3D-PEIM 2025 Program

Day 1 - Tuesday July 8, 2025			
Time	**Description/Title**	**Presenter**	**Affiliation**
7:30 - 8:30 a.m.	Registration Opens & Contenental Breakfast		
8:30 - 9:00 a.m.	Welcome and Opening Remarks	Faisal Khan, Peter Green	NREL
9:00 - 9:45 a.m.	*Plenary I : Beyond 2030, Powering the E-Powertrain with a High-Value and High-Efficiency Power Conversion System - a BorgWarner Perspective*	*Harsha Nanjundaswamy*	*BorgWarner*
9:45 - 10:15 a.m.	*Break*		
10:15 - 11:55 a.m.	S1: Converter Integration and Manufacturing		
	Session Co-Chair	Jared Hornberger	Wolfspeed
	Session Co-Chair	Fang Luo	Stony Brook University
10:15 - 10:40 a.m.	Motor-Integrated Segmented Inverters	Dakshina Murthy Bellur	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*		
1:00 - 2:40 p.m.	*S2: Thermal Management*		
	Session Co-Chair	Adam Wilson	U.S. Army Research Laboratory
	Session Co-Chair	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*		
	Session Co-Chair	Przemek Gromala	Bosch
	Session Co-Chair	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.	*Lab Tour of Power Electronics and Electric Machines Facilities in Building 16 (Optional, advanced registration required)*		
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.	Contenental Breakfast		
8:30 - 9:15 a.m.	*Plenary P2: Advanced Packaging to System Integration – Trends and Challenges*	*Devan Iyer*	*IPC*
9:15 - 9:45 a.m.	*Break*		
9:45 - 11:25 a.m.	*S4: Module Integration and Manufacturing*		
	Session Co-Chair	Chris Kapusta	GE Aerospace
	Session Co-Chair	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 Capactence 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*		
	Session Co-Chair	Matt Wilkowski	Wurth Elektronik
	Session Co-Chair	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*		
	Session Chair	Bidzina Kekelia	NREL
3:40 - 5:10 p.m.	*S7: Poster Session, and Benchtop/Exhibits from Partners*		
	Session Co-Chair	Jason Rouse	Taiyo-America
	Session Co-Chair	Sreekant Narumanchi	NREL
	Effect of Moisture on the Field-Grading of a Polymer Nanocomposite Coating in Medium-Voltage Power Modules	*Zachary Zintak*	*VirginiaTech*
	Low-Temperature Slurry-Cast Copper Structures for Multiple Power Electronics 3D Packaging Applications	*Sujan Dewanjee*	*University of Illinois at Urbana Champaign*
	Low-Pressure (5 MPa) and Short-Time (3 Min) Silver-Sintering Die-Attach	*Yancheng Chen*	*Virginia Tech*
	Novel Multi Loop 3D-Interconnect-Based Inductance Minimization Technique for Lateral WBG Device Power Modules	*Sourish Sinha*	*North Carolina State University*
	Universal Stacked Die Layout Technique for Minimizing Parasitic Inductance in Flying Capacitor-Based Multilevel Converters	*Sourish Sinha*	*North Carolina State University*
	Rapid prototyping techniques for organic direct bonded copper power modules	*Shuofeng Zhao*	*NREL*
	Fully printed power module with advanced thermal management	*Sai Avuthu*	*Eaton*
	Double-Side Liquid Cooling of a 1.2 kV SiC Three-Phase Traction Inverter Power Stage with Integrated Parallel Flow	*Joshua Gardner*	*VirginiaTech*
	Evaluation of Heat Spreading Technologies Within Double-Side Cooled Power Modules for Thermal Performance Enhancements	*Gilbert Moreno*	*NREL*
	Saturation Dependent Heat Transfer Coefficients for Design of Evaporative Wicks	*Gokce Ozkazanc-Guc*	*University of California Merced*
	Packaging of double-side-cooled 3.3kV 100A SiC Mosfet module	*Li Zhang*	*Virginia Tech*
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.	Contenental 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*		
	Session Co-Chair	Andy Mackie	Indium Corporation
	Session Co-Chair	G.-Q. Lu	Virginia Tech
9:30 - 9:55 a.m.	Innovative Ceramic Packaging Solutions for Power Semiconductors by NGK	Jerry Higuchi	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 Amirisetti	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*		
	Session Co-Chair	Eric Dede	Toyota
	Session Co-Chair	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)*		