**Programme SCAPE 2022 - Tutorial**

# Tutorial Sunday May 15

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| 09:00 - 09:15 **Welcome** | |
| 09:15 - 11:15 | **Francesco Iannuzzo, *Aalborg University:***  *Testing for reliability of SiC MOSFETs for traction applications* |
| 11:15 - 11:30 **Coffee break** | |
| 11:30 - 12:30 | **Stig Munk-Nielsen, *Aalborg University*:**  *Packaging challenges and solutions for WBG-based high-voltage applications – Part I* |
| 12:30 - 13:30 | **Lunch** |
| 13:30 - 14:30 | **Stig Munk-Nielsen, *Aalborg University*:**  *Packaging challenges and solutions for WBG-based high-voltage applications – Part II* |
| 14:30 - 14:45 **Coffee break** | |
| 14:45 - 16:45 | **Huai Wang, *Aalborg University*:**  *Condition and Health Monitoring – Toward WBG-based Power Electronic Converters* |
| 16:45 | **End of tutorial** |

# Workshop Monday May 16 – Day 1

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| 08:30 - 09:20 **Registration, coffee** | | |
| 09:20 - 09:30 | **Welcome** | **Mietek Bakowski*, RISE*** |
| **Strategic Initiatives** | | |
| 09:30 - 10:00  **Key Note** | **Victor Veliadis, *Power America:***  *Accelerating Commercialization of U.S. WBG Power Electronics* | |
| 10:00 - 10:20 | **Hiroshi Yamaguchi, *AIST:***  *Recent Progress in Advanced SiC Power Device and Module* | |
| 10:20 - 10:40 | **Herbert Pairitsch, *Infineon:***  *UltimateGaN as an enabler of Green Applications* | |
| 10:40 - 11:00 **Coffee & Exhibition** | | |
| 11:00 - 11:20 | **Carl-Mikael Zetterling, *KTH:***  *Presentation of the IEA collaboration on the promotion of WBG-materials, the IEA 4E PECTA* | |
| **SiC and GaN devices** | | |
| 11:20 - 11:50  **Key Note** | **Gerald Deboy, *Infineon*:**  *Perspective of SiC and GaN devices in the 600V to 1200V segment and their use cases in high power applications* | |
| 11:50 - 12:10 | **Daniel Hofmann, *Wolfspeed*:**  *High Temperature Performance of next Generation SiC-MOSFET 1200 V & 750 V* | |
| 12:10 - 12:30 | **Martin Domeij, *On Semiconductor*:**  *Performance and reliability of onsemi's new generation M3 1200 V SiC MOSFETs* | |
| 12:30 - 14:00 **Lunch & Exhibition** | | |
| 14:00 – 14:20 | **Sohail Khan, *II-VI*:**  *Integrated WBG Technology (Solutions) at the center of Clean Energy Revolution* | |
| 14:20 – 14:40 | **Anup Bhalla, *UnitedSiC*:**  *Gen 4 SiCFET technology and applications* | |
| 14:40 - 15:00 | **Gabriele Bellocchi, *STMicroelectronics*:**  *Methods to control the Barrier Height in SiC Schottky diodes* | |
| 15:00 - 15:20 | **Hyung-Seok Lee, *ETRI*:**  *Recent progress of GaN-based semiconductor device technologies in ETRI* | |
| 15:20 - 15:50 **Coffee & Exhibition** | | |
| **Applications** | | |
| 15:50 - 16:10 | **Per Ranstad,** ***LNU/SFT*:**  ***SiC Power Electronics in Mobile X-ray Equipment*** | |
| 16:10 - 16:30 | **Mats Wårdemark, *Power Box*:**  *Use of SiC MOSFET's in DC/DC converters* | |
| 16:30 - 16:50 | **Xibo Yuan, *University of Bristol:***  *Motor winding and bearing stress under fast-switching wide-bandgap devices and mitigation* | |
| 16:50 – 17:10 | **Magnus Pihl, *Micropower:***  *SiC in EV chargers - 5 years of field experience* | |
| 17:10 – 17:30 | **Felix Steiner, *IPE:***  *GaAs power diodes and the challenges of packaging and handling such devices* | |
| **WBG PC Annual Awards** | | |
| 17:30 - 18:00 | **Per Ranstad,** ***WBG Power Center:***  *Presentation of awards*  **Ole Christian Spro, *NTNU:***  *Design and Optimisation of an Auxiliary Power Supply with Medium-Voltage Isolation Using GaN HEMTs*  **Keijo Jacobs, *KTH*:**  *Performance of Charge-Carrier-Lifetime-Tailored High-Voltage SiC PiN Diodes*  **Farhan Akram, *MiU*:**  *Gate Driver Solutions for High Power Density SMPS Using Silicon Carbide MOSFETs*  **Christian Al Kzair, *UU*:**  *SiC MOSFET Function in DC-DC Converter* | |
| 18:00 - 19:00 | **Mingle** |  |
| 19:30 - | **Dinner** |  |

# Workshop Tuesday May 17 – Day 2

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| 08:30 - 09:00 **Registration, coffee** | |
| **Reliability** | |
| 09:00 - 09:30  ***Key Note*** | **Aivars Lelis, *ARL*:**  *SiC MOSFET Reliability* |
| 09:30 - 09:50 | **Kyu-Bong Yeon, *KATECH*:**  *Reliability issues in SiC semiconductors for automotive applications* |
| 09:50 - 10:10 | **Subhashish Bhattacharya, *NCSU:***  *Use of 10 kV SiC MOSFETs in converters and their performance under critical conditions* |
| 10:10 - 10:30 | **Felix Hoffmann, *UNI-Bremen:***  *Power Cycling of SiC Power Devices – Aspects and Peculiarities* |
| 10:30 - 11:00 **Coffee & Exhibition** | |
| **Medium-Voltage Convertors** | |
| 11:00 - 11:20 | **Jacek Rabkowski, *WUT*:**  *Insights into the turn-off process of SiC MOSFET power modules* |
| 11:20 - 11:40 | **Stefanie Heinig, *Hitachi Energy*:**  *Experimental Insights into the MW Range Dual Active Bridge with Silicon Carbide Devices* |
| 11:40 - 12:00 | **Ole Christian Spro, *NTNU:***  *Design and Optimisation of an Auxiliary Power Supply with Medium-Voltage Isolation Using GaN HEMTs* |
| 12:00 - 12:20 | **Keijo Jacobs, *KTH*:**  *Performance of Charge-Carrier-Lifetime-Tailored High-Voltage SiC PiN Diodes* |
| 12:20 - 14:00  **Lunch & Exhibition** | |
| **Market & Roadmap** | |
| 14:00 - 14:30  ***Key Note*** | **Claire Troadec, *Yole Développement*:**  ***GaN & SiC power devices – Market overview*** |
| **Panel Discussion** | |
| 14:30 - 15:20 | **Chair: Claire Troadec & Poshun CHIU, *Yole Développement*:**  ***What happens next 5 years ?*** |
| **Packaging** | |
| 15:20 - 15:40 | **Shiori Idaka, *Mitsubishi*:**  ***New Packaging Concept - Wiring Designs from Line to Surface*** |
| 15:40 - 16:00 | **Elena Barbarini, *System Plus Consulting***  *Technical and Cost state of the art of SiC & GaN power devices* |
| **Closing remarks** | |
| 16:00 - 16:20 | **Hans-Peter Nee, *KTH Royal Institute of Technology*** |
| 16:20 | **End of workshop** |

**Exhibition**

**Young-Jin Kim, *REVOTECH*:**

*SiC PTC controller*