael Sommet[1]
[1]XLIM CNRS, France; [2]C2N CNRS, France

09.55 am **Submicron Ultrafast Raman Thermography System for Power Semiconductors Using Confocal Scanning Microscopy**
Jung-Hoon Song[1,2], Youngboo Moon[1,3], Seungyoung Lim[1], Gyeong Eun Choi[1], Jaesun Kim[1], Byongjin Ma[4]
[1]AccuOptotec Col, Republic of South Korea; [2]Kongju National University, Republic of South Korea; [3]UJL Co., Republic of South Korea; [4]4Korea Electronics Technology Institute, Republic of South Korea

10.15 am **Novel Methods to Address the Time Dependence of Temperature Sensitive Parameters in Thermal Testing**
Sándor Ress[1,2], Márta Rencz[1], Gábor Farkas[2], Zoltán Sárkány[2]
[1]Budapest University of Technology and Economics, Hungary; [2]SIEMENS DI SW, Budapest, Hungary



Session 8A: Two-Phase Cooling Solutions 1

🕐 11.25 am – 12.45 pm

➔ *Session Chair: Lisa Mitterhuber, Materials Center Leoben Forschung*

11.25 am **Enhancement of Vertical Flow Boiling Performance through Port and Channel Design**
Hanyang Ye, Sreeram Barathula, Teck Neng Wong, Jin Yao Ho
School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore

11.45 am **Experimental Comparison of Flow Boiling Instabilities in two Increasing Density Heatsink Designs**
Jaume Camarasa, Montse Vilarrubí, Pol Rosell, Desideri Regany, David Beberide, Joan Ignasi Rosell, Manel Ibáñez, Jérôme Barrau
Universitat de Lleida, Spain

12.05 pm **Thermal-hydraulic Analysis of Miniaturized Loop Heat Pipe**
Kelvin Guessi Domiciano[1], Larissa Krambeck[1,2], Marco Bernagozzi[3], Marcia Barbosa Henriques Mantelli[1]
[1]*Heat Pipe Laboratory, Federal University of Santa Catarina, Florianopolis/SC, Brazil;* [2] *University of Pavia, Pavia, Italy;* [3] *University of Brighton, Brighton, United Kingdom*

12.25 pm **Review of Experiments in Microlayer Thickness during Nucleate Pool Boiling**
Willem Vandenhove[1], Mitchell Whiting[1], Jasper Nonneman[1,2,3], Ivan Verhaert[1], Ilya T'Jollyn[1]
[1]*University of Antwerp;* [2]*University of Ghent;* [3]*Flanders Make*

12.45 pm – 01.45 pm **Lunch**

Session 8B: Thermal Simulations 2

🕐 11.25 am – 12.45 pm

➔ *Session Chair: Thomas Zahner, ams-OSRAM International GmbH*

11.25 am **Comparison of Radial and Axial Thermal Transport in Silicon Nanowires**
Alexander Burenkov, Peter Pichler, Ferdinand Schulz
Fraunhofer IISB, Germany

11.45 am **Artifacts of Non-ideal Thermal Excitation in Time-constant Spectra of thin Tnterfaces: A Simulation-based Study on Dead-time Extrapolation and Excitation Shift Effects**
Hannes Schwan, Maximilian Schmid, Elger Gordon
Technische Hochschule Ingolstadt, Germany

12.05 pm **Electro-Thermal Wide Temperature Range SPICE BJTs and FETs Transistor Models Based on Si, SiGe, SiC, GaAs, GaN Semiconductor Materials**
Konstantin O. Petrosyants, Mamed R. Ismail-zade, Lev M. Sambursky, Maxim V. Kozhukhov
National Research University Higher School of Economics (Moscow Institute of Electronics and Mathematics), Russian Federation

12.25 pm **Thermal Assessment of a Smart Power Stage Through Experiments and SPICE Simulations**
Giorgio Eliseo[1,2], Ciro Scognamillo[1], Antonio Pio Catalano[1], Vincenzo d'Alessandro[1], Francesco Maria De Paola[2], Jaume Roig[3], Petr Betak[3], James Victory[3]
[1]*University of Naples Federico II, Italy;* [2]*onsemi, Analog and Mixed-Signal Group;* [3]*onsemi, Power Solution Group*

12.45 pm – 01.45 pm **Lunch**

Session 9: Two-Phase Cooling Solutions 2

🕐 1.45 pm – 2.45 pm

➔ *Session Chair: Wessel W. Wits, University of Twente*

01.45 pm **Flow-boiling Cooling Concept for a Small Form-factor Embedded MOSFET Half-bridge Power Module**
Ralph Schacht[1], Felix Fischer[2], Ben Majed[1], Wiljan Vermeer[2], Bernhard Wunderle[3], Eckart Hoene[2]
[1]BTU Cottbus-Senftenberg, Germany; [2]Fraunhofer IZM, Germany; [3]Chemnitz University of Technology, Germany

02.05 pm **Cooling Electronics While Generating Power: A Thermomagnetic Pulsating Heat Pipe Approach**
Luca Cattani[1], Francesco Cugini[2], Rachele Schiasselloni[1], Dario Pavon Vargas[1], Simone Gabbi[2], Fabio Bozzoli[3], Massimo Solzi[2], Giulio Lorenzini[1]
[1]Department of Engineering for Industrial Systems and Technologies, University of Parma, Italy; [2]Department of Mathematical, Physical and Computer Sciences, University of Parma, Italy; [3]Department of Industrial Engineering, University of Florence, Florence, Italy

02.25 pm **Evaluation of the Cooling Behaviour of Different Cooling Concepts for 2-Phase Approaches under the Influence of Mechanical Vibrations**
Ernst Plamen, Fabian Rohmann
HENSOLDT Sensors GmbH, Germany

02.45 pm – 03.15 pm **Awards & Closing Remarks**



→ CONTACT

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CONFERENCE PROGRAM COMMITTEE
Bernhard Wunderle, TU Chemnitz
Mohamad Abo Ras, NANOTEST
Ralph Schacht, BTU Cottbus-Senftenberg

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