PowerAmerica | Next Generation Power Electronics Manufacturing Innovation Institute

2023 WBG Summer Workshop

August 8 – 10, 2023

NC State University

Raleigh, NC 27606

All Times are Eastern Daylight (New York) Time

Event Sponsor:

AEHR TEST SYSTEMS

Tuesday August 8	
1:00 PM	**Introduction to Tutorials** Victor Veliadis, PowerAmerica's Executive Director and CTO
1:05 – 3:45 PM	**WBG Tutorials** ● Sei-Hyung Ryu, Wolfspeed: **SiC Power MOSFET Design Considerations, Ruggedness, and Radiation Hardness** ● Roger Brewer, Lockheed Martin: **WBG Technologies, Capacitors & High Temperature Electronics for Modern Aircraft Applications**
4:00 PM	**Membership Advisory Committee Meeting *(Members only)***
5:30 – 7:00 PM	**Networking Reception**
Wednesday August 9	
8:00 AM	**Networking Breakfast**
8:30 AM	**Welcoming Remarks** Victor Veliadis, PowerAmerica's Executive Director and CTO
8:45 AM	**Keynote:** Clayton Pillion, VP Silicon Carbide Business Unit, Microchip: **Empowering a More Sustainable Future with SiC**
9:30 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**
10:00 AM	**Networking Break –** Sponsored by **Hesse Mechatronics**
10:30 AM	MIP #4 Update -- Yue Zhao, University of Arkansas: **Design and Demonstration of a Current Sharing Strategy for Paralleling High Current Silicon Carbide Modules**

11:00 AM	MIP #4 Update -- Rick Eddins, GE: **Paralleling of GaN Modules for High Power Applications**
11:30 AM	**Event Sponsor Presentation** – Aehr Test Systems
11:45 AM	**Networking Lunch**
1:15 PM	**Newer Member Introductions** ● Ideal Power - Mudit Khanna ● University of Houston - Harish Krishnamoorthy ● BorgWarner - Harsha Nanjundaswamy ● Coherent - Andy Souzis ● Delta - Peter Barbosa ● Beneq - Dilip Deshpande
2:30 PM	MIP #5 Update -- Yuhao Zhang, Virginia Tech: **High-Frequency, Soft-Switching Losses of GaN and SiC Devices: Application-oriented Evaluation and Physical Mechanism**
3:00 PM	MIP #5 Update -- Juan Rivas-Davila, Stanford University: **Automated Tool to Measure Soft-switching C_{oss} Losses in Wide Bandgap Power Devices**
3:30 PM	**Networking Break** – Sponsored by **Hesse Mechatronics**
4:00 PM	MIP #5 Update -- Subhashish Bhattacharya, NC State University: **A 650V GaN-based Three-Level ANPC Inverter for Electric Vehicle Traction**
4:30 PM	MIP #5 Update -- Nathan Weise, Marquette University: **Multilevel GaN-based Traction Drive Inverter**
5:00 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**
5:30 PM	**Travel to Park Alumni Center** (2450 Alumni Drive)
6 – 8 PM	**Evening Reception @ Park Alumni Center** (Heavy Hors-D'oeuvres) – Sponsored by TBD
Thursday August 10	
8:00 AM	**Networking Breakfast**
8:30 AM	**Keynote:** Jeff Perkins, EVP & GM, Yole: **Update on SiC and GaN Market Dynamics**
9:15 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**
9:45 AM	MIP #5 Update -- Ram Adapa, EPRI: **Defining the Full Benefits of WBG Technology for the Power Grid**
10:15 AM	**Networking Break** – Sponsored by **Hesse Mechatronics**
10:45 AM	Undergraduate Student Scholarship Project Presentation - - Maximo DiPreta, Virginia Tech (remote) - **Reliability of Double-Side Cooled GaN HEMT Phase-Leg Modules**
11:15 AM	**Panel Discussion: Commercialization Success (4 panelists)** 1. Brij Singh, John Deere (virtual)

	2. Rick Eddins, GE 3. Pete Losee, Qorvo 4. Llew Vaughan-Edmunds, Navitas
12:15 PM	**Networking Lunch**
1:30 PM	**MIP Topic Selection Breakouts** A- Grid Modernization B- Energy-Efficient Data Centers and Industrial Applications C- Energy-Efficient Motor Drives D- Electric Vehicles E - Innovation in materials, and manufacturing tools F - Advanced packaging and passive components
3:00 PM	**Adjourn**

August 1, 2023 version