ESREF 2024: 35TH EUROPEAN SYMPOSIUM ON RELIABILITY OF ELECTRON DEVICES, FAILURE PHYSICS AND ANALYSIS

PROGRAM

Days: Monday, September 23rd
Tuesday, September 24th   Wednesday, September 25th
Thursday, September 26th

Monday, September 23rd

View this program: with abstracts   session overview   talk overview

09:00-10:40 Session Tutorial 1

CHAIR: *Nicola Delmonte* (University of Parma, Italy)
LOCATION: Pizzetti

09:00 *Huai Wang* (Aalborg University, Denmark)
AI-assisted reliability testing, modeling, and condition monitoring for power electronics applications

10:40-11:00 Coffee Break

11:00-12:40 Session Tutorial 2

CHAIR: *Nicola Delmonte* (University of Parma, Italy)
LOCATION: Pizzetti

11:00 *Gaudenzio Meneghesso* (University of Padua, Italy)
GaN reliability: from technological considerations to failure processes

12:40-14:00 Lunch

14:00-14:40 Session Opening

CHAIR: *Paolo Cova* (University of Parma, Italy)
LOCATION: Pizzetti

14:00 *Paolo Cova* (University of Parma, Italy)
Opening ceremony

14:40-16:00 Session K1: Semiconductor Keynotes

CHAIR: *Francesco Iannuzzo* (Aalborg University, Denmark)
LOCATION: Pizzetti

14:40 *Harald Gossner* (Intel, Germany)
(Keynote) The Reliability Perspective of the Advanced CMOS Roadmap

15:20 *Gianluca Boselli* (Texas Instruments, United States)
(Keynote) System-Level ESD Design in HV Automotive Applications: Process, IP and System Co-Design Challenges

16:00-16:20 Coffee Break

16:20-18:20 Session F1: Power devices reliability: smart-power devices and silicon power

CHAIRS:
Giovanni Breglio (University of Naples Federico II, Italy)
Zoubir Khatir (Gustave Eiffel University, France)

LOCATION: Pizzetti

16:20 *Andrea Irace* (University of Napoli "Federico II", Italy)
(Invited) Out-of-SOA Electrothermal Limitations of Power Semiconductor Devices: Characterization and Modeling

17:00 *Zoubir Khatir* (Gustave Eiffel University, France)
Ali Ibrahim (University Gustave Eiffel, France)
Richard Lallemand (University Gustave Eiffel, France)
New Temperature-Independent Aging Indicator for power semiconductor devices – application to IGBTs (abstract)

17:20 *Ayda Halouani* (Gustave Eiffel University, Paris-Saclay University, ENS Paris-Saclay, CNRS, SATIE, 78000 Versailles, France, France)
Zoubir Khatir (Gustave Eiffel University, Paris-Saclay University, ENS Paris-Saclay, CNRS, SATIE, 78000 Versailles, France, France)
Richard Lallemand (Gustave Eiffel University, Paris-Saclay University, ENS Paris-Saclay, CNRS, SATIE, 78000 Versailles, France, France)
Ali Ibrahim (Gustave Eiffel University, Paris-Saclay University, ENS Paris-Saclay, CNRS, SATIE, 78000 Versailles, France, France)
Damien Ingrosso (Gustave Eiffel University, Paris-Saclay University, ENS Paris-Saclay, CNRS, SATIE, 78000 Versailles, France, France)
Nicolas Degrenne (Mitsubishi Electric R&D Centre Europe, 1 Allée de Beaulieu, 35708 Rennes, France, France)
Effect of load sequence interaction for low ∆Tj's on the reliability of bonded aluminium wires in IGBTs (abstract)

17:40 *Koki Okame* (Interdisciplinary Graduate School of Engineering Science, Kyushu University, Fukuoka, 816-8580, Japan)
Yuki Yamakita (Interdisciplinary Graduate School of Engineering Science, Kyushu University, Fukuoka, 816-8580, Japan)
Shin-Ichi Nishizawa (Research Institute for Applied Mechanics, Kyushu University, Fukuoka, 816-8580, Japan)
Wataru Saito (Research Institute for Applied Mechanics, Kyushu University, Fukuoka, 816-8580, Japan)
Improvement of Sensitivity for Power Cycle Degradation by A New Device Structure (abstract)

18:00 *Christian Bäumler* (Chemnitz University of Technology, Germany)
Thomas Basler (Chemnitz University of Technology, Germany)
Impact of IGBT emitter pad design and front-side ageing on switching stability (abstract)

17:00-18:40 Session B: Silicon technologies, nanoelectronics and MEMS : from device reliability to back-end reliability

CHAIRS:
Alain Bravaix (ISEN, France)
George Papaioannou (University of Athens, Greece)

LOCATION: Paër

17:00 *Renzo Antonelli* (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Guillaume Bourgeois (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Valentina Meli (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Zineb Saghi (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Théo Monniez (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Simon Martin (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Niccolò Castellani (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Mathieu Bernard (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Leïla Fellouh (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Antoine Salvi (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Sylvain Gout (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
François Andrieu (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Abdelkader Souifi (Univ. Grenoble Alpes, CNRS, LTM, 38054 Grenoble, France, France)
Gabriele Navarro (CEA-Leti, Univ. Grenoble Alpes, 38000 Grenoble, France, France)
Reading reliability in 1S1R OTS+PCM devices based on Double Patterned Self Aligned structure (abstract)

17:20 *Konstantinos Efstathios Falidas* (Fraunhofer IPMS, Germany)
Kati Kühnel (Fraunhofer IPMS, Germany)
Matthias Rudolph (Fraunhofer IPMS, Germany)
André Reck (Fraunhofer IPMS, Germany)
Malte Czernohorsky (Fraunhofer IPMS, Germany)
Johannes Heitmann (Institute for Applied Physics (IAP), Technische Universität Bergakademie Freiberg, Germany)
Electrical and reliability characterization with optimized extrapolation models of two- and three-dimensional Metal-Insulator-Metal decoupling capacitors with ZrAlxOy high-κ dielectric under BEoL-friendly conditions (abstract)

17:40 *Jaehyeong Lee* (samsung electronics, South Korea)
Byoungwook Woo (samsung electronics, South Korea)
Yumi Lee (samsung electronics, South Korea)
Namhyun Lee (samsung electronics, South Korea)
Young-Yun Lee (samsung electronics, South

Korea)
Yunsung Lee (samsung electronics, South Korea)
Seungbum Ko (samsung electronics, South Korea)
Sangwoo Pae (samsung electronics, South Korea)
Vertically Scaled Cu/low-k Interconnect Development for BEOL Reliability Improvement of 12nm DRAM (abstract)

18:00 Konstantinos Tselios (TU Wien, Austria)
Theresia Knobloch (TU Wien, Austria)
Dominic Waldhoer (TU Wien, Austria)
Hubert Enichlmair (ams-OSRAM, Austria)
Eleftherios G. Ioannidis (ams-OSRAM AG, Austria)
Rainer Minixhofer (ams-OSRAM AG, Austria)
Tibor Grasser (TU Wien, Austria)
Michael Waltl (TU Wien, Austria)
Evaluation of the Impact of Body Bias on the Threshold Voltage Drift of SiO2 Transistors (abstract)

18:20 John Theocharis (University of Athens, Greece)
Paolo Martins (Thales Research and Technology, France)
Aymen Mahjoub (Thales Research and Technology, France)
Etienne Eustache (Thales Research and Technology, France)
Afshin Ziaei (Thales Research and Technology, France)
George Papaioannou (University of Athens, Greece)
On the electrical properties of ALD HfO2 dielectric films for MEMS capacitive switches. (abstract)

18:40-20:00 Welcome reception

Tuesday, September 24th

View this program: with abstracts session overview talk overview

08:20-09:40 Session K2: Automotive Keynotes

CHAIR: Nicola Delmonte (University of Parma, Italy)
LOCATION: Pizzetti

08:20 Giorgio Gullone (Ferrari S.p.A., Italy)
(Keynote) Battery Diagnostics and Virtual Sensors in Ferrari

09:00 Luca Zacheo (Lamborghini S.p.A., Italy)
(Keynote) An approach to Electronic Platform Complexity: the System Integration in Lamborghini

09:40-10:00 Coffee Break

10:00-11:20 Session A-1: Accelerated life tests and design of experiments

CHAIR: Edgar Olthof (NXP Semiconductors, Netherlands)
LOCATION: Paër

10:00

[Fatima-Ezahra Indmeskine] (University of Angers, LARIS, SFR MATHSTIC, F-49000 Angers, France)
[Laurent Saintis] (University of Angers, LARIS, SFR MATHSTIC, F-49000 Angers, France)
[Abdessamad Kobi] (University of Angers, LARIS, SFR MATHSTIC, F-49000 Angers, France)
[Hélène Marceau] (TAME-COMPONENT (TRONICO), F-85660 Saint-Philbert-de-Bouaine, France)
Design-of-Experiments and ALT plan for reliability qualification of chip resistors based on mission profile of AIMDs (abstract)

10:20 Ui Hyo Jeong (Korea Testing Certification, South Korea)
Seongyong Lim (Incheon National University, South Korea)
Seung Su Han (Korea Testing Certification, South Korea)
Reliability Assurance in Foldable Displays: Design of Experiment-Based Testing Strategy for Market-Ready Products (abstract)

10:40 Sebastien Perrin (STMicroelectronics, France)
Vincenzo Della Marca (Aix-Marseille University, IM2NP, CNRS, France)
Thibault Kempf (STMicroelectronics, France)
Marc Bocquet (Aix-Marseille University, IM2NP, CNRS, France)
Loic Welter (STMicroelectronics, France)
Jean-Michel Moragues (STMicroelectronics, France)
Arnaud Regnier (STMicroelectronics, France)
Jean-Michel Portal (Aix-Marseille University, IM2NP, CNRS, France)
New statistical analysis methodology to forecast the memory cell behavior before reliability test (abstract)

11:00 Frederic Sehr (Fraunhofer Institute for Reliability and Microintegration (IZM), Berlin, Germany, Germany)
Stefan Wagner (Fraunhofer Institute for Reliability and Microintegration (IZM), Berlin, Germany, Germany)
Adelja Schulz (Fraunhofer Institute for Reliability and Microintegration (IZM), Berlin, Germany, Germany)
Alexander Vorwerk (Fraunhofer Institute for Reliability and Microintegration (IZM), Berlin, Germany, Germany)
Condition Monitoring for Detection of Humidity-Induced Failures in Control Electronics of Power Converters (abstract)

10:00-11:40 Session L: Automotive and industrial electronic reliability

CHAIRS:
Nicola Trivellin (University of Padova, Italy)
Ulrich Abelein (Infineon Technologies AG, Germany)
Michael Nelhiebel (KAI Kompetenzzentrum Automobil- und Industrieelektronik GmbH, Austria)
LOCATION: Pizzetti

10:00 Alessandro Caria (University of Padova, Italy)
Nicola Trivellin (University of Padova, Italy)

Riccardo Fraccaroli (Information Engineering Department - University of Padova, Italy)
Nicola Roccato (University of Padova, Italy)
Matteo Buffolo (University of Padova, Italy)
Carlo De Santi (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
Gaudenzio Meneghesso (University of Padova, Italy)
Enrico Zanoni (University of Padova, Italy)
Matteo Meneghini (University of Padova, Italy)
Reliability analysis of high power LEDs for automotive: impact of current and temperature (abstract)

10:20 *Andrea Toscani* (University of Parma, Italy)
Mattia Stighezza (University of Parma, Italy)
Marco Simonazzi (University of Parma, Italy)
Nicola Delmonte (University of Parma, Italy)
Paolo Cova (University of Parma, Italy)
Valentina Bianchi (University of Parma, Italy)
Ilaria Demunari (University of Parma, Italy)
Aging modelling of Li-Ion Battery Systems based on accelerated tests (abstract)

10:40 *Mohamed Belguith* (LATIS- Université de Sousse, ENISo Sousse,Tunisia / Université Rouen Normandie/ ESIGELEC/ IRSEEM, 76000 Rouen, France, France)
Sonia Eloued (LATIS- Laboratory of Advanced Technology and Intelligent Systems Université de Sousse, ENISo Sousse, Tunisia, Tunisia)
Moncef Kadi (Université Rouen Normandie / ESIGELEC / IRSEEM , 76000 Rouen, France, France)
Jaleleddine Ben Hadj Slama (LATIS- Laboratory of Advanced Technology and Intelligent Systems Université de Sousse, ENISo Sousse, Tunisia, Tunisia)
Development challenges of a one-sided GaN-based high-current density buck converter through multiphysics optimization for electric vehicle applications (abstract)

11:00 *Ossama Rafik* (ims bordeaux, France)
Jean-Michel Vinassa (ims-bordeaux, France)
Olivier Briat (ims-bordeaux, France)
Armande Capitaine (ims-bordeaux, France)
Performance characterization of lithium-ion battery and ageing under constant stress conditions at low temperature (abstract)

11:20 *Mirko Bernardoni* (Infineon Technologies Austria, Austria)
Robert Illing (Infineon Technologies Austria, Austria)
Mario Tripolt (Infineon Technologies Austria, Austria)
Christian Djelassi-Tscheck (Infineon Technologies Austria, Austria)
SMART Protection Design of Automotive Power Distribution Systems with Temperature-Based Electronic Fuses: Mathematical Background, Design Guidelines and Drawbacks of Energy-Based Methods (abstract)

12:00-13:00 Lunch

12:00-14:00 Session Poster 1

CHAIR:
Giovanna Mura (DIEE University of Cagliari - Italy, Italy)
LOCATION: Foyer

Xue Zhou (Harbin Institute of Technology, China)
Mingxu Zhang (Harbin Institute of Technology, China)
Donghui Li (Harbin Institute of Technology, China)
Chensong Ji (Harbin Institute of Technology, China)
Le Xu (Harbin Institute of Technology, China)
Guofu Zhai (Harbin Institute of Technology, China)
Degradation model for insulation characteristics of tantalum capacitors related to manufacturing parameters and stress (abstract)

Le Xu (Harbin Institute of Technology, Harbin, China, China)
Yuyao Zhao (Harbin Institute of Technology, Harbin, China, China)
Shujuan Wang (Harbin Institute of Technology, Harbin, China, China)
Research on The Degradation of Contact Resistance of Wire-Spring Contacts in Different Wear Condition (abstract)

Ya Jing Zhang (Beijing Information Science and Technology University, China)
Xin Yu Ao (Beijing Information Science and Technology University, China)
Hong Li (Beijing Jiaotong University, China)
Xiu Teng Wang (China National Institute of Standardization, China)
Reliability Design of GaN Based High-frequency Inverter Optimization (abstract)

Joseph Bernstein (Ariel University, Israel)
Alain Bensoussan (ReEExS Reliability, France)
Emmanuel Bender (MIT, Israel)
Tsuriel Abraham (Ariel University, Israel)
Correlating time and voltage laws in BTI (abstract)

John Theocharis (National and Kapodistrian University of Athens, Greece)
Spiros Gardelis (National and Kapodistrian University of Athens, Greece)
George Papaioannou (National and Kapodistrian University of Athens, Greece)
Evidence of resistive switching in SiNx thin films for MEMS capacitors: the role of metal contacts (abstract)

Tiang Teck Tan (Singapore University of Technology and Design, Singapore)
Tian-Li Wu (National Yang Ming Chiao Tung University, Taiwan)
Kalya Shubhakar (Singapore University of Technology and Design, Singapore)
Nagarajan Raghavan (Singapore University of Technology and Design, Singapore)
Kin Leong Pey (Singapore University of Technology and Design, Singapore)
Recovery and Unrecovered Damage During Interrupted CVS in MFIS FE devices (abstract)

Laura Anoldo (STMicroelectronics, Italy)
Giuseppe Tosto (STMicroelectronics, Italy)

Santina Bevilacqua (STMicroelectronics, Italy)
Erwin Schroer (STMicroelectronics, Italy)
Francesco Patanè (STMicroelectronics, Italy)
Salvatore Patanè (University of Messina, Italy)
Alfio Russo (STMicroelectronics, Italy)

HTRB effects on threshold instability of 4H-SiC PowerMOSFET with carrots defects (abstract)

Xuerong Ye (Harbin Institute of Technology, China)
Qisen Sun (City University of Hong Kong, Hong Kong)
Ruyue Zhang (China Jiliang University, China)
Junpeng Gao (Harbin Institute of Technology, China)
Haodong Wang (Harbin Institute of Technology, China)
Guofu Zhai (Harbin Institute of Technology, China)

Thermal layout optimization of electrolytic capacitors considering degradation self-acceleration effect for reliability improvement (abstract)

Mario Wolf (TU Bergakademie Freiberg, MSE Lab, Germany)
Peter Hoffrogge (PVA TePla Analytical Systems GmbH, Germany)
Michael Wiedenmann (Robert Bosch GmbH, Germany)
Stefan Oberhoff (Robert Bosch GmbH, Germany)
Christian Kupsch (TU Bergakademie Freiberg, MSE Lab, Germany)
Jörg Krinke (Robert Bosch GmbH, Germany)
Peter Czurratis (PVA TePla Analytical Systems GmbH, Germany)

Semi-supervised parameter estimation for Synthetic Aperture Focusing in Scanning Acoustic Microscopy for a 3D reconstruction of plastic molded electronic devices (abstract)

He Zhang (Harbin Institute of Technology, China)
Li Wang (Harbin Institute of Technology, China)
Jiwen Cui (Harbin Institute of Technology, China)

Reliability detection and analysis of elliptical holes corresponding to defects in electrothermal environment (abstract)

Lukas Mikutta (Infineon Technologies AG, Germany)
Frederik Otto (Infineon Technologies AG, Germany)
Jörg Schadewald (Infineon Technologies AG, Germany)

On the influence of the porosity and homogeneity of sintered die-attach layers on the power cycling performance (abstract)

Tanguy Phulpin (GeePs, France)
Alexandre Jaffré (GeePs, France)
Pascal Chrétien (GeePs, France)
David Alamarguy (GeePs, France)

Aging impact of the SiC Mosfet gate dielectric (abstract)

Jianbo Xin (School of Material Science and Chemical Engineering, Harbin University of Science and Technology, China)
Xiaochun Lv (Harbin Welding Institute Limited Company, China)
Yue Gao (Heraeus Electronic Technology, Heraeus Materials Technology Shanghai, China)
Le Yang (School of Material Science and Chemical Engineering, Harbin University of Science and Technology, China)
Sushi Liu (School of Material Science and Chemical

Engineering, Harbin University of Science and Technology, China)
Ke Li (School of Material Science and Chemical Engineering, Harbin University of Science and Technology, China)
Minghao Zhou (School of Electrical and Electronics, Harbin University of Science and Technology, China)
William Cai (School of Electrical and Electronics, Harbin University of Science and Technology., China)
Jing Zhang (Heraeus Electronic Technology, Heraeus Materials Technology Shanghai, China)
Yang Liu (School of Material Science and Chemical Engineering, Harbin University of Science and Technology, China)

Failure mode competition and long-term reliability in the isothermal aging of sintered Cu joints (abstract)

Ziheng Wang (Aalborg University, Denmark)
Yi Zhang (Aalborg University, Denmark)
Huai Wang (Aalborg University, Denmark)

Investigating the thermal degradation trends for thermal interface materials in the power converter (abstract)

Klodjan Bidaj (STMicroelectronics, France)
Yong Chen (STMicroelectronics, Singapore)
Jason Chang (STMicroelectronics, Taiwan)
Orianne Atance-Loustaunau (STMicroelectronics, Taiwan)
Francois Braud (STMicroelectronics, France)
Matteo Medda (ST Microelectronics, Italy)

PBO Delamination and RDL Corrosion detection on WLCSP Package Products (abstract)

Angelo Antonio Merassi (STMicroelectronics, Italy)
Tommaso Melis (STMicroelectronics, France)

Laser voltage probing and simulation of a flip-flop with undesired quasi-static switching (abstract)

Martin Votava (Fraunhofer Institute for Silicon Technology ISIT,, Germany)
Karthik Debbadi (Fraunhofer Institute for Silicon Technology ISIT, Germany)
Gopal Mondal (Siemens AG, Germany)
Sebastian Nielebock (Siemens AG, Germany)
Yoann Pascal (Fraunhofer Institute for Silicon Technology ISIT, Germany)
Marco Liserre (Fraunhofer Institute for Silicon Technology ISIT; Chair of Power Electronics, Kiel University, Germany)

Multi-sensor Data Fusion for Prediction of Remaining Useful Life of IGBT Power Modules (abstract)

Marcello Cioni (STMicroelectronics, Italy)
Giovanni Giorgino (STMicroelectronics, Italy)
Alessandro Chini (University of Modena and Reggio Emilia, Italy)
Nicolo Zagni (University of Modena and Reggio Emilia, Japan)
Giacomo Cappellini (STMicroelectronics, Italy)
Santo Principato (STMicroelectronics, Italy)
Cristina Miccoli (STMicroelectronics, Italy)
Tariq Wakrim (STMicroelectronics, France)
Maria Eloisa Castagna (STMicroelectronics, Italy)

Aurore Constant (STMicroelectronics, France)
Ferdinando Iucolano (STMicroelectronics, Italy)

Effect of Drain Field Plate design and 2DEG density on Dynamic-RON of 650V AlGaN/GaN HEMTs (abstract)

Kaihong Hou (National University of Defense Technology, Changsha, China, China)
Zhengwei Fan (National University of Defense Technology, Changsha, China, China)
Xun Chen (National University of Defense Technology, Changsha, China, China)
Shufeng Zhang (National University of Defense Technology, Changsha, China, China)
Yashun Wang (National University of Defense Technology, Changsha, China, China)
Yu Jiang (National University of Defense Technology, Changsha, China, China)

Evolution analysis of mechanical behavior of through-silicon via under thermal cycling load (abstract)

Arkadeep Deb (University of Warwick, UK)
Mohamed Taha Elsayed Abdelkader (University of Warwick, UK)
Jose Ortiz Gonzalez (University of Warwick, UK)
Phil Mawby (University of Warwick, United States)
Saeed Jahdi (University of Bristol, UK)
Olayiwola Alatise (University of Warwick, UK)

Long-Term Positive and Negative Gate Bias Stress Tests on Parallel Connected SiC MOSFETs at -40°C and 175°C (abstract)

Pengwei Li (China Academy of Space Technology, China)
Liang Zhen (School of Materials Science and Engineering Harbin Institute of Technology, China)
Xingji Li (School of Materials Science and Engineering Harbin Institute of Technology, China)
Jianqun Yang (School of Materials Science and Engineering Harbin Institute of Technology, China)
Hongwei Zhang (China Academy of Space Technology, Chile)
Guohe Zhang (School of Microelectronics, Xi'an Jiaotong University, Xi'an, China, China)
Xuhui Wang (School of Microelectronics, Xi'an Jiaotong University, Xi'an, China, China)
Yi Sun (China Academy of Space Technology, China)
Qingkui Yu (China Academy of Space Technology, China)
Qianyuan Wang (China Academy of Space Technology, China)

Single Event Irradiation Damage Effect of SiC MOSFETs Based on Degradation of Forward Conduction Characteristic (abstract)

Bin Yu (1.Nanjing University of Information Science and Technology;2. Zhejiang University;3.Yongjiang Laboratory, China)
Xingjian Shi (Polytechnic Institute of Zhejiang University, Gong Shu District, Hangzhou, China, China)
Hongyi Gao (College of Electrical Engineering, Zhejiang University, Xihu District, Hangzhou, China, China)
Haoze Luo (College of Electrical Engineering, Zhejiang University, Xihu District, Hangzhou, China, China)

Wenbo Wang (Yongjiang Laboratory, Ningbo, China, China)
Francesco Iannuzzo (Department of Energy Technology, Aalborg University, Denmark, Denmark)
Wuhua Li (College of Electrical Engineering, Zhejiang University, Xihu District, Hangzhou, China, China)

Stress comparison of several short-circuit types on SiC MOSFET packaging (abstract)

Frédéric Richardeau (Lab. Laplace - CNRS - University of Toulouse, France)
Lucien Ghizzo (THALES - Lab. Laplace - Lab. LAAS - CNRS, France)
David Tremouilles (Lab. LAAS - CNRS, France)
Sébastien Vinnac (Lab. Laplace - CNRS - University of Toulouse, France)

Low-Voltage Schottky p-GaN HEMT Properties under Extreme Repetitive Short-Circuit Operation Conditions : 2DEG Pinch-off, Stability, Aging, Robustness and Failure-Modes Analysis (abstract)

Mustafa Shqair (Lab. Laplace - CNRS - University of Toulouse, France)
Emmanuel Sarraute (Lab. Laplace - CNRS - University of Toulouse, France)
Frédéric Richardeau (Lab. Laplace - CNRS - University of Toulouse, France)

Preliminary SiC MOSFET Gate-Cracking Modeling under Short-Circuit Based on Rankine's Damage Energetic Approach Using a Wide Temperature-Range Elastoplastic 2D Simulation (abstract)

Simone Longato (Department od Information Engineering, University of Padova, Italy)
Davide Favero (Department od Information Engineering, University of Padova, Italy)
Arno Stockman (BelGaN, Oudenaarde Belgium, Belgium)
Arianna Nardo (BelGaN, Oudenaarde Belgium, Belgium)
Piet Vanmeerbeek (BelGaN, Oudenaarde Belgium, Belgium)
Marnix Tack (BelGaN, Oudenaarde Belgium, Belgium)
Gaudenzio Meneghesso (Department od Information Engineering, University of Padova, Italy)
Enrico Zanoni (Department od Information Engineering, University of Padova, Italy)
Carlo De Santi (Department od Information Engineering, University of Padova, Italy)
Matteo Meneghini (Department od Information Engineering, University of Padova, Italy)

Impact of drain-source leakage on the dynamic Ron of power HEMTs with p-GaN gate (abstract)

Shiwei Zhao (Institute of Modern Physics, Chinese Academy of Sciences, China)
Yuzhu Liu (Institute of Modern Physics, Chinese Academy of Sciences, China)
Xiaoyu Yan (Institute of Modern Physics, Chinese Academy of Sciences, China)
Peipei Hu (Institute of Modern Physics, Chinese Academy of Sciences, China)
Xinyu Li (Institute of Modern Physics, Chinese Academy of Sciences, China)
Qiyu Chen (Institute of Modern Physics, Chinese Academy of Sciences, China)
Pengfei Zhai (Institute of Modern Physics, Chinese

Academy of Sciences, China)
Teng Zhang (Nanjing Electronic Devices Institute, China)
Li Cai (Institute of Modern Physics, Chinese Academy of Sciences, China)
Yang Jiao (Institute of Modern Physics, Chinese Academy of Sciences, China)
Youmei Sun (Institute of Modern Physics, Chinese Academy of Sciences, China)
Jie Liu (Institute of Modern Physics, Chinese Academy of Sciences, China)

Effect of gate oxide thickness on gate latent damage induced by heavy ion in SiC power MOSFETs (abstract)

Mehdi Ghrabli (SATIE Laboratory, ENS Paris Saclay, France)
Mounira Bouarroudj (SATIE Laboratory, Paris EST Créteil University, France)
Ludovic Chamoin (LMPS Laboratory Université Paris-Saclay / CentraleSupélec / ENS Paris-Saclay / CNRS, France)
Emanuel Aldea (SATIE Laboratory, Paris Saclay university, France)

Physics informed Markov chains for remaining useful life prediction of wire bonds in power electronic modules (abstract)

Yu Wang (Harbin Institute of Technology, China)
Yong Xie (GA Technologies Co.Ltd., China)
Huimin Liang (Harbin Institute of Technology, China)
Hangyu Ma (Harbin Institute of Technology, China)

Remaining Useful Life Prediction of DC Contactor Based on LSTM (abstract)

Fawad Rauf (TUM and HUAWEI, Germany)
Muhammad Farhan Tayyab (HUAWEI, Germany)
Samir Mouhoubi (HUAWEI, Germany)
Marcelo Heldwein (TUM, Germany)
Gilberto Curatola (HUAWEI, Germany)

Investigation of the long-term dynamic Rds(ON) variation and dynamic high temperature operating life test robustness of Schottky gate and ohmic gate GaN HEMT with comparable stress conditions (abstract)

Jae-Seong Jeong (Korea Electronics Technology Institute (KETI), South Korea)

Creep tester for quality assessment of solder joints using normal and thermal stress (abstract)

Yun-Chan Kim (Korea Institute of Industrial Technology (KITECH), South Korea)
Dong-Yurl Yu (Korea Institute of Industrial Technology (KITECH), South Korea)
Shin-il Kim (Korea Institute of Industrial Technology (KITECH), South Korea)
Yong-Mo Kim (Korea Instrument Co., Ltd., South Korea)
Dongjin Byun (Korea University, South Korea)
Junghwan Bang (Korea Institute of Industrial Technology (KITECH), South Korea)
Dongjin Kim (Korea Institute of Industrial Technology (KITECH), South Korea)

Heat-resistant durability of AMB substrates for SiC power devices: AlN and Si3N4, which one is thermally strong? (abstract)

Hong Li (Beijing Jiaotong University, China)
Yixiang Zhao (Beijing Jiaotong University, China)
Xiaofei Hu (Beijing Jiaotong University, China)
Qinghao Zhang (Tsinghua University, China)
Online Junction Temperature Monitoring of SiC MOSFET Based On The Maximum Drain Current Change Rate During The Process of Opening (abstract)

Yunseok Han (Yonsei University, South Korea)
Sunho Kim (Wooriro Co., South Korea)
Ilgu Yun (Yonsei University, South Korea)
Efficient Long-term Reliability Assessment of Planar InGaAs/InP Avalanche Photodiodes using Accelerated Step-Stress Test (abstract)

Ping Liu (College of Electrical and Information Engineering, Hunan University, Changsha, China, China)
Yongjie Liu (College of Electrical and Information Engineering, Hunan University, Changsha, China, China)
Qi Cao (College of Electrical and Information Engineering, Hunan University, Changsha, China, China)
Biao Xiao (College of Electrical and Information Engineering, Hunan University, Changsha, China, China)
Chunming Tu (College of Electrical and Information Engineering, Hunan University, Changsha, China, China)
Active Gate Driver for Current Overshoot Suppression of SiC+Si Hybrid Switches with Dynamic gate Current Regulation (abstract)

Benewende Diane Raïnatou Bonkoungou (Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France, France)
Romain Gwoziecki (Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France, France)
Gaetan Perez (Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France, France)
Leo Sterna (Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France, France)
Zoubir Khatir (SATIE, Univ. Gustave Eiffel, 78000 Versailles, France, France)
Optimized Semi-Physical EKV Model for Simulation of SiC MOSFETs (abstract)

Ciro Scognamillo (University of Naples Federico II, Italy)
Antonio Pio Catalano (University of Naples Federico II, Italy)
Lorenzo Codecasa (Politecnico di Milano, Italy)
Alberto Castellazzi (Kyoto University of Advanced Science, Japan)
Vincenzo D'Alessandro (University of Naples Federico II, Italy)
A study of UIS ruggedness of mismatched paralleled SiC MOSFETs (abstract)

Alejandro Urena-Acuna (ONERA, DPHY, Université de Toulouse, France)
Julien Favrichon (CEA, DES, ISEC, DPME, LNPA, Univ. Montpellier. Marcoule France, France)
Aurelien Ballier (Univ. Montpellier, France)
Pierre-Alexis Robin (Univ. Montpellier, France)

Vincent Gironés (Université de Montpellier, IES-UMR UM/CNRS 5214, France)
Tadec Maraine (Université de Montpellier, IES-UMR UM/CNRS 5214, France)
Frederic Saigné (Université de Montpellier, IES-UMR UM/CNRS 5214, France)
Jerome Boch (Université de Montpellier, IES-UMR UM/CNRS 5214, France)

The Use of Filtered High-Energy X-rays and 60Co for TID Testing of a 32-Bit 28nm FDSOI DSP (abstract)

Hui Teng Tan (Singapore-MIT Alliance for Research and Technology, Singapore, Singapore)
Wardhana A. Sasangka (Singapore-MIT Alliance for Research and Technology, Singapore, Singapore)
Yu Gao (Singapore-MIT Alliance for Research and Technology, Singapore, Singapore)
Kenneth Eng Kian Lee (Singapore-MIT Alliance for Research and Technology, Singapore, Singapore)
Carl V. Thompson (Massachusetts Institute of Technology, USA, United States)
Chee Lip Gan (Nanyang Technological University, Singapore, Singapore)

Comprehensive LED Reliability Assessment through Integrated Real-Time Visualization, Electrical, and Optical Analysis (abstract)

Minh Long Hoang (Department of Engineering and Architecture, University of Parma, Parma 43124, Italy, Italy)
Simone Daniele (Federal-Mogul Italy s.r.l., Carpi 41012, Modena, Italy, Italy)
Nicola Delmonte (Department of Engineering and Architecture, University of Parma, Parma 43124, Italy, Italy)
Massimo Dal Re (Federal-Mogul Italy s.r.l., Carpi 41012, Modena, Italy, Italy)
Paolo Cova (Department of Engineering and Architecture, University of Parma, Parma 43124, Italy, Italy)
Danilo Santoro (Department of Engineering and Architecture, University of Parma, Parma 43124, Italy, Italy)

Machine learning classification for failure analysis of smart spark plugs (abstract)

Valeria Trabattoni (Università degli Studi di Milano, Italy)
Alessandro Andreani (Università degli Studi di Milano, Italy)
Massimo Lazzaroni (Università degli Studi di Milano, Italy)
Andrea Riminucci (Università degli Studi di Milano, Italy)
Danilo Santoro (Università degli Studi di Parma, Italy)
Andrea Zani (INFN Sezione di Milano, Italy)

Issues of electronic devices in hostile environment (abstract)

Saumya Joshi (Infineon Technologies, Germany)
Rosina Menditto (Infineon Technologies, Germany)
Karsten Ermisch (Infineon Technologies, Germany)
Guenther Schindler (Infineon Technologies, Germany)
Joerg Berthold (Infineon Technologies, Germany)
Toni Huber (Infineon Technologies, Germany)
Steffen Rost (Infineon Technologies, Germany)

Katja Waschneck (Infineon Technologies, Germany)
Wolfgang Gustin (Infineon Technologies, Germany)
Georg Georgakos (Infineon Technologies, Germany)
Methodology to estimate the impact of Single Event Transients in Logic (abstract)

14:00-16:00 Session WS WBG

CHAIRS:
Fabio Coccetti (IRT Saint Exupéry, Toulouse, France)
Thomas Harder (ECPE, Nurnberg, Germany)
LOCATION: Paër II

14:20-16:00 Session A-2: Reliability and Lifetime predictions focused on power electronics

CHAIR: *Edgar Olthof* (NXP Semiconductors, Netherlands)
LOCATION: Paër I

14:20 *Nils Zöllner* (Infineon Technologies AG, Germany)
Oliver Schilling (Infineon Technologies AG, Germany)
David Übelacker (Infineon Technologies AG, Germany)
Hans-Günter Eckel (University of Rostock, Institute for Electrical Power Engineering, Germany)
Tobias Heise (University of Rostock, Institute for Electrical Power Engineering, Germany)
Lifetime prediction for power modules in wind-energy converters based on temperature variations in a large area substrate solder connection (abstract)

14:40 *Dawei Zhao* (Fraunhofer Institute for Integrated Systems and Device Technology, Germany)
Sebastian Letz (Fraunhofer-Institute for Integrated Systems and Device Technology, Germany)
Jürgen Leib (Fraunhofer-Institute for Integrated Systems and Device Technology, Germany)
Bernd Eckardt (Fraunhofer-Institute for Integrated Systems and Device Technology, Germany)
On the Validity of Rainflow Counting-Based Lifetime Assessment for Power Electronics Assembly (abstract)

15:00 *Zijian Guo* (Department of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China)
Hao Chen (Department of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China)
Yifan Hu (Department of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China)
Xuerong Ye (School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China, China)
Reliability Prediction of Electronic Components based on Physical of Failure with Manufacturing Parameters Fluctuations (abstract)

15:20 *Weiming Liu* (Department of Electrical Engineering & Automation, Harbin Institute of Technology, China)

Cen Chen (Department of Electrical Engineering & Automation, Harbin Institute of Technology, China)
Wei Zheng (Beijing Aerospace Automatic Control Research Institute, China)
Mingtao Feng (Beijing Aerospace Automatic Control Research Institute, China)
Xuerong Ye (Department of Electrical Engineering & Automation, Harbin Institute of Technology, China)
Guofu Zhai (Department of Electrical Engineering & Automation, Harbin Institute of Technology, China)
Reliability prediction of multi-level power supply system based on failure precursor parameters (abstract)

15:40 Yifei Zheng (National University of Defense Technology, China)
Jianfei Wu (National University of Defense Technology, China)
Yanfang Lu (Tianjin Institute of Advanced Technology, China)
Yang Li (Tianjin Institute of Advanced Technology, China)
Hongli Zhang (Tianjin Institute of Advanced Technology, China)
Peiguo Liu (National University of Defense Technology, China)
A New Methodology of Modeling Conducted Emission Behavioural in System-in-Packages (SiP) (abstract)

14:20-16:00 Session F3: Power devices reliability: power electronic systems

CHAIR: Andrea Toscani (University of Parma, Italy)

LOCATION: Pizzetti

14:20 Wenxin Dai (School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin 150001, China, China)
Xue Zhou (School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin 150001, China, China)
Zhigang Sun (School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin 150001, China, China)
Guofu Zhai (School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin 150001, China, China)
Series AC Arc Fault Diagnosis Method Based on Spectrogram and Deep Residual Network (abstract)

14:40 Takuma Yamasoto (Kyushu Institute of Technology, Japan)
Kazunori Hasegawa (Kyushu Institute of Technology, Japan)
Condition Monitoring of a DC-Link Capacitor in an Inverter with a front-end diode rectifier under Imbalanced Three-phase Supply Voltage (abstract)

15:00 Kazunori Hasegawa (Kyushu Institute of Technology, Japan)
Sakurako Nasu (Kyushu Institute of Technology, Japan)

Analysis and experimental verification of current sharing among parallel-connected dc-link capacitors in a fast-switching converter (abstract)

15:20 *Mohamed Tlig* (LATIS-ENISo, National Engineering School of Sousse, University of Sousse, 4023 Sousse, Tunisia, Tunisia)
Bessem Zitouna (LATIS-ENISo, National Engineering School of Sousse, University of Sousse, 4023 Sousse, Tunisia, Tunisia)
Mahmoud Hammouda (LATIS-ENISo, National Engineering School of Sousse, University of Sousse, 4023 Sousse, Tunisia, Tunisia)
Jaleleddine Ben Hadj Slama (LATIS-ENISo, National Engineering School of Sousse, University of Sousse, 4023 Sousse, Tunisia, Tunisia)
Moncef Kadi (IRSEEM / ESIGELEC, France)
Conducted EMI Assessment of Aging Power Si-MOSFET in 3 phase inverter (abstract)

15:40 *Fabian Dresel* (Fraunhofer IISB, Germany)
Jürgen Leib (Fraunhofer IISB, Germany)
Lukas Blamberger (Fraunhofer IISB, Germany)
Bernd Eckardt (Fraunhofer IISB, Germany)
Martin März (Fraunhofer IISB, Germany)
High AC load current testing method for power capacitors (abstract)

16:00-16:20 Coffee Break

16:20-17:40 Session D: Reliability of microwave devices and circuits

CHAIR: *Michael Dammann* (Fraunhofer, Germany)
LOCATION: Paër I

16:20 *Michael Dammann* (Fraunhofer IAF, Germany)
Peter Brückner (Fraunhofer IAF, Germany)
Rachid Driad (Fraunhofer IAF, Germany)
Sebastian Krause (Fraunhofer IAF, Germany)
Sayed Albahrani (Fraunhofer IAF, Germany)
Benjamin Weber (Fraunhofer IAF, Germany)
Martina Bäumler (Fraunhofer IAF, Germany)
Helmer Konstanzer (Fraunhofer IAF, Germany)
Michael Mikulla (Fraunhofer IAF, Germany)
Michel Simon-Najasek (Fraunhofer IMWS, Germany)
Susanne Hübner (Fraunhofer IMWS, Germany)
Andreas Graff (Fraunhofer IMWS, Germany)
Reliability and Failure Analysis of AlGaN/GaN HEMT with NiPtAu and PtAu Gate (abstract)

16:40 *Andrea Carlotto* (University of Padua, Italy)
Fabiana Rampazzo (University of Padova, Italy)
Marco Saro (University of Padova, Italy)
Francesco De Pieri (University of Padova, Italy)
Manuel Fregolent (University of Padova, Italy)
Carlo De Santi (University of Padova, Italy)
Gaudenzio Meneghesso (University of Padova, Italy)
Matteo Meneghini (University of Padova, Italy)
Enrico Zanoni (University of Padova, Italy)
Study of Trapping Mechanisms Affecting AlGaN/GaN HEMTs adopting AlGaN Back-Barriers with Different Aluminum Concentrations (abstract)

17:00 *Nasri Said* (IMS bordeaux - LAAS Toulouse, France)
Damien Saugnon (LAAS Toulouse, France)
Kathia Harrouche (IEMN Lille, France)
Farid Medjdoub (IEMN Lille, France)
Nathalie Labat (IMS Bordeaux, France)
Nathalie Malbert (IMS Bordeaux, France)
Jean Guy Tartarin (LAAS Toulouse, France)
Nonlinear modelling of AlN/GaN HEMT accounting for Self-biasing effect during RF step stress: analysis and Hard-SOA (abstract)

17:20 *Thomas Pallaro* (University of Bordeaux, France)
Tristan Dubois (University of Bordeaux, France)
Magali De Matos (University of Bordeaux, France)
Christophe Chang (United Monolithic Semiconductors, France)
Nathalie Labat (University of Bordeaux, France)
Benoit Lambert (United Monolithic Semiconductors, France)
Nathalie Malbert (University of Bordeaux, France)
DC and RF aging test of AlGaN/GaN HEMT technology on SiC substrate (abstract)

16:20-18:30 Session WS Automotive

CHAIRS:
Rene Rongen (NXP Semiconductors, Netherlands)
Ulrich Abelein (Infineon Technologies AG, Germany)
Francesco Leali (MUNER, Modena, Italy)
LOCATION: Pizzetti

Wednesday, September 25th

View this program: with abstracts session overview talk overview

08:20-10:20 Session F2-1: GaN&SiC: reliability and testing methodologies (1)

CHAIR: *Matteo Meneghini* (University of Padova, Italy)
LOCATION: Pizzetti

08:20 *Manuel Stabentheiner* (Infineon Technologies Austria AG, Austria)
(Invited) Advanced Methodology and Understanding of GaN Device Reliability

09:00 *Lukas R. Farnbacher* (Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany)
Jürgen Leib (Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany)
Fabian Dresel (Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany)
Andreas Schletz (Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany)
Bernd Eckardt (Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany)
Jörg Schulze (Friedrich-Alexander-University of Erlangen-Nürnberg, Germany, Germany)
Gate voltage modulation for power cycling tests of SiC MOSFETs and its influence on

temperature distribution (abstract)

09:20 *Joao Oliveira* (IRT Saint Exupéry, France)
Jean-Michel Reynes (IRT Saint Exupéry, France)
Hervé Morel (INSA/Ampère, France)
Pascal Frey (IRT Saint Exupéry, France)
Olivier Perrotin (Alter Technology France, France)
Michel Piton (Alstom, France)
Fabio Coccetti (IRT Saint Exupéry, France)
Test Methodology for Short-Circuit Assessment Applied to Power SiC MOSFETs (abstract)

09:40 *Wataru Saito* (Kyushu University, Japan)
Shin-Ichi Nishizawa (Kyushu University, Japan)
A Screening Test of GaN-HEMTs for Improvement of Breakdown Voltage Uniformity (abstract)

10:00 *Mohamed Lemine Dedew* (SATIE, Cnam, CNRS, ENS Paris-Saclay, France)
Stéphane Lefebvre (SATIE, Cnam, CNRS, ENS Paris-Saclay, France)
Tien Anh Nguyen (SATIE, Cnam, CNRS, ENS Paris-Saclay, France)
Thanh Long Le (SAFRAN TECH, France)
Valeria Rustichelli (IRT Saint-Exupéry, France)
Joao Oliveira (IRT Saint-Exupéry, France)
Maroun Alam (IRT Saint-Exupéry, France)
Fabio Coccetti (IRT Saint-Exupéry, France)
Dependence between the drain current saturation and short-circuit robustness of p-GaN HEMTs (abstract)

09:20-09:40 Session BPA: Best paper IPFA 2024

CHAIRS: *Matteo Medda* (ST Microelectronics, Italy)
Frank Altmann (Fraunhofer, Germany)

LOCATION: Paër

09:20 *Giulio Galderisi* (NaMLab GmbH, Germany)
(IPFA 2024 Best Paper) Reliability of Reconfigurable Field Effect Transistors: Early Analysis of Bias Temperature Instability

09:40-10:20 Session Invited C

CHAIRS: *Matteo Medda* (ST Microelectronics, Italy)
Frank Altmann (Fraunhofer, Germany)

LOCATION: Paër

09:40 *Navid Asadi* (University of Florida, United States)
(Invited) Physical Assurance for Advanced Packaging

10:20-10:40 Coffee Break

10:40-12:00 Session C: Progress in Failure Analysis: Defect detection and Analysis

CHAIRS: *Matteo Medda* (ST Microelectronics, Italy)
Frank Altmann (Fraunhofer, Germany)

LOCATION: Paër

10:40 *Sebastian Brand* (Fraunhofer IMWS, Germany)
Michael Kögel (Fraunhofer IMWS, Germany)
Christian Grosse (Fraunhofer IMWS, Germany)
Frank Altmann (Fraunhofer IMWS, Germany)
Hemachandar Tanukonda Devarajulu (Intel Corporation Inc., United States)

Francisco M Benito (Intel Corporation Inc., United States)
Deepak Goyal (Intel Corporation Inc., United States)
Mario Pacheco (Intel Corporation Inc., United States)
Localization enhancement in quantitative thermal lock-in analysis using spatial phase evaluation (abstract)

11:00 *Till Dreier* (Excillum AB, Sweden)
Daniel Nilsson (Excillum AB, Sweden)
Julius Hållstedt (Excillum AB, Sweden)
Fast high-resolution X-ray nano tomography for failure analysis in advanced packaging (abstract)

11:20 *Lei Zhang* (Harbin Institute of Technology , China Aviation Optical-Electrical Technology Co., Ltd., China)
Shujuan Wang (Harbin Institute of Technology, China)
Xueyong Chen (China Aviation Optical-Electrical Technology Co., Ltd., China)
Jianshe Guo (China Aviation Optical-Electrical Technology Co., Ltd., China)
Le Xu (Harbin Institute of Technology, China)
Sanqiang Ling (China Aviation Optical-Electrical Technology Co., Ltd., China)
Xiaojuan Zhang (China Aviation Optical-Electrical Technology Co., Ltd., China)
Failure Analysis of Gold-plated Fuzz Button Contacts in Elevated Temperature (abstract)

11:40 *Thomas Adlmaier* (Infineon Technologies Dresden GmbH, Germany)
Stefan Doering (Infineon Technologies Dresden GmbH, Germany)
Boris Binder (Infineon Technologies Dresden GmbH, Germany)
Daniel K. Simon (Infineon Technologies Dresden GmbH, Germany)
Lukas M. Eng (Institute of Applied Physics, University of Technology Dresden, Germany)
Thomas Mikolajick (Namlab gGmbH; Chair of Nanoelectronic Materials, University of Technology Dresden, Germany)
Improved 2D charge carrier quantification workflow for scanning spreading resistance microscopy (abstract)

10:40-12:00 Session F2-2: GaN&SiC: reliability and testing methodologies (2)

CHAIR: *Matteo Meneghini* (University of Padova, Italy)
LOCATION: Pizzetti

10:40 *Dominik Wieland* (TU Vienna, Infineon Technologies Austria AG, Austria)
Boris Butej (TU Vienna, Kompetenzzentrum Automobil- u. Industrieelektronik, Austria)
Manuel Stabentheiner (TU Vienna, Infineon Technologies Austria AG, Austria)
Christian Koller (Infineon Technologies Austria AG, Austria)
Dionyz Pogany (TU Vienna, Austria)

Clemens Ostermaier (Infineon Technologies Austria AG, Austria)
Analyzing the role of hole injection on the short circuit performance of p-GaN gate power HEMTs (abstract)

11:00 Lukas Hein (Chemnitz University of Technology, Germany)
Patrick Heimler (Chemnitz University of Technology, Germany)
Tobias Lentzsch (Chemnitz University of Technology, Germany)
Josef Lutz (Chemnitz University of Technology, Germany)
Thomas Basler (Chemnitz University of Technology, Germany)
Advanced Power Cycling Test Strategies on Discrete SiC MOSFETs in Different Operating Modes and the Impact on Life-time (abstract)

11:20 Maroun Alam (IRT Saint Exupéry, Toulouse, France, France)
Valeria Rustichelli (IRT Saint Exupéry, Toulouse, France, France)
Moustafa Zerarka (IRT Saint Exupéry, Toulouse, France, France)
Christophe Banc (Safran Electronics & Defense, France)
Jean-Francois Pieprzyk (STMicroelectronics, Toulouse, France, France)
Olivier Perrotin (Alter Technology, Toulouse, France, France)
Romain Ceccarelli (Alter Technology, Toulouse, France, France)
David Tremouilles (LAAS-CNRS, Université de Toulouse, CNRS, Toulouse, France, France)
Mohamed Matmat (IRT Saint Exupéry, Toulouse, France, France)
Fabio Coccetti (IRT Saint Exupéry, Toulouse, France, France)
Gate lifetime investigation at low temperature for p-GaN HEMT (abstract)

11:40 Patrick Heimler (Chemnitz, University of Technology, Germany)
Sandro Richter (Technical University Chemnitz, Germany)
Josef Lutz (Technical University Chemnitz, Germany)
Thomas Basler (Chemnitz University of Technology, Germany)
Reliability of Discrete SiC MOSFETs under Temperature-Shock and Power Cycling Tests (abstract)

12:00-13:00 Lunch

12:00-14:00 Session Poster 2

CHAIR:
Giovanna Mura (DIEE University of Cagliari - Italy, Italy)
LOCATION: Foyer

Yingqi Wang (Harbin Institute of Technology, China)
Yuchen Song (Harbin Institute of Technology, China)
Runze Yu (Harbin Institute of Technology, China)
Shengwei Meng (Harbin Institute of Technology, China)

Yu Peng (Harbin Institute of Technology, China)
Datong Liu (Harbin Institute of Technology, China)
Spacecraft Sensor Reliability Improvement Based On Temporal Digital Twin Model (abstract)

Hong Li (Beijing JiaoTong University, China)
Kuang Zhang (Beijing JiaoTong University, China)
Jinchang Pan (Beijing JiaoTong University, China)
A Floquet Theory-Based Stability Analysis Method for PV-Storage Independent DC Microgrid (abstract)

Ziheng Wang (Aalborg University, Denmark)
Yi Zhang (Aalborg University, Denmark)
Huai Wang (Aalborg University, Denmark)
Machine learning-based surrogate models for finned heatsink optimization (abstract)

Simone Carta (Department of Electrical and Electronic Eng., University of Cagliari, Cagliari, Italy, Italy)
Alessandro Urru (Nurjana Technologies srl, Italy)
Michela Musa (Nurjana Technologies srl, Italy)
Pietro Andronico (Nurjana Technologies srl, Italy)
Giovanna Mura (Department of Electrical and Electronic Eng., University of Cagliari, Cagliari, Italy, Italy)
Electronics authentication using electrical measurements and machine learning (abstract)

Vladimir Kolkovsky (Fraunhofer IPMS, Germany)
Ronald Stübner (Fraunhofer IPMS, Germany)
Charging effects in alumina layers deposited with different precursors for microelectronic applications (abstract)

Yujin Kim (School of Electrical, Electronics and Communication Engineering, KOREATECH, South Korea)
Yeohyeok Yun (School of Electrical, Electronics and Communication Engineering, KOREATECH, South Korea)
Enhancing AC Degradation Modeling by Considering the Degradation Profile in SiON pMOSFETs (abstract)

Sandra Veljković (Faculty of Electronic Engineering, University of Nis, Nis, Serbia, Serbia)
Nikola Mitrović (Faculty of Electronic Engineering, University of Nis, Nis, Serbia, Serbia)
Vojkan Davidović (Faculty of Electronic Engineering, University of Nis, Nis, Serbia, Serbia)
Albena Paskaleva (Institute of Solid State Physics, Bulgarian Academy of Sciences, Sofia 1734, Bulgaria, Bulgaria)
Dencho Spassov (Institute of Solid State Physics, Bulgarian Academy of Sciences, Sofia 1734, Bulgaria, Bulgaria)
Igor Jovanović (Faculty of Electronic Engineering, University of Nis, Nis, Serbia, Serbia)
Emilija Živanović (Faculty of Electronic Engineering, University of Nis, Nis, Serbia, Serbia)
Goran Ristić (Faculty of Electronic Engineering, University of Nis, Nis, Serbia, Serbia)
Danijel Danković (Faculty of Electronic Engineering, University of Nis, Nis, Serbia, Serbia)
The effects of NBT stressing on later operation of power VDMOS transistors under normal conditions (abstract)

Hélène Duchemin (Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France)
David Bouchu (Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France)

Sorption getter characterization under wafer-level packaging (WLP) conditions (abstract)

Matthew Maniscalco (UConn, United States)
Hongbin Choi (UConn, United States)
Adrian Phoulady (UConn, United States)
Alexander Blagojevic (UConn, United States)
Toni Moore (UConn, United States)
Mohammad Taghi Mohammadi Anaei (UConn, United States)
Parisa Mahyari (UConn, United States)
Nicholas May (UConn, United States)
Sina Shahbazmohamadi (UConn, United States)
Pouya Tavousi (UConn, United States)

Fast Reverse Engineering of Chips using Lasers, Focused Ion Beams, and Confocal and Scanning Electron Microscopy (abstract)

Domenico De Rosa (STMicroelectronics, Italy)

Solid failure analysis flow for the detection of the leakage current in MEMS gyroscope resonant system (abstract)

Andreas Rummel (Kleindiek Nanotechnik GmbH, Germany)
Greg Johnson (ZEISS Research Microscopy Solutions, United States)
Heiko Stegmann (Carl Zeiss Microscopy GmbH, Germany)

GaN defect detection and analysis using electrical probing, EBAC, EBIC and EBIRCH (abstract)

Francis Nikolai Lupena (Renesas Design Germany GmbH, Germany)
Timo Mohamed El Khawaga (Renesas Design Germany GmbH, Germany)

Failure investigation on an embedded Schottky Barrier Diode due to an inhomogeneous silicide formation (abstract)

Elisa Vitanza (ST Microelectronics Catania, Italy)
Chiara Realmuto (ST Microelectronics Catania, Italy)
Antoine Reverdy (sector technologies, France)
Paolo Dalla Ricca (ThermoFisher Scientific, United States)

Power devices Failure Analysis Use Cases Using High voltage OBIRCh and EMMI workflows (abstract)

Takumi Yasuda (Mitsubishi Electric, Japan)
Kazunori Hasegawa (Kyushu Institute of Technology, Japan)
Jun-Ichi Itoh (Nagaoka University of Technology, Japan)

A Submodule Capacitor Degradation Balancing Control with Capacitor Parameter Monitoring of a Modular Multilevel Converter for a Battery Energy Storage System (abstract)

Wenyan Wang (China Academy of Space Technology, China)

Assembly reliability of ceramic small outline packaged devices (abstract)

Nicola Delmonte (University of Parma - Department of Engineering and Architecture, Italy)

Davide Spaggiari (University of Parma - Department of Engineering and Architecture, Italy)
Corrado Sciancalepore (University of Parma - Department of Engineering and Architecture, Italy)
Roberto Menozzi (University of Parma - Department of Engineering and Architecture, Italy)
Paolo Cova (University of Parma - Department of Engineering and Architecture, Italy)
FEM-based development of novel 3D-printable plastic direct coolers for power semiconductor modules (abstract)

Katalin Szász (Renesas Electronics, Germany)
Denise Luca (Renesas Electronics, Germany)
System in package: Advanced FA Techniques to Minimize Analysis Time and Cost (abstract)

Davide Spaggiari (University of Parma, Italy)
Paolo Cova (University of Parma, Italy)
Federico Portesine (Poseico S.p.A., Italy)
Marco Aschero (Poseico S.p.A., Italy)
Nicola Delmonte (University of Parma, Italy)
Evaluation with FEM Analysis of peak case non-rupture current for power devices working at very high current (abstract)

Zhihao Guo (School of Materials Science and Engineering, Hefei University of Technology, China)
Shuibao Liang (School of Materials Science and Engineering, Hefei University of Technology, China)
Saran Ramachandran (Advanced Forming Research Centre, University of Strathclyde, UK)
Han Jiang (School of Integrated Circuits, Anhui University, China)
Yaohua Xu (School of Integrated Circuits, Anhui University, China)
Zhihong Zhong (School of Materials Science and Engineering, Hefei University of Technology, China)
Microstructure-based fatigue analysis of SiC power module with sintered silver die attach (abstract)

Noritoshi Araki (Nippon Micrometal Corporation NMC, Japan)
Motoki Eto (Nippon Micrometal Corporation NMC, Japan)
Teruo Haibara (Nippon Micrometal Corporation NMC, Japan)
Takashi Yamada (Nippon Micrometal Corporation NMC, Japan)
Robert Klengel (Fraunhofer IMWS, Germany)
Sandy Klengel (Fraunhofer IMWS, Germany)
Understanding improved pitting corrosion resistance under high temperature application leading to a newly developed palladium coated copper wire (abstract)

Matteo Greatti (Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Italy)
Jurij Lorenzo Mazzola (Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Italy)
Lorenzo Cantù (Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Italy)
Christian Monzio Compagnoni (Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di

Milano, Italy)
Alessandro Spinelli (Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Italy)
Dario Paci (STMicroelectronics, Italy)
Fabrizio Speroni (STMicroelectronics, Italy)
Michele Lauria (STMicroelectronics, Italy)
Vincenzo Marano (STMicroelectronics, Italy)
Gerardo Malavena (Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Italy)

Impact of Device Encapsulation on the Time-Dependent Dielectric Breakdown in Polymeric Dielectrics for Galvanic Isolation (abstract)

Michael Vogt (University of Bremen, Germany)
Alexander Brunko (University of Bremen, Germany)
Markus Meier (Zestron Europe, Dr. O.K. Wack Chemie GmbH, Germany)
Helmut Schweigart (Zestron Europe, Dr. O.K. Wack Chemie GmbH, Germany)
Lothar Henneken (Robert Bosch GmbH, Germany)
Michael Schleicher (Semikron-Danfoss, Semikron Elektronik GmbH & Co. KG, Germany)
Detlev Schucht (Lackwerke Peters GmbH & Co. KG, Germany)
Nando Kaminski (University of Bremen, Germany)

Solder Stop as a Reliable Insulation Layer on Printed Circuit Boards – Different Layouts and Materials under Humidity and High Voltage (abstract)

Shuo Liu (Harbin Institute of Technology, China)
Fengkai Liu (Harbin Institute of Technology, China)
Zhongli Liu (Harbin Institute of Technology, China)
Lei Wu (Harbin Institute of Technology, China)
Jianqun Yang (Harbin Institute of Technology, China)
Xingji Li (Harbin Institute of Technology, China)

The Effect of Trench Depth on Single-Event Burnout Hardening of Split-Gate-Trench MOSFET (abstract)

Ole Bergmann (Delft University of Technology, Netherlands)
Tim Böttcher (Nexperia Germany GmbH, Germany)
Hoan Vu (Nexperia Germany GmbH, Germany)
Hoc Khiem Trieu (Hamburg University of Technology, Germany)

Thermal Impedance and Local Thermal Runaway during Surge Events in Power Rectifiers (abstract)

Zhebie Lu (Aalborg University, Denmark)
Francesco Iannuzzo (Aalborg University, Denmark)

Separate Investigation of Performance Degradation for the Si and GaN parts in Cascode GaN devices under Repetitive Short Circuits (abstract)

Bang-Ren Chen (National Yang Ming Chiao Tung University, Taiwan)
Cheng Sung (National Yang Ming Chiao Tung University, Taiwan)
Yu-Sheng Hsiao (National Yang Ming Chiao Tung University, Taiwan)
Wei-Chen Yu Yu (Hon Hai Research Institute, Taiwan)
Yi-Jun Dong (National Yang Ming Chiao Tung University, Taiwan)
Wei-Cheng Lin (National Yang Ming Chiao Tung University, Taiwan)
Surya Elangovan (Hon Hai Research Institute, Taiwan)

Yi-Kai Hsiao (Hon Hai Research Institute, Taiwan)
Hao-Chung Kuo (Hon Hai Research Institute, Taiwan)
Chang-Ching Tu (National Central University, Taiwan)
Tian-Li Wu (National Yang Ming Chiao Tung University, Taiwan)

Investigation of Trade-off between Switching Loss and Gate Overshoot in SiC MOSFETs by Driving Waveform Modification (abstract)

Zhebie Lu (Aalborg University, Denmark)
Francesco Iannuzzo (Aalborg University, Denmark)

Power Cycling Results of Cascode GaN Devices – Separate Analysis of Performance Degradation for Si/GaN parts and Lifetime Model (abstract)

Lorenzo Perini (UNIVERSITY OF PARMA, Italy)
Payam Rajabi Kalvani (UNIVERSITY OF PARMA, Italy)
Antonella Parisini (UNIVERSITY OF PARMA, Italy)
Roberto Fornari (UNIVERSITY OF PARMA, Italy)
Giovanna Sozzi (UNIVERSITY OF PARMA, Italy)

Numerical simulation of current uniformity in Ga2O3 planar diodes and its effect on temperature field and device reliability (abstract)

Farzad Hosseinabadi (Vrije Universiteit Brussel, Belgium)
Sajib Chakraborty (Vrije Universiteit Brussel, Belgium)
Omar Hegazy (Vrije Universiteit Brussel, Belgium)

Aging Effects on Short-Circuit Peak Current Through Gate-oxide Degradation in SiC MOSFET (abstract)

Marco Nicoletto (Department of Information Engineering-University of Padua, Italy)
Davide Panizzon (University of Padova, Italy)
Alessandro Caria (University of Padova, Italy)
Nicola Trivellin (University of Padova, Italy)
Carlo De Santi (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
Matteo Buffolo (University of Padova, Italy)
Gaudenzio Meneghesso (University of Padova, Italy)
Enrico Zanoni (University of Padova, Italy)
Matteo Meneghini (University of Padova, Italy)

Hail damage investigation in heterojunction silicon photovoltaic modules: a real word case study (abstract)

Alessandro Borghese (University of Naples Fedrico II, Italy)
Vincenzo Terracciano (University of Naples Fedrico II, Italy)
Marco Boccarossa (University of Naples Fedrico II, Italy)
Andrea Irace (University of Naples Federico II, Italy)
Vincenzo D'Alessandro (University of Naples Federico II, Italy)

A Geometry-Scalable Electrothermal Compact Circuit Model of SiC MPS Diodes Accounting for the Snapback Mechanism: Application to Current Surge Events (abstract)

Alessandro Caria (University of Padova, Italy)
Riccardo Fraccaroli (University of Padova, Italy)
Giulia Pierobon (University of Padova, Italy)
Thomas Castellaro (University of Padova, Italy)
Ambrogio Huang (University of Padova, Italy)

Julien Magnien (Materials Center Leoben Forschung GmbH, Austria)
Joerdis Rosc (Materials Center Leoben Forschung GmbH, Austria)
Gyula Lipák (Budapest University of Technology and Economics, Hungary)
Gusztáv Hantos (Budapest University of Technology and Economics, Hungary)
János Hegedüs (Budapest University of Technology and Economics, Hungary)
Carlo De Santi (University of Padova, Italy)
Matteo Buffolo (University of Padova, Italy)
Nicola Trivellin (University of Padova, Italy)
Enrico Zanoni (University of Padova, Italy)
András Poppe (Budapest University of Technology and Economics, Hungary)
Gaudenzio Meneghesso (University of Padova, Italy)
Matteo Meneghini (University of Padova, Italy)

Long-term (8000 h) reliability and failures of high-power LEDs for outdoor lighting stressed at high ambient temperatures (abstract)

Giorgio Cora (Politecnico di Torino, Italy)
Corrado De Sio (Politecnico di Torino, Italy)
Sarah Azimi (Politecnico di Torino, Italy)
Luca Sterpone (Politecnico di Torino, Italy)

Selective Hardening of RISCV Soft-Processors for Space Applications (abstract)

Muhammad Aitezaz Hussain (University of Parma, Italy)
Alessandro Soldati (University of Parma, Italy)
Giovanna Sozzi (Department of Engineering and Architecture, University of Parma Italy, Italy)

Impact of Constant and Pulsed Active Balancing Current Patterns on the Aging of Lithium-ion Batteries (abstract)

Zhi Chao Wei (China Academy of Space Technology, China)

Characterization and Analysis of Single-Event Effects in 16 nm FinFET FPGAs Based on On-Orbit Data (abstract)

Tsuriel Avraham (Ariel University, Israel)
Joseph Bernstein (Ariel University, Israel)

Empirical reliability model of GaN HEMT devices (abstract)

Alessandro Sitta (STMicroelectronics, Italy)
Giuseppe Mauromicale (STMicroelectronics, Italy)
Michele Fiore (STMicroelectronics, Italy)
Michele Calabretta (STMicroelectronics, Italy)

Reliability Assessment of SiC Power MOSFETs in Dynamic Reverse Bias Test (abstract)

Tomoyuki Mannen (University of Tsukuba, Japan)

Degradation of SiC-MOSFETs Utilized in Bidirectional Switch for Grid Applications Under Over Current Stress (abstract)

Guesuk Lee (Korea Electronics Technology Institute, South Korea)
Jemin Kim (Korea Electronics Technology Institute, South Korea)
Byongjin Ma (Korea Electronics Technology Institute, South Korea)

Thermal Performance Comparison of Wide Bandgap Power Modules by Simulation (abstract)

Ravi Nath Tripathi (Kyushu Institute of Technology, Japan)
Ichiro Omura (Kyushu Institute of Technology, Japan)
Peak detection for current balancing of parallel-connected SiC power devices using PCB sensors (abstract)

Roelof van der Berg (Ampleon, Netherlands)
Edwin Jellema (Eurofins | Maser, Netherlands)
ESD Human Body Model step stress distributions of GaN HEMTs and the correlation with one level test results (abstract)

Ke Li (Harbin University of Science and Technology, China)
Jianbo Xin (Harbin University of Science and Technology, China)
Xiaochun Lv (Harbin Welding Institute Limited Company, China)
Jun You (Harbin University of Science and Technology, China)
Minghao Zhou (Harbin University of Science and Technology, China)
William Cai (Harbin University of Science and Technology, China)
Jicun Lu (Zhuhai Fudan Innovation Research Institute, China)
Yang Liu (Harbin University of Science and Technology, China)
Improving Large-Area Sintering Reliability of Power Module Systems Using Copper Paste/Film (abstract)

Hyoungseuk Choi (Korea Institute of Ceramic Engineering and Technology, South Korea)
Development of Life Prediction Model based on Physics-of-Failure for Negative Temperature Coefficient Thermistor (abstract)

Yinyin Shang (Institute of Microelectronics of the Chinese Academy of Sciences, China)
Chenhe Gao (Institute of Microelectronics of the Chinese Academy of Sciences, China)
Xing Zhao (Institute of Microelectronics of the Chinese Academy of Sciences, China)
Binhong Li (Institute of Microelectronics of the Chinese Academy of Sciences, China)
Jianzhong Li (Guangdong Greater Bay Area Institute of Integrated Circuit and System, China)
Jianfei Wu (Tianjin Adance Technology Institutes, China)
Hongli Zhang (Tianjin Adance Technology Institutes, China)
Yang Li (Tianjin Adance Technology Institutes, China)
Jun Luo (Institute of Microelectronics of the Chinese Academy of Sciences, China)
Tianchun Ye (Institute of Microelectronics of the Chinese Academy of Sciences, China)
Synergistic Effect of Total Ionizing Dose and Electromagnetic Interference in SRAM using 22nm FDSOI technology (abstract)

14:00-15:20 Session F2-3: GaN&SiC: reliability and testing methodologies (3)

CHAIR: *Matteo Meneghini* (University of Padova, Italy)

LOCATION: Pizzetti

14:00

Tobias Lentzsch (Chair of Power Electronics, Chemnitz University of Technology, Germany)
Josef Lutz (Technical University Chemnitz, Germany)
Thomas Basler (Chemnitz University of Technology, Germany)
The impact of mold compound on power cycling capability of SiC MOSFETs in double sided cooled modules (abstract)

14:20 *Chih-Yao Chang* (Leadtrend Technology Corporation, Taiwan)
Hsing-Hua Hsieh (Leadtrend Technology Corporation, Taiwan)
Huang-Pin Hsu (Leadtrend Technology Corporation, Taiwan)
Cheng-Tsung Ho (Leadtrend Technology Corporation, Taiwan)
Tsung-Hsiu Wu (Leadtrend Technology Corporation, Taiwan)
Han-Wei Chen (Leadtrend Technology Corporation, Taiwan)
Ming-Chang Tsou (Leadtrend Technology Corporation, Taiwan)
Chih-Wen Hsiung (Leadtrend Technology Corporation, Taiwan)
Ming-Nan Chuang (Leadtrend Technology Corporation, Taiwan)
Tian-Li Wu (National Yang Ming Chiao Tung University, Taiwan)
Toward understanding the impacts of dynamic Ron on the efficiency in GaN-based AC-DC flyback converter (abstract)

14:40 *Manuel Fregolent* (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
Francesco Bergamin (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
Davide Favero (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
Carlo De Santi (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
Christian Huber (Department for Advanced Technologies and Micro Systems, Robert Bosch GmbH, Renningen, Germany, Germany)
Gaudenzio Meneghesso (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
Enrico Zanoni (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
Matteo Meneghini (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
OFF-state Breakdown and Threshold Voltage Stability of Vertical GaN-on-Si Trench

MOSFETs (abstract)

15:00 *Anton Marco Hofer* (TU Wien, Infineon Technologies Austria AG, Austria)
Christian Koller (Infineon Technologies Austria AG, Siemensstrasse 2, 9500 Villach, Austria, Austria)
Nicola Modolo (Infineon Technologies Austria AG, Siemensstrasse 2, 9500 Villach, Austria, Austria)
Dionyz Pogany (TU Wien, Gusshausstrasse 25, 1040 Vienna, Austria, Austria)
Clemens Ostermaier (Infineon Technologies Austria AG, Siemensstrasse 2, 9500 Villach, Austria, Austria)
Improved CV characterization technique for interface state evaluation in Si3N4/n-GaN MIS Capacitors (abstract)

14:00-17:00 Session WS-FA

CHAIRS: *Navid Asadi* (University of Florida, United States)
Frank Altmann (Fraunhofer, Germany)

LOCATION: Paër

15:20-15:40 Coffee Break

15:40-17:00 Session F2-4: GaN&SiC: discrete device stability and reliability

CHAIR: *Matteo Meneghini* (University of Padova, Italy)
LOCATION: Pizzetti

15:40 *Riccardo Fraccaroli* (Department of Information Engineering, University of Padova, 35131, Padova (PD), Italy, Italy)
Manuel Fregolent (Department of Information Engineering, University of Padova, 35131, Padova (PD), Italy, Italy)
Mirco Boito (Department of Information Engineering, University of Padova, 35131, Padova (PD), Italy, Italy)
Carlo De Santi (Department of Information Engineering, University of Padova, 35131, Padova (PD), Italy, Italy)
Eleonora Canato (STMicroelectronics, 20864, Agrate Brianza (MB), Italy, Italy)
Isabella Rossetto (STMicroelectronics, 20864, Agrate Brianza (MB), Italy, Italy)
Maria Eloisa Castagna (STMicroelectronics, 95121, Catania (CT), Italy, Italy)
Ferdinando Iucolano (STMicroelectronics, 95121, Catania (CT), Italy, Italy)
Cristina Miccoli (STMicroelectronics, 95121, Catania (CT), Italy, Italy)
Alfio Russo (STMicroelectronics, 95121, Catania (CT), Italy, Italy)
Giansalvo Pizzo (STMicroelectronics, 20007, Cornaredo (MI), Italy, Italy)
Gaudenzio Meneghesso (Department of Information Engineering, University of Padova, 35131, Padova (PD), Italy, Italy)
Enrico Zanoni (Department of Information Engineering, University of Padova, 35131, Padova (PD), Italy, Italy)
Matteo Meneghini (Department of Information Engineering, University of Padova, 35131, Padova (PD), Italy, Italy)

Evidence for double degradation regime in off-state stressed 100 V GaN transistors: from dielectric failure to subthreshold current increase (abstract)

16:00 *Alberto Marcuzzi* (Department of Information Engineering, University of Padova, Italy)
Marina Avramenko (onsemi, Belgium, Belgium)
Carlo De Santi (Department of Information Engineering, University of Padova, Italy)
Peter Moens (onsemi, Belgium, Belgium)
Gaudenzio Meneghesso (Department of Information Engineering, University of Padova, Italy)
Enrico Zanoni (Department of Information Engineering, University of Padova, Italy)
Matteo Meneghini (Department of Information Engineering, University of Padova,, Italy)

Interface-related VTH Shift of SiC MOSFETs during Constant Current Stress extracted from Charge Pumping measurements (abstract)

16:20 *Dong Xie* (Chair of Power Electronics, Chemnitz University of Technology, Germany)
Patrick Heimler (Chair of Power Electronics, Chemnitz University of Technology, Germany)
Roman Boldyrjew-Mast (Chair of Power Electronics, Chemnitz University of Technology, Germany)
Mohamed Alaluss (Chair of Power Electronics, Chemnitz University of Technology, Germany)
Sven Thiele (Chair of Power Electronics, Chemnitz University of Technology, Germany)
Josef Lutz (Chair of Power Electronics, Chemnitz University of Technology, Germany)
Thomas Basler (Chair of Power Electronics, Chemnitz University of Technology, Germany)

Threshold Voltage Hysteresis Investigation of SiC MOSFETs with Different Structures under Various Measurement Conditions (abstract)

16:40 *Alberto Cavaliere* (University of Padova, Italy)
Nicola Modolo (Infineon Technologies, Villach, Austria, Austria)
Carlo De Santi (University of Padova, Italy)
Gaudenzio Meneghesso (University of Padova, Italy)
Enrico Zanoni (University of Padova, Italy)
Matteo Meneghini (University of Padova, Italy)

Ultra-Fast recovery transients in GaN MIS-HEMT submitted to OFF State stress (abstract)

18:00-23:00 Social Programme and Gala Dinner

Thursday, September 26th

View this program: with abstracts session overview talk overview

08:20-10:20 Session E-1: Reliability of packages for power devices and sensors

CHAIRS:
Nicola Delmonte (University of Parma, Italy)
Rene Rongen (NXP Semiconductors, Netherlands)
LOCATION: Pizzetti

08:20 Mirko Bernardoni (Infineon Technologies Austria, Automotive Product Development, Austria)
(Invited) Virtual prototyping in power electronics: the role of simulation in developing reliable products

09:00 Falk Naumann (Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Germany)
Michél Simon-Najasek (Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Germany)
Bernd Wiesenberger (TDK-Micronas GmbH, Germany)
Achim Lindner (TDK-Micronas GmbH, Germany)
Frank Altmann (Fraunhofer Institute for Microstructure of Materials and Systems IMWS, Germany)
Numerical study of critical filler particle to chip interaction on an automotive Hall sensor (abstract)

09:20 Yehri Kim (Korea Institute of Industrial Technology (KITECH), South Korea)
Eunjin Jo (Korea Institute of Industrial Technology (KITECH), South Korea)
Byeong Kwon Ju (Korea University, South Korea)
Yoongul Lee (SP semiconductor, South Korea)
Jaeup Kim (SP semiconductor, South Korea)
Kijoon Ahn (SP semiconductor, South Korea)
Seungjun Noh (Hyundai Mobis, Co., Ltd., South Korea)
Dongjin Kim (Korea Institute of Industrial Technology (KITECH), South Korea)
Risk of CuxO phase penetration between the Ag plating layer and Cu during high-temperature reliability testing of interfaces bonded to cold sintered Ag nano-porous sheets on direct Ag-plated Cu substrates (abstract)

09:40 Goulven Janod (Grenoble-INP/UGA, France)
Lucas Chachay (Grenoble-INP/UGA, France)
Jonathan Schoenleber (UTINAM, France)
Yvan Avenas (Grenoble-INP/UGA, France)
Didier Bouvard (Grenoble-INP/UGA, France)
Remi Daudin (Grenoble-INP/UGA, France)
Jean-Michel Missiaen (Grenoble-INP/UGA, France)
Marie-Pierre Gigandet (UTINAM, France)
Jean-Yves Hihn (UTINAM, France)
Rabih Khazaka (SAFRAN-Tech, France)
Evaluation and thermal ageing of power semiconductor die attachment based on porous film electrodeposition (abstract)

10:00 Dajung Kim (Korea Electronics Technology Institute, South Korea)
Mi So Won (Korea Electronics Technology Institute (KETI), South Korea)
Hyunseung Yang (Korea Electronics Technology Institute (KETI), South Korea)
Chulmin Oh (Korea Electronics Technology Institute (KETI), South Korea)
Enhancing Long-Term Thermal Reliability of Sintered Joints through the Use of Silver-

Coated Copper Particles (abstract)

08:20-10:20 Session G: Photonics reliability

CHAIRS: *Matteo Buffolo* (University of Padova, Italy)
Yannick Deshayes (IMS Laboratory, France)

LOCATION: Paër

08:20 *Grigory Onushkin* (Signify Research, Eindhoven, Netherlands)
(Invited) LED Reliability for Lighting Applications and Beyond

09:00 *Marco Nicoletto* (Department of Information Engineering-University of Padova (UNIPD), Italy)
Alessandro Caria (Department of Information Engineering-University of Padova (UNIPD), Italy)
Nicola Roccato (Department of Information Engineering-University of Padova (UNIPD), Italy)
Carlo De Santi (Department of Information Engineering-University of Padova (UNIPD), Italy)
Matteo Buffolo (Department of Information Engineering-University of Padova (UNIPD), Italy)
Gaudenzio Meneghesso (Department of Information Engineering-University of Padova (UNIPD), Italy)
Enrico Zanoni (Department of Information Engineering-University of Padova (UNIPD), Italy)
Matteo Meneghini (Department of Information Engineering-University of Padova (UNIPD), Italy)
Changes in the extraction and collection efficiency of GaN-based MQW solar cells under optical step-stress (abstract)

09:20 *Claudia Casu* (Dept. of Information Engineering, University of Padova, Italy)
Matteo Buffolo (Dept. of Information Engineering, University of Padova, Italy)
Alessandro Caria (Dept. of Information Engineering, University of Padova, Italy)
Carlo De Santi (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
Nicola Trivellin (Department of Industrial Engineering, University of Padova, Italy)
Stefano Rampino (CNR-IMEM Parma, Italy)
Matteo Bronzoni (CNR-IMEM Parma, Italy)
Massimo Mazzer (CNR-IMEM, Italy)
Gaudenzio Meneghesso (Dept. of Information Engineering, University of Padova, Italy)
Enrico Zanoni (Dept. of Information Engineering, University of Padova & National Interuniversity Consortium for Nanoelectronics, Italy, Italy)
Matteo Meneghini (Dept. of Information Engineering, University of Padova, Dept. of Physics and Astronomy, University of Padova, Italy)
Evidence for Optically-Induced Degradation in CIGS Solar Cells (abstract)

09:40 *Jorge Souto* (Universidad de Valladolid, Spain)
José Luis Pura (Universidad de Valladolid, Spain)
Julian Anaya (Universidad de Valladolid, Spain)
Juan Jimenez (Universidad de Valladolid, Spain)
About the influence of temperature operation and packaging stress on the threshold for

catastrophic optical damage in laser diodes (abstract)

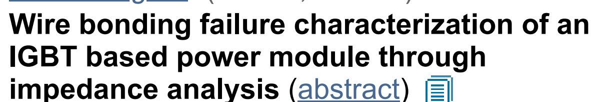
10:00 *Heewon Bang* (Yonsei University, South Korea)
Yunseok Han (Yonsei University, South Korea)
Sunho Kim (Wooriro Co., South Korea)
Ilgu Yun (Yonsei University, South Korea)
Degradation Modeling of InGaAs/InP Avalanche Photodiodes using Calibrated Technology Computer-aided Design (abstract)

10:20-10:40 Coffee Break

10:40-12:20 Session E-2: Bond wire reliability

CHAIRS:
Olaf Wittler (Fraunhofer, Germany)
Rene Rongen (NXP Semiconductors, Netherlands)
LOCATION: Pizzetti

10:40 *Paul-Etienne Vidal* (Laboratoire Génie de Production - Université de Technologie de Tarbes - Toulouse University, France)
Stéphane Baffreau (Laboratoire Génie de Production - Université de Technologie de Tarbes - Toulouse University, France)
Guillaume Viné (Laboratoire Génie de Production - Université de Technologie de Tarbes - Toulouse University, France)
Anusha Gopishetti (Deep Concept, France)
Than-Long Le (Safran, France)



Wire bonding failure characterization of an IGBT based power module through impedance analysis (abstract)

11:00 *Rasched Sankari* (Robert Bosch GmbH, Corporate Sector Research and Advance Engineering, Germany - Technical University Berlin, Germany, Germany)
Ulrich Keßler (Robert Bosch GmbH, Corporate Sector Research and Advance Engineering, Germany, Germany)
Martin Rittner (Robert Bosch GmbH, Corporate Sector Research and Advance Engineering, Germany, Germany)
Borja Kilian (Robert Bosch GmbH, Corporate Sector Research and Advance Engineering, Germany, Germany)
Youssef Maniar (Robert Bosch GmbH, Corporate Sector Research and Advance Engineering, Germany, Germany)
Olaf Wittler (Fraunhofer-Institute for Reliability and Microintegration IZM, Germany, Germany)
Martin Schneider-Ramelow (Technical University Berlin, Germany - Fraunhofer-Institute for Reliability and Microintegration IZM, Germany, Germany)
Degradation mode analysis of Cu bond wires on Cu plated SiC power semiconductors stressed by active power cycling (abstract)

11:20 *Roberta Carluccio* (STMicroelectronics, Italy)
Alberto Mancaleoni (STMicroelectronics, Italy)
Gabriele Losacco (STMicroelectronics, Italy)
Riccardo Villa (STMicroelectronics, Italy)
Andrea Serafini (STMicroelectronics, Italy)
Lucrezia Guarino (STMicroelectronics, Italy)
David Dellasega (Politecnico di Milano, Italy)

Thermal ageing monitoring in Cu-Al intermetallic joints through electrical resistance drift: comparative study of lifetime potential in pure and alloyed copper wires (abstract)

11:40 *Bernhard Czerny* (University of Applied Sciences Burgenland, Austria)
Golta Khatibi (Institute of Chemical Technologies and Analytics, TU Wien, Austria)
He Du (Kyushu Institute of Technology, Japan)
Francesco Iannuzzo (Department of Energy Technology, Denmark)
Lifetime model for wire bond degradation in power semiconductors based on accelerated mechanical testing and power cycling (abstract)

12:00 *Liz Karanja* (CEMES-CNRS, France)
Pierre-Yves Pichon (Mitsubishi Electric R&D Centre Europe, France)
Marc Legros (CEMES-CNRS, France)
Crack propagation in ultrasonic-bonded copper wires investigated by power cycling and accelerated mechanical fatigue interconnection test methods (abstract)

10:40-12:20 Session I: Extreme environments and Radiation

CHAIRS: *Marta Bagatin* (University of Padova, Italy)
Francesco Pintacuda (STMicroelectronics, Italy)

LOCATION: Paër

10:40 *Simone Gerardin* (University of Padova, Italy)
(Invited) Non-volatile Memories for the Space Environment: Ionizing Radiation Effects (abstract)

11:20 *Anuj Justus Rajappa* (PhD Researcher at imec-IDLab, Belgium)
Philippe Reiter (imec-IDLab Universiteit Antwerpen, Belgium)
Paolo Rech (Università di Trento, Italy)
Siegfried Mercelis (University of Antwerp - imec IDLab, Belgium)
Jeroen Famaey (University of Antwerp - imec IDLab, Belgium)
C-SMART: A preprocessor for neural network performance and reliability under radiation (abstract)

11:40 *Francesco Velardi* (University of Cassino, Italy)
Giovanni Canale Parola (University of Cassino, Italy)
Simone Palazzo (University of Cassino, Italy)
Emanuele Martano (University of Cassino, Italy)
Annunziata Sanseverino (University of Cassino, Italy)
Luca Silvestrin (University of Padua, Italy)
Carmine Abbate (DAC Engineering and Research srl, Italy)
Giovanni Busatto (University of Cassino, Italy)
The behavior of 350V GaN HEMTs during heavy ion irradiations (abstract)

12:00 *Laura Zunarelli* (University of Bologna, Italy)
Simone Rotorato (University of Bologna, Italy)
Elena Gnani (University of Bologna, Italy)

Susanna Reggiani (University of Bologna, Italy)
Raj Sankaralingam (Texas Instruments, United States)
Mariano Dissegna (Texas Instruments, United States)
Gianluca Boselli (Texas Instruments, United States)

Optimization of the drain-side configuration in ESD-protection SCR-LDMOS for high holding-voltage applications (abstract)

12:20-13:00 Session Closing

CHAIR: *Paolo Cova* (University of Parma, Italy)
LOCATION: Pizzetti