



POWERAMERICA

Next Generation Power
Electronics Manufacturing
Innovation Institute

2023 Annual Meeting

February 28 – March 2, 2023

Hunt Library, NC State University, Raleigh, NC

All Times are Eastern Standard (New York) Time



Event Sponsor

Tuesday February 28	
1:00 PM	Introduction to Tutorials Victor Veliadis, PowerAmerica’s Executive Director and CTO
1:05 – 3:45 PM	WBG Tutorials <ul style="list-style-type: none"> Eric Persson, Infineon: Design Techniques for Optimizing Switching Performance of HV GaN HEMTs Hrishikesh Das, onsemi: Making a SiC Wafer – Crystal Growth, Wafering and Epitaxy
4:00 PM	Membership Advisory Committee Meeting (Members only)
5:30 – 7:00 PM	Networking Reception – Hunt Library – Sponsored by Deere & Company
Wednesday March 1	
8:00 AM	Networking Breakfast – Sponsored by Deere & Company
8:30 AM	Welcoming Remarks Victor Veliadis, PowerAmerica’s Executive Director and CTO
8:45 AM	Keynote: Philip Chesley, Senior Vice-President & President, High Performance Analog, Qorvo: Harnessing the Power of Compound Semiconductors.
9:30 AM	MIP #4 Update -- Jim Cooper, Sonrisa and Purdue University: Increasing Channel Mobility, Reducing Threshold Instability, and Improving Robustness of 650 V SiC Power MOSFETs
10:00 AM	MIP #4 Update -- Wensong Yu, NC State University: Demonstration of a 100 kW SiC Inverter with Soft-Switching dv/dt Filter and Ultra High Efficiency for Motor Drives
10:30 AM	Networking Break – Sponsored by CVD Equipment
11:00 AM	MIP #4 Update -- Yue Zhao, University of Arkansas: Design and Demonstration of a Current Sharing Strategy for Paralleling High Current Silicon Carbide Modules
11:30 AM	MIP #4 Update -- Rick Eddins, GE: Paralleling of GaN Modules for High Power Applications

12:00 PM	Event Sponsor Presentation – Aehr Test Systems
12:10 PM	Networking Lunch – Sponsored by Deere & Company
1:15 PM	Newer Member Introductions <ul style="list-style-type: none"> • CVD Equipment, Manny Lakios, CEO • Marel Power Systems, Amrit Vivekanand, CEO • RCT Systems, Troy Beechner, VP, Engineering, Power Systems • Galaxy Semiconductor, Wes Smith, CEO
1:45 PM	MIP #4 Update -- Ram Adapa, EPRI: Optimal HV SiC Device Characteristics for D-FACTS Rated 5 kV to 25 kV
2:15 PM	MIP #4 Update -- Mohammed Agamy, SUNY-Albany: Medium Voltage Solid State & Hybrid Breaker Architectures Using SiC JFETs
2:45 PM	MIP #5 Update -- Yuhao Zhang, Virginia Tech: High-Frequency, Soft-Switching Losses of GaN and SiC Devices: Application-oriented Evaluation and Physical Mechanism
3:15 PM	Networking Break – Sponsored by CVD Equipment
3:45 PM	MIP #5 Update -- Nathan Weise, Marquette University: Multilevel GaN-based Traction Drive Inverter
4:05 PM	MIP #5 Update -- Kevin Bai, University of Tennessee-Knoxville: Design and Test A 800V/>50kW Three-level Active Neutral Point Clamping Motor Drive Inverter using 650V/60A GaN HEMTs for Electric Vehicles
4:35 PM	Student/Industry Mixer with Poster Session (in person only)
5:30 – 7:30 PM	Evening Reception (Heavy Hors-D’oeuvres) – Fitts-Woolard Hall (adjacent to Hunt Library) Sponsored by Deere & Company
Thursday March 2	
8:00 AM	Networking Breakfast – Sponsored by Deere & Company
8:30 AM	Keynote: Manish Dalal, Vice President, Advanced Technology, GE Aerospace: Electrification in Aviation – Trends, Challenges and Opportunities
9:15 AM	MIP #5 Update -- Subhashish Bhattacharya, NC State University: A 650V GaN-based Three-Level ANPC Inverter for Electric Vehicle Traction
9:45 AM	MIP #5 Update -- Juan Rivas-Davila, Stanford University: Automated Tool to Measure Soft-switching C_{oss} Losses in Wide Bandgap Power Devices
10:15 AM	Networking Break – Sponsored by CVD Equipment
10:45 AM	MIP #5 Update -- Ram Adapa, EPRI: Defining the Full Benefits of WBG Technology for the Power Grid
11:15 AM	Undergraduate Student Scholarship Project Presentations <ul style="list-style-type: none"> • Amy Depee, NC State University: SiC Power Module Characterization Using High Voltage Double Pulse Testing for a 250kW All-Electric Powertrain of Electric Trucks • Peter Lazos, RPI: Design and Optimization of Vertical GaN-Doped and Polarization Superjunction Devices

11:45 AM	Panel Discussion: SiC Supply Chain Challenges and Prospects <ul style="list-style-type: none"> • Cengiz Balkas, SVP and GM, Materials Business, Wolfspeed • Hrishikesh Das, Senior Director, SiC Materials Group Leader, onsemi • Kevin Speer, Technology Director, SiC Power Solutions, Microchip
12:30 PM	Networking Lunch – Sponsored by Deere & Company
1:30 PM- 3:30 PM	Working Groups to Review DoE Proposal and Develop New Project Ideas
3:30 PM	Adjourn

Thanks to our Meals and Receptions Sponsor



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February 23, 2023

Display Tables: SOITEC, Aehr Test Systems, CVD Equipment, General Electric, Oxford Instruments