

3D-PEIM 2023 Program

Day 1 - Wednesday February 1, 2023			
Time	Description/Title	Presenter	Affiliation
8:15-8:30 a.m.	Opening Remarks	Markondeyaraj Pulugurtha	Florida International University
8:30-9:10 a.m.	S1: Plenary I : Design for Power		
8:30-9:10 a.m.	<i>Finite-Element Predictive Modeling for Power Modules</i>	<i>Dr. Brandon Passmore</i>	<i>Wolfspeed</i>
9:10-9:50 a.m.	<i>Integrated Power Delivery for AI Computing: Technology Gaps & Opportunities</i>	<i>Prof. Madhavan Swaminathan</i>	<i>Georgia Tech.</i>
9:50-10:05 a.m.	<i>Break</i>		
10:05-11:50 a.m.	S2: IVR for Computers and Servers		
	<i>Session Chair</i>	Siddharth Ravichandran	Chipletz
10:05-11:50 a.m.	<i>Keynote: Practical challenges with advanced IVR solutions for microprocessors</i>	Michael J. Hill	Intel
10:05-10:35 a.m.	3D Power Delivery for High Performance Processors	Noah Sturcken	Ferric, Inc
10:35-11:00 a.m.	Topology and Magnetics Co-Investigation for 48V-1V Point-of-Load VRM	Minjie Chen, Shuai Jiang, Jose A. Cobos, & Brad Lehman	Princeton University
11:00-11:25 a.m.	Inductor-Linked Multi-Output Chiplet Power Delivery Architecture	Daniel H. Zhou, Mian Liao, Ping Wang, & Minjie Chen	Princeton University
11:25- 11:50 a.m.	<i>Lunch</i>		
12:50-3:00 p.m.	S3: Multiphysics Design & Tools		
	<i>Session Chair</i>	Rajen Murugan	Texas Instruments
12:50-1:20 p.m.	<i>Keynote: Machine-learning-based optimization: the future of power package design</i>	Vanessa Smet	Georgia Tech.
1:20-1:50 p.m.	<i>Keynote: New Challenges in Transportation Electrification, Powertrain Drives & New Power Electronics Architectures</i>	Osama Muhammed	Florida International University
1:50-2:15 p.m.	Multiphysics System Co-Design Modeling: State-of-the-Art, Challenges, and Opportunities	Rajen Murugan	Texas Instruments
2:15-2:40 p.m.	EMI Shielding Performance of Thin and Thick Graphene Films Placed Within Integrated Power Modules	Ghaleb Al Duhni, John Volakis, & Markondeyaraj Pulugurtha	Florida International University
2:40-3:05 p.m.	Reliability Analysis of Wireless Power Transfer for Electric Vehicle Charging Based on Continuous Markov Process	Arif Sarwat, Milad Behnamfar, Md Abu Taher, Alexis Polowsky, Mohd Tariq, & Sukanta Roy	Florida International University
3:05-3:20 p.m.	<i>Break</i>		
3:20-4:50 p.m.	S11: Thermal Management and Reliability		
	<i>Session Chair</i>	Patrick McCluskey	University of Maryland
3:20-3:50 p.m.	<i>Keynote: Integrated thermal management in power electronics and motors</i>	Satish Kumar	Georgia Tech.
3:50-4:15 p.m.	Power Electronics Thermal Design with Carbice Nanotubes for Reliability and Cost Saving	Craig Green	Carbice Corporation
4:15-4:40 p.m.	Inverter/converter power density and flexibility improvements through modularity and novel thermal management architecture	Ian Byers & Stuart Wooters	Marel Power solutions Inc.
4:40-6:25 p.m.	S5: Manufacturing Technologies		
	<i>Session Chair</i>	Jason Rouse	Taiyo America
4:40-5:10 p.m.	<i>Keynote; Insights from Microelectronic Packaging for Power Packaging Advancement</i>	Matt Kelly	IPC
5:10-5:35 p.m.	Vertical integrated high density power packaging technology	C.P. Hung, Matt Li, & Kay Essig	ASE
5:35-6:00 p.m.	Reticular Graphene Reinforced Copper for Low-Stress Thermal Management Application	Ambreem Nisar, Cheng Zhang, Markondeyaraj Pulugurtha, Arvind Agarwal, & Al Dumni Ghaleb	Florida International University
6:00-9:00 p.m.	WELCOME RECEPTION		

Day 2 - Thursday February 2, 2023			
Time	Description/Title	Presenter	Affiliation
8:30-9:50 a.m.	S6: Plenary II: Improved Electrical Performance for Power		
8:30-9:10 a.m.	<i>PCB based Integrated Magnetics</i>	<i>Prof. Fred C. Lee</i>	<i>Virginia Tech.</i>
9:10-9:50 a.m.	<i>Future of Packaging and the Role of Power Integration</i>	<i>Prof. Rao R. Tummala</i>	<i>3D Electronic Systems Packaging Research Center(PRC), Georgia Tech.</i>
9:50-10:05 a.m.	<i>Break</i>		

Day 2 - Thursday February 2, 2023 cont'd

Time	Description/Title	Presenter	Affiliation
10:05-11:30 a.m.	S7: Materials I Interconnects & Lead Attachments		
	<i>Session Chair</i>	Andy Mackie	Indium Corporation
10:05-10:35 a.m.	Keynote: Roadmap for Copper Sintering - Next Interconnect for Power Electronic Module Packaging	Gordon Elger	Technische Hochschule Ingolstadt
10:35-11:05 a.m.	Keynote: Die Top System: Advanced interconnect for Power Electronics Module Packaging	Habib Mustain	Heraeus
11:05-11:30 a.m.	Rapid Development of Electrically Conductive Materials for Additive Manufacturing Feasibility and Applications	Gilad Nave, Patrick McCluskey	University of Maryland
11:30 a.m.-12:20 p.m.	S8: Materials II Substrates & Encapsulants		
	<i>Session Chair</i>	Ninad Shahane	Texas Instruments
11:30-12:00 p.m.	Keynote: A Polymer-Nanoparticle Composite for Nonlinear Resistive Field-Grading in Medium-Voltage Power Modules	G. Q. Lu	Virginia Tech.
12:00-12:25 p.m.	New Substrate Technology for Power Applications	Neda Ameli	Rogers Corporation
12:25-1:25 p.m.	Lunch with Posters		
	Laser-Induced graphene supercapacitors on flex substrates for package-Integrated Power Supply in Wearable and IoT Devices	Reshmi Banerjee, Azmal Chowdhury, Pavar Sai Kumar, Chunlei Wang, Sanket Goel, Pulugurtha Markondeya Raj	Florida International University
	New Design Concepts for PCB-Integration Technology in Power Electronics Reducing Circuit Parasitics to a Minimum	Rando Raßmann, Jasper Schnack, Ulf Schümann	University of Applied Science Kiel
	Low Frequency Power Telemetry Using Multiferroic Laminate Heterostructures	Pawan Gaire, Veeru Jaiswal, Markondeyaraj Pulugurtha, Maria Thuy Do, Ravi Mullapudi, Shubhendu Bhardwaj	University of Nebraska-Lincoln
	Overview of Power Electronic Converters in Electric Vehicle Applications	S M Sajjad Hossain Rafin, Rejaul Islam, Osama Mohammed	Florida International University
	Wide Band Gap Semiconductor Devices for Power Electronic Converters	S M Sajjad Hossain Rafin, Rony Ahmed, Osama Mohammed	Florida International University
	A Review of Power Electronics Converters for Electronic Aircrafts	S M Sajjad Hossain Rafin, Md Ashikul Haque, Osama Mohammed	Florida International University
	Power Electronic Converters for Wind Power Generation	S M Sajjad Hossain Rafin, Rejaul Islam, Osama Mohammed	Florida International University
1:25-4:05 p.m.	S9: Module Integration		
	<i>Session Chair</i>	Vanessa Smet	Georgia Tech.
1:25-1:55 p.m.	Keynote: Power Electronic Materials and Devices: Silicon to Diamond	Travis Anderson	US Navy
1:55-2:25 p.m.	Keynote: Heterogeneous Roadmap Update	Patrick McCluskey	University of Maryland
2:25-2:50 p.m.	Towards next generation power module package technology blooming	S. Idaka	Mitsubishi Electric R&D Center Europe
2:50- 3:15 p.m.	An intelligent power module	Julien Morand, Johan Le Lesle	Mitsubishi Electric R&D Center Europe
3:15-3:40 p.m.	WAVELET-Based Parameter Estimation of High Voltage Impulse Signals	Emel Onal	Istanbul Technical University
3:40-4:05 p.m.	NMOS/NLDMOS LSS dead-Time Minority Carrier Isolation Optimization	Gang Liu, Olivier Causse	OnSemi
4:05 - 4:20 p.m.	Break		
4:20-5:15 p.m.	S4: Additive Manufacturing		
	<i>Session Chair</i>	Peter Friedrichs	Infineon
4:20-4:50 p.m.	Keynote Nano Additive Manufacturing of Challenging Materials	Wendy Gu	Stanford University
4:50-5:15 p.m.	Additive deposition technologies: from 2D towards 3D electronic systems	Frank Roscher	Fraunhofer Institute
5:15-6:05 p.m.	S10: Partners Session		
	Amkor Technology		
	KEMET-Smoltek		
	FIU Biomedical Engineering		
	Wolfspeed		
	Indium Corporation		
6:05-7:00pm	POSTERS & BENCHTOP PARTNERS		

Day 3 - Friday February 3, 2023

Time	Description/Title	Presenter	Affiliation
8:30-9:50 a.m.	S14: Plenary III: Improved Electrical Performance for Power		
8:30-9:10 a.m.	Superior heat dissipation by low pressure Ag sinter joining and real time AI lifetime prediction for SiC power module	Prof. Katsuaki Suganuma	University of Osaka
9:10-9:50 a.m.	Emerging Power electronics packaging and system integration for automotive applications	Dr. Mahadevan Iyer	Amkor
9:50-10:05 a.m.	Break		
10:05 a.m.-12:15 p.m.	S12: Passive Component Integration		
	Session Chair	John Bultitude	KEMET Electronics Corporation
10:05-10:35 a.m.	Keynote: Enabling Sustainable Power Electronics Through Miniaturization and Integration of Power Magnetics	Matt Wilkowski	Enachip
10:35-11:00 a.m.	Application of Circuit Board Technology for Passives Packaging	B. K. Summey	KEMET Electronics Corporation
11:00-11:25 a.m.	High-density nanoporous silicon decoupling capacitors	Mohamed Jatlaoui	Murata
11:25-11:50 a.m.	Cold-sprayed aluminum capacitors for 3D power packaging	Reshmi Banerjee, Denny John, Cheng Zhang, Arvind Agarwal, & Markondeyraj Pulugurtha	Florida International University
11:50-12:15 p.m.	Class I Multi-Layer Ceramic Capacitors (MLCCs) Performance As Wide Band Gap (WBG) Snubbers for Hard Switching Applications	Allen Templeton, Nathan Reed, Hunter Hayes, James Davis, John Bultitude	KEMET Electronics Corporation
12:15-1:15 p.m.	Lunch		
	Lunch Plenary: Magnetolectric Nanoparticles As a Wireless Brain-Machine Interface	Sakhrat Khizoev	University of Miami
	S13: Low Power & Telemetry		
1:15-3:00 p.m.	Session Chair	Girish Wable	Jabil
1:15-1:45 p.m.	Keynote: Energy Harvesting at the Edge: When the Package IS the System	Brian Zahnstecher	PowerRox
1:45-2:10 p.m.	Manufacturing Challenges and Qualification of 3D Packaging	Chuck Woychik	Skywater Technology
2:10-2:35 p.m.	Metamaterial beam steering for wireless power	Hae-In Kim, Y.K. Yoon	University of Florida
2:35-3:00 p.m.	Laminate-Embedded Multimodal Energy Harvester for Multilevel Power Supply	Jorge A. Caripidis Troccola, Sweta Gupta, Maxence Carvalho, Satheesh Bojja Venkatakrishnan, Markondeyraj Pulugurtha, & John L. Volakis	Florida International University
3:00-3:15 p.m.	Closing Remarks	Markondeyraj Pulugurtha	Florida International University
	S15: LABORATORY TOUR - Florida International University		