

3D-PEIM 2025 Program

Day 1 - Tuesday July 8, 2025

Time	Description/Title	Presenter	Affiliation
7:30 - 8:30 a.m.	Registration Opens & Contentual Breakfast		
8:30 - 9:00 a.m.	Welcome and Opening Remarks	Faisal Khan, Peter Green	NREL
9:00 - 9:45 a.m.	<i>Plenary I : Beyond 2030, Powering the E-Powertrain with a High-Value and High-Efficiency Power Conversion System - a BorgWarner Perspective</i>	Harsha Nanjundaswamy	BorgWarner
9:45 - 10:15 a.m.	Break		
10:15 - 11:55 a.m.	S1: Converter Integration and Manufacturing		
	<i>Session Co-Chair</i>	Jared Hornberger	Wolfspeed
	<i>Session Co-Chair</i>	Fang Luo	Stony Brook University
10:15 - 10:40 a.m.	Motor-Integrated Segmented Inverters	Jaroslav Leonarski	Cummins
10:40 - 11:05 a.m.	Cost Reduction of Solar PV and Storage systems through the use of Advanced Inverters	Leo Casey	GoogleX
11:05 - 11:30 a.m.	A High Power Density Inverter Design for Traction Applications	Rohit Baranwal	Eaton
11:30 - 11:55 a.m.	Isolation Integration Into Cold Plate and Thermal Densification of Liquid-Cooled Power Modules and Environmental Stress	Thilo Vethake	Trumpf
12:00 - 1:00 p.m.	Lunch and Partner Exhibits		
1:00 - 2:40 p.m.	S2: Thermal Management		
	<i>Session Co-Chair</i>	Adam Wilson	U.S. Army Research Laboratory
	<i>Session Co-Chair</i>	Jong Ryu	North Carolina State University
1:00 - 1:25 p.m.	Overview of DARPA'S Heterogenous Integration Efforts	Sumit De	DARPA
1:25 - 1:50 p.m.	Thermal Management Techniques for Power-Dense Advanced Packages	Clay Pullins	Northrop Grumman Corporation
1:50 - 2:15 p.m.	Thermal Management in Power Electronics: The Role of Multifunctional Components and Phase Change Materials	Rachel McAfee	U.S. Army Research Laboratory
2:15 - 2:40 p.m.	Die and Baseplate Warpage As a Critical Factor for Thermal Interface Material Development	Dave Saums	DS&A LLC
2:40 - 3:10 p.m.	Break		
3:10 - 4:50 p.m.	S3: Reliability		
	<i>Session Co-Chair</i>	Przemek Gromala	Bosch
	<i>Session Co-Chair</i>	David Huitink	University of Arkansas
3:10 - 3:35 p.m.	Reliability Challenges for High-Power Modules	Yong Liu	onsemi
3:35 - 4:05 p.m.	Power Electronics Module with Integrated Ceramic Heat Exchanger	Doug DeVoto	NREL
4:05 - 4:30 p.m.	Thermal and Reliability Considerations in Integrated Cooling inside a 3D Power Module	David Huitink	University of Arkansas
4:30 - 4:55 p.m.	Reliability of Space Power Module	Patrick McCluskey	University of Maryland
3:10 - 5:10 p.m.	<i>Lab Tour of Power Electronics and Electric Machines Facilities in Building 16 (Optional, advanced registration required)</i>		
6:00 - 8:00 p.m.	WELCOME RECEPTION & DINNER		

Day 2 - Wednesday July 9, 2025

Time	Description/Title	Presenter	Affiliation
7:30 - 8:30 a.m.	Contentual Breakfast		
8:30 - 9:15 a.m.	<i>Plenary P2: Advanced Packaging to System Integration – Trends and Challenges</i>	Devan Iyer	IPC
9:15 - 9:45 a.m.	Break		
9:45 - 11:25 a.m.	S4: Module Integration and Manufacturing		
	<i>Session Co-Chair</i>	Chris Kapusta	GE Aerospace
	<i>Session Co-Chair</i>	Patrick McCluskey	University of Maryland
9:45 - 10:10 a.m.	Achieving Heterogeneous 3D Power Electronics Integration	Alan Mantooth	University of Arkansas
10:10 - 10:35 a.m.	Electronic Packaging and System Challenges in Deep-Space, Power Electronic Applications	Joe Kozak	Johns Hopkins University
10:35 - 11:00 a.m.	GE POL-kW Power Module Packaging and Integration	Shung ik Lee	GE Aerospace
11:00 - 11:25 a.m.	Comparitive Study of Parasitic Capacitance of Dielectric Liquid Cooled Power Module designs	Shuofeng Zhao	NREL
11:25 - 12:30 p.m.	Lunch and Partner Exhibits		

Day 2 - Wednesday July 9, 2025 cont'd

Time	Description/Title	Presenter	Affiliation
12:30 - 2:10 p.m.	S5: Passive Components		
	<i>Session Co-Chair</i>	Matt Wilkowski	Wurth Elektronik
	<i>Session Co-Chair</i>	John Bultitude	Consultant
12:30 - 12:55 p.m.	A Novel Capacitor-Embedded Substrate Technology for Next Generation Power Supply Applications	Shuhei YAMADA	Murata Manufacturing Co., Ltd
12:55 - 1:20 p.m.	Segmented winding transformer (SWT) for Surface power delivery of large AI & HPC chips	José A. Cobos	Differential Power
1:20 - 1:45 p.m.	Inductive Components on Silicon Substrate 300mm Wafer	Martin Haug	Wurth Elektronik
1:45 - 2:10 p.m.	FOM for High-frequency Integrated Magnetics	Ranajit Sai	Tyndall
2:10 - 2:40 p.m.	Break		
2:40 - 3:40 p.m.	S6: Partner Presentations		
	<i>Session Chair</i>	Bidzina Kekelia	NREL
3:40 - 5:10 p.m.	S7: Poster Session, and Benchtop/Exhibits from Partners		
	<i>Session Co-Chair</i>	Jason Rouse	Taiyo-America
	<i>Session Co-Chair</i>	Sreekant Narumanchi	NREL
	<i>Effect of Moisture on the Field-Grading of a Polymer Nanocomposite Coating in Medium-Voltage Power Modules</i>	<i>Zachary Zintak</i>	<i>VirginiaTech</i>
	<i>Low-Temperature Slurry-Cast Copper Structures for Multiple Power Electronics 3D Packaging Applications</i>	<i>Sujan Dewanjee</i>	<i>University of Illinois at Urbana Champaign</i>
	<i>Low-Pressure (5 MPa) and Short-Time (3 Min) Silver-Sintering Die-Attach</i>	<i>Yancheng Chen</i>	<i>Virginia Tech</i>
	<i>Novel Multi Loop 3D-Interconnect-Based Inductance Minimization Technique for Lateral WBG Device Power Modules</i>	<i>Sourish Sinha</i>	<i>North Carolina State University</i>
	<i>Universal Stacked Die Layout Technique for Minimizing Parasitic Inductance in Flying Capacitor-Based Multilevel Converters</i>	<i>Sourish Sinha</i>	<i>North Carolina State University</i>
	<i>Rapid prototyping techniques for organic direct bonded copper power modules</i>	<i>Shuofeng Zhao</i>	<i>NREL</i>
	<i>Fully printed power module with advanced thermal management</i>	<i>Sai Avuthu</i>	<i>Eaton</i>
	<i>Double-Side Liquid Cooling of a 1.2 kV SiC Three-Phase Traction Inverter Power Stage with Integrated Parallel Flow</i>	<i>Joshua Gardner</i>	<i>VirginiaTech</i>
	<i>Evaluation of Heat Spreading Technologies Within Double-Side Cooled Power Modules for Thermal Performance Enhancements</i>	<i>Gilbert Moreno</i>	<i>NREL</i>
	<i>Saturation Dependent Heat Transfer Coefficients for Design of Evaporative Wicks</i>	<i>Gokce Ozkazanc-Guc</i>	<i>University of California Merced</i>
	<i>Packaging of double-side-cooled 3.3kV 100A SiC Mosfet module</i>	<i>Li Zhang</i>	<i>Virginia Tech</i>
3:40 - 5:40 p.m.	Lab Tour of Power Electronics and Electric Machines Facilities in Building 16 (Optional, advanced registration required)		
6:15 - 9:15 p.m.	DINNER (Offsite)		

Day 3 - Thursday July 10, 2025

Time	Description/Title	Presenter	Affiliation
7:30 - 8:30 a.m.	Continental Breakfast		
8:30 - 9:15 a.m.	Plenary P3: The Power Delivery and Energy Storage Challenge in Advanced Packaging	Subramanian Iyer	University of California Los Angeles
9:15 - 9:30 a.m.	Break		
9:30 - 11:10a.m.	S8: Materials for Modules and Converters		
	<i>Session Co-Chair</i>	Andy Mackie	Indium Corporation
	<i>Session Co-Chair</i>	G.-Q. Lu	Virginia Tech
9:30 - 9:55 a.m.	Innovative Ceramic Packaging Solutions for Power Semiconductors by NGK	Kazuo Kimura	NGK, Japan
9:55 - 10:20 a.m.	Electric Field Neutralization: Rethinking (Ultra)Wide Bandgap Power Semiconductor Packaging	Chanyeop Park	Arizona State University
10:20 - 10:45 a.m.	Next Generation Sintering Technology for Die-bonding	Minoru Ueshima	Daicel, Japan
10:45 - 11:10 a.m.	Electro-infiltrated Nickel/Iron Oxide Nanocomposite Microinductors for Power Supply on Chip Applications	Sai Pranesh Amiriseti	University of Florida
11:10 - 12:10 p.m.	Lunch and Partner Exhibits		

Day 3 - Thursday July 10, 2025 cont'd			
12:10 - 1:50 p.m.	S9: Advanced Artificial Intelligence, Machine Learning, and Modeling		
	<i>Session Co-Chair</i>	Eric Dede	Toyota
	<i>Session Co-Chair</i>	Doug Hopkins	North Carolina State University
12:10 - 12:35 p.m.	Data-Driven Models and MagNet Challenge for Power Magnetics Modeling	Minjie Chen	Princeton University
12:35 - 1:00 p.m.	Continuous and Categorical Bayesian Optimization for 3D Power Module Package and Cold Plate Design	Danny Lohan	Toyota Research Institute of North America
1:00 - 1:25 p.m.	ML-Based Optimization of Co-Designed Stacked Substrate Power Module Structures	Jong Eun Ryu	NCSU
1:25 - 1:50 p.m.	Artificial Intelligence for Power Electronics Thermal Performance and Reliability	Paul Paret	NREL
1:50 - 2:00 p.m.	Closing Remarks	Faisal Khan	NREL
2:10 - 4:45 p.m.	NREL Tour of South Table Mountain Campus – Energy Systems Integration Facility, Solar Energy Research Facility, Science and Technology Facility (Optional, advanced registration required)		
2:10 - 4:10 p.m.	Lab Tour of Power Electronics and Electric Machines Facilities in Building 16 (Optional, advanced registration required)		