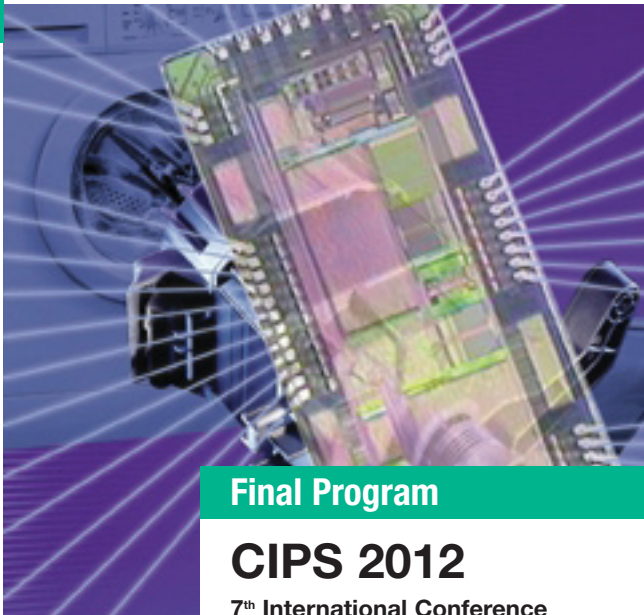


ETG POWER ENGINEERING
SOCIETY WITHIN VDE



Final Program

CIPS 2012

7th International Conference
on Integrated Power
Electronics Systems

March, 6 - 8, 2012
Nuremberg / Germany

www.cips-conference.de



ZVEI:
Electronic Components
and Systems



VDE

CIPS 2012 Program Overview

Tuesday, March 6, 2012

Time	Saal Kaiser Karl IV.
10:30 AM	Opening
10:50 AM	Session 1: Emerging Technologies
12:30 PM	Lunch
01:40 PM	Session 2: Design
03:10 PM	Coffee Break
03:40 PM	Session 3: Applications
04:40 PM	Break
05:00 PM	Session 4: Reliability (1)
06:40 PM	Break
07:00 PM	Dialog Session and Frankonian Snacks and Beverages

Wednesday, March 7, 2012

Time	Saal Kaiser Karl IV.	Saal Kaiser Maximilian
08:30 AM	Session 5: Reliability (2)	Session 7: Magnetics Components (1)
10:20 AM	Coffee Break	Coffee Break
10:50 AM	Session 6: Reliability (3)	Session 8: Magnetics Components (2)
12:30 PM	Lunch	Lunch
01:50 PM	Session 9: Packaging	Session 9: Packaging
03:20 PM	Coffee Break	Coffee Break
03:50 PM	Session 10: High and medium power modules	Session 10: High and medium power modules
04:50 PM	Introduction to Wide Band Gap Session	Introduction to Wide Band Gap Session
07:00 PM	Conference Dinner	

Thursday, March 8, 2012

Time	Saal Kaiser Karl IV.
09:00 AM	Session 11: Wide Band Gap
10:40 AM	Coffee Break
11:10 AM	Session 12: Sinter Joinings
12:50 PM	Lunch
01:50 PM	Session 13: Future
03:30 PM	Closing

Organized by

The conference is organized by ETG, the Power Engineering Society within VDE, and by ECPE European Center for Power Electronics.

VDE the Association for Electrical, Electronic & Information Technologies is one of the largest technical and scientific associations in Europe with more than 32 000 members.



the Industrial and Research Network for Power Electronics in Europe was founded in 2003 by leading power electronics industries in order to promote research, education and public relations in this field.

Technical Co-Sponsors

IEEE Power Electronics Society (PELS) and

ZVEI – the German Electrical and Electronic Manufacturers' Association.

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Technical Chairs

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ECPE e.V., Munich (Germany)

Dieter Silber
University of Bremen (Germany)

Saal Kaiser Karl IV.

Opening

Saal Kaiser Karl IV.

Session 1: Emerging Technologies

Chairs:

10:50 Keynote:

Extreme Efficiency Power Electronics – CCM vs. DCM Operation

Johann W. Kolar (ETH Zurich, Power Electronic Systems Laboratory, Switzerland)

11:30 Advanced cooling for power electronics (Invited)

Sukhvinder Kang (Aavid, USA)

12:00 Analysis of innovative packaging technologies and trends for power modules (Invited)

Alexandre Avron (Yole Développement, France)

12:30 PM - 1:40 PM Lunch

Saal Kaiser Karl IV.**Session 2: Design***Chairs:*

- 1:40 Electromagnetic Modeling of EMI Input Filters (Invited)**
Andreas Müsing (Gecko-Research GmbH, Switzerland); Ivana Kovacevic (PES, ETHZ, Switzerland)
- 2:10 Calculating Transient Thermal Loads of ECUs in Engine Compartment by Applying Simplified Physical Models**
Michael Decker (Continental Automotive GmbH, Germany); Thomas Riepl (Continental Automotive GmbH, Germany)
- 2:30 Comparative Evaluation of Individual and Coupled Inductor Arrangements for Output Filters of AC Power Sources Based on Two-level or Three-Level Inverter Systems**
Bernardo Cougo (ETH Zurich, Switzerland); Johann W. Kolar (ETH Zurich, Power Electronic Systems Laboratory, Switzerland)
- 2:50 Analysis and Reduction of Radiated EMI of Power Modules**
André Domurat-Linde (Fraunhofer IZM, Germany); Eckart Hoene (Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration IZM, Germany)

3:10 PM - 3:40 PM Coffee break**Saal Kaiser Karl IV.****Session 3: Applications***Chairs:*

- 3:40 The performance comparison of the multilevel converter topologies for PV inverter**
Yugo Kashihara (Nagaoka University of Technology, Japan); Jun-ichi Itoh (Nagaoka University of Technology, Japan)
- 4:00 Integrated Power Electronics Interface for Plug-In Hybrid Electric Vehicle Applications**
Omar Hegazy (Vrije Universiteit Brussel, Belgium); Joeri Van Mierlo (Vrije Universiteit Brussel, Belgium); Philippe Lataire (Vrije Universiteit Brussel, Belgium); Mohamed El Baghdadi (Vrije Universiteit Brussel, Belgium)
- 4:20 A Versatile Control Modulator for Optimal Bi-directional Battery Charging**
Rajeev Singh (Indian Institute of Technology Kanpur, India); Santanu Mishra (Indian Institute of Technology, Kanpur, India)

4:40 PM - 5:00 PM Break

Saal Kaiser Karl IV.**Session 4: Reliability (1)***Chairs:*

- 5:00 Keynote: Reliability of Power Electronics Under Thermal Loading**
Patrick McCluskey (University of Maryland, USA)
- 5:40 Reliability driven virtual prototyping of power electronic equipment – a case study**
Till Huesgen (ABB Corporate Research, Switzerland); Gernot J Riedel (ABB Corporate Research, Switzerland); Uwe Drogenik (ABB Corporate Research, Switzerland)
- 6:00 New Methods Help Better Evaluate Risks from Vibrations**
Angelika Schingale (Continental Automotive GmbH, Germany); Marius Tarnovetchi (Continental Automotive Romania Srl, Romania); Andreas Schiebl (Continental Automotive GmbH, Germany); Daniela Wolf (Continental Automotive GmbH, Germany)
- 6:20 Separating failure modes in Power Cycling Tests**
Ralf Schmidt (Semikron Elektronik GmbH, Germany); Uwe Scheuermann (Semikron, Germany)

6:40 PM - 7:00 PM Break**Exhibition Area****Dialog Session
and Frankonian Snacks and Beverages****Sinter materials for broad process windows in DCB applications – concepts and results***Wolfgang Schmitt (ZVEI & Heraeus Material s Technology GmbH & Co. KG, Germany); Sebastian Fritzsche (Heraeus Materials Technology GmbH&Co. KG, Germany)***Quality evaluation and process control for silver sintering layers in power electronic modules***Jacek Rudzki (Danfoss Silicon Power GmbH, Germany); Lars Jensen (University of Applied Sciences Kiel, Germany); Max Poech (Fraunhofer Institut für Siliziumtechnologie, Germany); Lothar Schmidt (Fraunhofer Institut für Siliziumtechnologie, Germany)***Performance evaluation of silver-sintering die attach***Wissam Sabbah (Safran Group, France); Raphaël Riva (Université de Lyon Laboratoire Ampere CNRS UMR 5005 Insa de Lyon, France); Stanislas Hascoët (Université de Lyon Laboratoire Ampere CNRS UMR 5005 Insa de Lyon, France); Cyril Buttay (Université de Lyon Laboratoire Ampere CNRS UMR 5005 & Insa de Lyon, France); Stephane Azzopardi (University of Bordeaux & IMS Laboratory, France); Eric Woigard (University of Bordeaux & IMS Laboratory, France); Dominique Planson (Université de Lyon Laboratoire Ampere CNRS UMR 5005 Insa de Lyon, France); Herve Morel (Université de Lyon, INSA Lyon, Lab Ampère, CNRS, France); Bruno Allard (INSA Lyon, France); Régis Meuret (Safran Group, France)***Control of Primary Active Rectifiers of Traction Converter with Medium-Frequency Transformer: Benefits of Control Unit Combining DSP and FPGA***Dušan Janík (University of West Bohemia, Czech Republic)***Scalable High Insulation Power Supply for Medium Voltage Power Converters***Iosu Aizpuru (Mondragon Goi Eskola Politeknikoa, Spain); Jose María Canales (Mondragon Goi Eskola Politeknikoa, Spain); Jesus Fernández (Mondragon Goi Eskola Politeknikoa, Spain)*

Integrated modular DC-DC converters with combined analog-digital control for pulsed GMAW

Xiaoqing Song (Beijing Institute of Technology, P.R. China)

Amplitude Modulated Resonant Push-Pull Driver for Piezoelectric Transformers in Switching Power Applications

Holger Schwarzmann (Fraunhofer IISB, Germany); Tobias Erlbacher (Fraunhofer IISB, Germany); Anton Bauer (Fraunhofer IISB, Germany); Heiner Ryszel (Fraunhofer IISB, Germany); Lothar Frey (Fraunhofer IISB, Germany)

Asymmetrical Parasitic Inductance Utilized for Switching Loss Reduction in Power Modules

Michael Frisch (Vincotech GmbH, Germany); Ernő Temesi (Vincotech Kft., Hungary)

Power Sandwich Thermal Management Concepts for Compact Industrial Drive

Ivan Josifovic (Delft University of Technology, The Netherlands); Jelena Popovic (Delft University of Technology, The Netherlands); Braham Ferreira (Delft University of Technology, The Netherlands)

Reliable Integration of Double-Sided Cooled Stacked Power Switches based on 70 um Thin IGBTs and Diodes

Alberto Castellazzi (University of Nottingham & Power Electronics, United Kingdom); Jianfeng Li (University of Nottingham, United Kingdom); C Mark Johnson (University of Nottingham, United Kingdom); Adane Solomon (University of Nottingham, United Kingdom)

Influence of baseplate design on cooling performance and reliability

Kai Kriegel (Siemens AG, Germany); Svetlana Levchuk (Siemens AG, Germany); Johann Otto (Siemens AG, Germany)

Comparison between electromagnetic and thermal stress induced by Direct Current flow in IGBT bond wires

Paul-Etienne Vidal (Université de Toulouse & Laboratoire Génie de Production, ENIT, France); Hassen Medjahed (Université de Toulouse, France); Bertrand Nogaredo (Université de Toulouse, France)

Centrifugal Formulation Of Percolating Thermal Undefills for Flip-Chip Applications

Jonas Zürcher (IBM Zurich Research Laboratory, Switzerland); Javier Goicochea (IBM Zurich Research Laboratory, Switzerland); Thomas Brunschweiler (IBM Zurich Research Laboratory, Switzerland); Keiji Matsumoto (IBM-Japan, Japan); Bruno Michel (IBM Zurich Research Laboratory, Switzerland)

Development and testing of cold gas sprayed substrates for power electronics applications

Eugen Rastjagaev (University of Freiburg & IMTEK, Germany); Jürgen Wilde (University of Freiburg, Germany)

Development of high temperature packaging technologies for SiC power devices based on finite elements simulation and experiments - thermal approach

Ludi Zhang (University of Bordeaux & IMS Laboratory, France); Stephane Azzopardi (University of Bordeaux & IMS Laboratory, France); Alexandrine Guedon-Gracia (University of Bordeaux & IMS Laboratory, France); Eric Woigard (University of Bordeaux & IMS Laboratory, France); Jean-Yves Deletage (University of Bordeaux & IMS Laboratory, France)

Mixed-Signal and Smart-Power Capable Hybrid Structured ASIC for Cost-Aware Single-Chip Integration of Industrial Applications

Yipin Zhang (Institute for Microelectronics Stuttgart, Germany); Cor Scherjon (Institute for Microelectronics Stuttgart, Germany); Joachim Burghartz (IMS Chips, Germany)

Design Consideration of Ultra-thin Coupled Inductors for Photovoltaic Application

Ziwei Ouyang (Technical University of Denmark, Denmark); Milos Acanski (Delft University of Technology, The Netherlands); Jelena Popovic (Delft University of Technology, The Netherlands); Braham Ferreira (Delft University of Technology, The Netherlands); Ole Thomsen (Technical University of Denmark, Denmark); Michael Andersen (Technical University of Denmark, Denmark)

Design of a PCB Rogowski coil based on the PEEC Method

Thomas Guillod (ETH Zürich, Switzerland); Dominic Gerber (ETH Zürich, Switzerland); Jürgen Biela (ETH Zurich, Switzerland); Andreas Muesing (ETH Zürich, Switzerland)

Wafer-level fabrication of high power density MEMS passives based on silicon molding technique

Jiping Li (University of Florida, USA); Khai D.T. Ngo (Virginia Tech, USA); Huikai Xie (University of Florida, USA)

A Hybrid Hydraulic Piezo Actuator and its Control for Camless Internal Combustion Engines

Paolo Mercorelli (Ostfalia University of Applied Sciences, Germany)

Condition Monitoring of Photovoltaic Power Converters – From Modelling to Implementation

Michael Rothe (Fraunhofer IZM, Germany)

Reliability Comparison of a Dual Boost and a Triangular Current Mode Resonant-Transition PFC Converter Topology

Sebastian Alleman (EMPA Swiss Federal Laboratories for Materials Science and Technology, Switzerland); Marcel Held (Empa Swiss Federal Laboratories for Materials Testing and Research, Switzerland); Jürgen Biela (ETH Zurich, Switzerland)

EMI Prediction of Power Converters using Switching Waveform Analysis

Sebastian Schulz (Otto-von-Guericke-University Magdeburg, Germany); Andreas Lindemann (University of Magdeburg, Germany); Peter Kanschat (Infineon Technologies AG Warstein, Germany)

Optimisation of Electrical Parasitics under Consideration of Thermal Behaviour of Power Semiconductor Components

Stefan Foerster (Otto von Guericke University, Germany); Andreas Lindemann (University of Magdeburg, Germany)

GaN-over-Si: The Promising Technology for Power Electronics in Automotive

Cherif Assad (Freescale Semiconducteurs SAS, France); Herve Mureau (Freescale Semiconductor, France)

How to Control SiC BJT with High Efficiency?

Luyu Wang (Lund University, Sweden); Hans Bångtsson (Lund University, Sweden)

Application of Gallium Nitride HEMTs for highly efficient Radio Frequency Power Amplifier

Dejana Cucak (Universidad Politecnica, Spain); Miroslav Vasic (Universidad Politecnica de Madrid, Spain); Oscar Suarez (Universidad Politecnica de Madrid, Spain); Jesus Oliver (Universidad Politecnica de Madrid, Spain); Pedro Alou (Universidad Politecnica de Madrid, Spain); Jose A. Cobos (Universidad Politécnica de Madrid (UPM), Spain)

Saal Kaiser Karl IV.**Session 5: Reliability (2)**

Chairs:

- 8:30 In-situ Bond Wire and Solder Layer Health Monitoring Circuit for IGBT Power Modules**
Bing Ji (Newcastle University, United Kingdom); Volker Pickert (Newcastle University, United Kingdom); Bashar Zahawi (Newcastle University, United Kingdom)
- 8:50 Thermal Networks for Time-Variant Cooling Systems: Modeling Approach and Accuracy Requirements for Lifetime Prediction**
Thomas Gradinger (ABB Switzerland Ltd., Corporate Research, Switzerland); Gernot J Riedel (ABB Corporate Research, Switzerland)
- 9:10 Lifetime evaluation of large IGBT power modules applying a nonlinear saturation voltage observer**
Dennis Wagenitz (Beuth Hochschule für Technik, Germany); Andreas Hambrecht (Beuth Hochschule für Technik, Germany); Sibylle Dieckerhoff (TU Berlin, Germany)
- 9:30 Influence of thermal cross-couplings on power cycling lifetime of IGBT power modules**
Tilo Poller (Chemnitz University of Technology, Germany); Salvatore D'Arco (NTNU Trondheim, Norway); Magnar Hernes (SINTEF Energy Research, Norway); Josef Lutz (University of Chemnitz, Germany)
- 9:50 Combined Reliability Testing: An approach to assure reliability under complex loading conditions (Invited)**
Olaf Wittler (Fraunhofer IZM, Germany); Johannes Jaeschke (Fraunhofer IZM, Germany); Olaf Bochow-Neß (Fraunhofer IZM, Germany); Andreas Middendorf (Fraunhofer IZM, Germany); Klaus-Dieter Lang (TU Berlin, Germany)

10:20 AM - 10:50 AM Coffee break

Saal Kaiser Maximilian**Session 7: Magnetics Components (1)**

Chairs:

- 8:30 Efficient nonlinear inductors for PV inverters and active PFC**
Alexander Stadler (STS Spezial-Transformatoren-Stockach GmbH & Co. KG & R&D Center im IGZ Innovations- und Gründerzentrum Nürnberg-Fürth-Erlangen GmbH, Germany); Christof Gulden (STS Spezial-Transformatoren-Stockach GmbH & Co. KG, Germany)
- 8:50 A 150kW Medium Frequency Transformer Optimized for Maximum Power Density**
Uwe Drogenik (ABB Corporate Research, Switzerland)
- 9:10 Integration of Leakage Inductance in Tape-Wound-Core Transformers for Dual Active Bridge Converters**
Johann W. Kolar (ETH Zurich, Power Electronic Systems Laboratory, Switzerland); Bernardo Cougo (ETH Zurich, Switzerland)
- 9:30 Laminated Bus Bar Structure for Low Induced Noise**
Zen-nosuke Ariga (Tokyo Metropolitan University, Japan); Keiji Wada (Tokyo Metropolitan University, Japan)
- 9:50 Integrated Passive Components (Invited)**
Ashraf Lotfi (Enpirion, Inc., USA); Quiang Li (Enpirion, Inc., USA)

10:20 AM - 10:50 AM Coffee break

Saal Kaiser Karl IV.**Session 6: Reliability (3)**

Chairs:

- 10:50 Using Changes of Gate Charging Current as Precursor Parameters to Diagnose Potential Defect inside IGBTs**
Shengqi Zhou (Chongqing University, P.R. China)
- 11:10 Influence of Bonding Parameters on Reliability of Heavy Wire Bonds on Power Semiconductors**
Jens Goehre (Fraunhofer IZM, Germany); Ute Geißler (Fraunhofer IZM, Germany); Martin Schneider-Ramelow (Fraunhofer IZM, Germany); Klaus-Dieter Lang (Fraunhofer IZM, Germany)
- 11:30 Microstructural and Mechanical Characterization of Ceramic Substrates with Different Metallization for Power Applications**
Bianca Böttge (Fraunhofer Institute for Mechanics of Materials, Germany); Sandy Klengel (Fraunhofer Institute for Mechanics of Materials, Germany); Heiko Knoll (IXYS Semiconductor GmbH, Germany)
- 11:50 Reliability of Large Area Solder Joints within IGBT Modules: Numerical Modelling and Experimental Results**
Gernot J Riedel (ABB Corporate Research, Switzerland); Roland Schmidt (ABB Corporate Research, Switzerland); Chunlei Liu (ABB Switzerland, Switzerland); Harald Beyer (Abb Semiconductors, Switzerland); Ilari Alaperä (ABB Corporate Research, Switzerland)
- 12:10 Effect of Input Power Interruptions on Reliability of Power Electronic Devices**
Juha Pippola (Tampere University of Technology, Finland); Tuomas Marttila (Tampere University of Technology, Finland); Laura Frisk (Tampere University of Technology, Finland); Kati Kokko (Tampere University of Technology, Finland); Janne Kiilunen (Tampere University of Technology, Finland)

12:30 PM - 1:50 PM Lunch

Saal Kaiser Maximilian**Session 8: Magnetics Components (2)**

Chairs:

- 10:50 Micro-fabricated thin-film inductors for on-chip power conversion**
Daniel Harburg (Thayer School of Engineering at Dartmouth, USA); Xuehong Yu (Georgia Institute of Technology, USA); Florian Herrault (Georgia Institute of Technology, USA); Christopher Levey (Thayer School of Engineering at Dartmouth, USA); Mark Allen (Georgia Institute of Technology, USA); Charles Sullivan (Thayer School of Engineering at Dartmouth, USA)
- 11:10 Radial-Anisotropy Thin-Film Magnetic Material for High-Power-Density Toroidal Inductors**
Jizheng Qiu (Thayer School of Engineering at Dartmouth, USA); Charles Sullivan (Thayer School of Engineering at Dartmouth, USA)
- 11:30 Planar, double-layer magnetic inductors for low power, high frequency dc-dc converters**
Elias Haddad (University Lyon 1 & Ampere Laboratory, France); Christian Martin (University Lyon 1, France); Charles Joubert (Academia, France); Bruno Allard (INSA Lyon, France); Maher Soueidan (Université de Lyon Laboratoire Ampere CNRS UMR 5005 Insa de Lyon, France)
- 11:50 An Improved Parasitic Capacitance Compensation Method for Planar Differential Mode Inductor in EMI Filters**
Wenhua Tan (Ecole Centrale de Lille & Laboratory of Electrical Engineering and Power Electronics, France); Xavier Margueron (ECLille - L2EP, France); Thierry Duquesne (Université de Lille 1, France); Nadir Idir (Universite de Lille 1 - L2EP, France)
- 12:10 Hybrid Integrated EMC filter for CM and DM EMC Suppression in a DC-DC Power converter**
Marwan Ali (Laboratoire SATIE-ENS Cachan, France); Eric Laboure (LGEP, France); Francois Costa (SATIE, France); Bertrand Revol (SATIE, France); Cyrille Gautier (SATIE, France)

12:30 PM - 1:50 PM Lunch

Saal Kaiser Karl IV.

Session 9: Packaging

Chairs:

- 1:50 Integrated high power modules (Invited)**
C Mark Johnson (University of Nottingham, United Kingdom)
- 2:20 Alternative lead free die attach for highly constrained power electronic module**
Jean Michel Morelle (VALEO, France); Ky Lim Tan (Valeo, France); Renan Leon (Valeo, France); Laurent Vivet (Valeo, France); Serge Lavrentieff (Valeo, France)
- 2:40 Reducing Parasitic Electrical Parameters with a Planar Interconnection Packaging Structure**
Zhenxian Liang (Oak Ridge National Laboratory, USA)
- 3:00 Design of Very Low Profile Coupled Inductors for PV Module Integrated Converters**
Milos Acanski (Delft University of Technology, The Netherlands); Ziwei Ouyang (Technical University of Denmark, Denmark); Jelena Popovic (Delft University of Technology, The Netherlands); Braham Ferreira (Delft University of Technology, The Netherlands)

3:20 PM - 3:50 PM Coffee break**Saal Kaiser Karl IV.**

Session 10: High and medium power modules

Chairs:

- 3:50 New assembly and interconnect technologies for power modules**
Karsten Guth (Infineon Technologies, Germany); Niels Oeschler (Infineon Technologies, Germany); Lars Böwer (Infineon Technologies, Germany); Roland Speckels (Infineon Technologies, Germany); Guido Strotmann (Infineon Technologies, Germany); Sandra Krasel (Infineon Technologies, Germany); Alexander Ciliox (Infineon Technologies, Germany)
- 4:10 Direct cooled modules – integrated heat sinks**
Olaf Hohlfeld (Infineon Technologies AG, Germany); Alexander Herbrandt (Infineon Technologies AG, Germany)
- 4:30 Stacked substrates for high voltage applications**
Olaf Hohlfeld (Infineon Technologies AG, Germany); Reinhold Bayerer (Infineon Technologies AG, Germany); Hans Hartung (Infineon Technologies AG, Germany); Thomas Hunger (Infineon Technologies AG, Germany)

Intruduction to Wide Band Gap Session**Saal Kaiser Karl IV.**

- 4:50 SiC and GaN Devices – Competition or Coexistence? (Invited)**
Nando Kaminski (University of Bremen, Germany); Oliver Hilt (FBH, Germany)

7:00 PM - 10:00 PM Conference Dinner

Saal Kaiser Karl IV.**Session 11: Wide Band Gap**

Chairs:

9:00 Holistic Approach to Maximize Power Density in Industrial Inverter Designs

Martin Schulz (Infineon Technologies, Germany); Liliana De Lillo (University of Nottingham, United Kingdom); Lee Empringham (University of Nottingham, United Kingdom)

9:20 Power-up assistance embedded in a High Temperature SOI driver for normally-on SiC JFETs based inverter

Khalil El Falahi (Ampere Lab & INSA Lyon, France); Bruno Allard (INSA Lyon, France); Damien Risaletto (Laplace, France); Dominique Bergogne (Ampere Lab, France); Fabien Dubois (Ampere Lab, France)

9:40 Electrical Analysis and Packaging Solutions for High-Current Fast-Switching SiC Components

Michel Mermet-Guyennet (ALSTOM Transport, France); Alberto Castellazzi (University of Nottingham & Power Electronics, Machines and Control Group, United Kingdom); Joseph Fabre (Alstom-Transport / LAPLACE, France); Philippe Ladoux (Université de Toulouse, France)

10:00 Design of an integrated power converter in Wide Band Gap for harsh environments

Jean-François Mogniotte (INSA de Lyon & Laboratoire AMPERE, France)

10:20 Reducing expenditure with cooling in renewable power conversion systems with innovative SiC switches

Samuel Araujo (Universität Kassel, Germany); Peter Zacharias (Universität Kassel, Germany)

10:40 AM - 11:10 AM Coffee break

Saal Kaiser Karl IV.**Session 12: Sinter Joinings**

Chairs:

11:10 3-Dimensional, Solder-Free Interconnect Technology for High-Performance Power Modules

Bassem Mouawad (Université de Lyon Laboratoire Ampere CNRS UMR 5005 Insa de Lyon, France); Cyril Buttay (Université de Lyon Laboratoire Ampere CNRS UMR 5005 & Insa de Lyon, France); Maher Soueidan (Université de Lyon Laboratoire Ampere CNRS UMR 5005 Insa de Lyon, France); Damien Fabrègue (Université de Lyon MATEIS CNRS UMR 5510, France); Vincent Bley (Université de Toulouse UPS INPT LAPLACE, France); Herve Morel (Université de Lyon, INSA Lyon, Lab Ampère, CNRS, France); Bruno Allard (INSA Lyon, France)

11:30 Reliability of Silver Sintering on DBC and DBA Substrates for Power Electronic Applications

Silke Kraft (Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany); Andreas Schletz (Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany); Martin März (FhG Erlangen, Germany)

11:50 Low-pressure (< 5 MPa) Low-temperature Joining of Large-area Chips on Copper Using Nanosilver Paste

Hanguang Zheng (Virginia Tech, USA); Jesus Calata (Virginia Tech, USA); Khai D.T. Ngo (Virginia Tech, USA); Susan Luo (NBE Technologies, LLC, USA); Guo-Quan Lu (Virginia Tech & NBE Technologies, LLC, USA)

12:10 Sintered Silver Joint Strength Dependence on Substrate Topography and Attachment Pad Geometry

Andrew Wereszczak (Oak Ridge National Laboratory, USA); Daniel Vuono (Oak Ridge National Laboratory, USA); Zhenxian Liang (Oak Ridge National Laboratory, USA)

12:50 PM - 1:50 PM Lunch

12:30 System Approach for Reliability of Low-power Power Electronics; How to Break Down into Their Constructed Parts

Sima Tarashioon (Delft University of Technology & Material Innovation Institute, The Netherlands)

Saal Kaiser Karl IV.

Session : 13 Future

Chairs:

1:50 Planar interconnect technology for power module system integration (Invited)

Norbert Seliger (FH Rosenheim, Germany); Karl Weidner (Siemens AG, Germany); Michael Kaspar (Siemens AG, Germany)

2:20 Reliability of Planar SKiN Interconnect Technology (Invited)

Uwe Scheuermann (Semikron, Germany)

2:50 Keynote: SiC Device and Power Module Technologies for Environmentally Friendly Vehicles

Kimimori Hamada (Toyota Motor Corporation, Japan)