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.	*Finite-Element Predictive Modeling for Power Modules*	*Dr. Brandon Passmore*	*Wolfspeed*
9:10-9:50 a.m.	*Integrated Power Delivery for AI Computing: Technology Gaps & Opportunities*	*Prof. Madhavan Swaminathan*	*Georgia Tech.*
9:50-10:05 a.m.	*Break*		
10:05-11:50 a.m.	*S2: IVR for Computers and Servers*		
	Session Chair	Siddharth Ravichandran	Chipletz
10:05-10:35 a.m.	*Keynote: Practical challenges with advanced IVR solutions for microprocessors*	Michael J. Hill	Intel
10:35-11:00am	3D Power Delivery for High Performance Processors	Noah Sturcken	Ferric, Inc
11:00-11:25am	Topology and Magnetics Co-Investigation for 48V-1V Point-of-Load VRM	Minjie Chen, Shuai Jiang, Jose A. Cobos, & Brad Lehman	Princeton University
11:25- 11:50am	*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.	*Lunch*		
12:50-3:00 p.m.	*S3: Multiphysics Design & Tools*		
	Session Chair	Rajen Murugan	Texas Instruments
12:50-1:20 p.m.	Keynote: Machine-learning-based optimization: the future of power package design	Vanessa Smet	Georgia Tech.
1:20-1:50 p.m.	Keynote: New Challenges in Transportation Electrification, Powertrain Drives & New Power Electronics Architectures	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.	*Break*		
3:20-4:50 p.m.	*S11: Thermal Management and Reliability*		
	Session Chair	Patrick McCluskey	University of Maryland
3:20-3:50 p.m.	Keynote: Integrated thermal management in power electronics and motors	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*		
	Session Chair	Jason Rouse	Taiyo America
4:40-5:10 p.m.	Keynote; Insights from Microelectronic Packaging for Power Packaging Advancement	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 Dunni 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.	*PCB based Integrated Magnetics*	*Prof. Fred C. Lee*	*Virginia Tech.*
9:10-9:50 a.m.	*Future of Packaging and the Role of Power Integration*	*Prof. Rao R. Tummala*	*3D Electronic Systems Packaging Research Center(PRC), Georgia Tech.*
9:50-10:05 a.m.	*Break*		

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*		
	Session Chair	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*		
	Session Chair	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	*Veeru Jaiswal, Pawan Gaire, Maria Thuy Do, Ravi Mullapudi, Shubhendu Bhardwaj, John Volakis, Markondeyaraj Pulugurtha*	*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*		
	Session Chair	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*		
	Session Chair	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, & Markondeyaraj 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: Magnetoelectric 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, Markondeyaraj Pulugurtha, & John L. Volakis*	*Florida International University*
3:00-3:15 p.m.	Closing Remarks	Markondeyaraj Pulugurtha	Florida International University
	S15: LABORATORY TOUR - Florida International University		