



POWERAMERICA

Next Generation Power
Electronics Manufacturing
Innovation Institute

Annual Meeting

March 1-3, 2022

NC State University – Hunt Library - Duke Energy Hall

1070 Partners Way, Raleigh, NC 27606

**This in-person meeting is subject to NC State University COVID safety protocols. See page 3 for details.*

Tuesday, March 1

- 1-4:30 PM** PowerAmerica Introduction and Facility Tours
- FREEDM Systems Center Power Electronics Lab (<https://www.freedm.ncsu.edu/>)
 - Nano-Fabrication Facility (<https://nnf.ncsu.edu/>)
 - PREES Packaging Lab (<http://prees.org/>)
- 4:30-5:30 PM** **Member Advisory Committee Meeting (PowerAmerica Members Only)**
See separate agenda.
- 5:30 – 7:30 PM** **Evening reception at Hunt Library**

Wednesday, March 2

- 8:00 AM** **Networking Breakfast**
- 8:30 AM** Welcome - Victor Veliadis, Executive Director and CTO
- 8:45 AM** Keynote: Jay Cameron, SVP and General Manager - Power, Wolfspeed
Silicon Carbide Technology Progress and Application to the Industrial and Energy Markets
- 9:40 AM** Module Challenge MIP #1: **SiC-based Module Building Block with Integrated Inductor and Gate Driver**, Christina DiMarino – Virginia Tech
- 10:10 AM** Module Challenge MIP #2: **SiC Power Modules for Medium Voltage Applications**, Alan Mantooh – Univ. of Arkansas
- 10:40 AM** **Networking Break & Exhibits**
- 11:10 AM** Module Challenge MIP #3: **Demonstration of Advanced Power Packaging Technology for Near-Term Commercialization**, Doug Hopkins - NC State Univ.
- 11:40 AM** Module Challenge MIP #4: **Embedded GaN Power Module for 400V>20A Operation with Double-sided Cooling and Integrated Gate Driver Circuits**, Helen Cui – Univ. of Tennessee-Knoxville
- 12:10 PM** **Lunch & Exhibits**

1:20 PM Jed Dorsheimer, Analyst – Canaccord Genuity LLC - **The Role of SiC and GaN in an Electrified World**

2:00 PM Member Project Selection Based on PowerAmerica Roadmap

- Group 1: Vehicles (Including EVs, Trains, Aviation)
- Group 2: Grid Connections and Energy Storage
- Group 3: Variable Speed Motor Drives
- Group 4: Test and Measurement for SiC and GaN Device & Module Manufacturing
- Group 5: Consumer & Personal Electronics

4:00 PM **Networking Break & Exhibits**

4:30 PM New member presentations

- AEHR Test Systems
- Ion Beam Services
- Mercedes Benz R&D

4:50 PM MIP Round 4 #1: **MV Solid State & Hybrid Breaker Architectures using SiC JFETs**, Mohammed Agamy – SUNY Albany

5:05 PM MIP Round 4 #2: **Optimal HV SiC Device Characteristics for D-FACTS Rated 5 kV to 25 kV**, Ram Adapa – Electric Power Research Institute

5:20 PM MIP Round 4 #3: **Increasing Channel Mobility, Reducing Threshold Instability, and Improving Robustness of 650 V SiC Power MOSFETs**, Jim Cooper – Sonrisa

5:35 – 7:30 PM **Evening Reception (Heavy Hors-D'oeuvres) - Fitts Woolard Hall (adjacent to Hunt Library)**

Thursday, March 3

8:00 AM **Networking Breakfast**

8:30 AM Keynote: Greg Ratcliff, Chief Innovation Officer, Vertiv – **SiC and GaN Infrastructure Power Management Opportunities for Large Data Centers**

9:15 AM MIP Round 4 #4: **Design and Demonstration of Current Sharing Strategy for Paralleling High Current Silicon Carbide Modules**, Yue Zhao – Univ. of Arkansas

9:30 AM MIP Round 4 #5: **Demonstration of 100 kW SiC Inverter with Soft-Switching dv/dt Filter and Ultra High Efficiency for Motor Drives**, Wensong Yu – NC State

9:45 AM MIP Round 4 #6: **Paralleling of GaN Modules for High Power Applications**, Rick Eddins – GE

10:00 AM **Industry Panel: Applications Beyond EV**

- ABB – Arun Kadavelugu
- NexGen Power Systems – Kevin Reed
- Qorvo – Zhongda Li

11:00 AM **Networking Break**

11:30 AM Report on Development of New SiC and GaN Projects

12:30 PM **Networking lunch**

1:30 PM Close Meeting

* In accordance with the North Carolina State University policies and safety guidelines, we will require attendee attestation of vaccination *or* a negative COVID test (antigen test within 24 hours or a PCR test within 72 hours) prior to arrival at the meeting. You will be asked to self-certify this information at the registration desk. No written confirmation is required. A mask must be worn indoors at all times except when eating or drinking.

February 14, 2022 version