

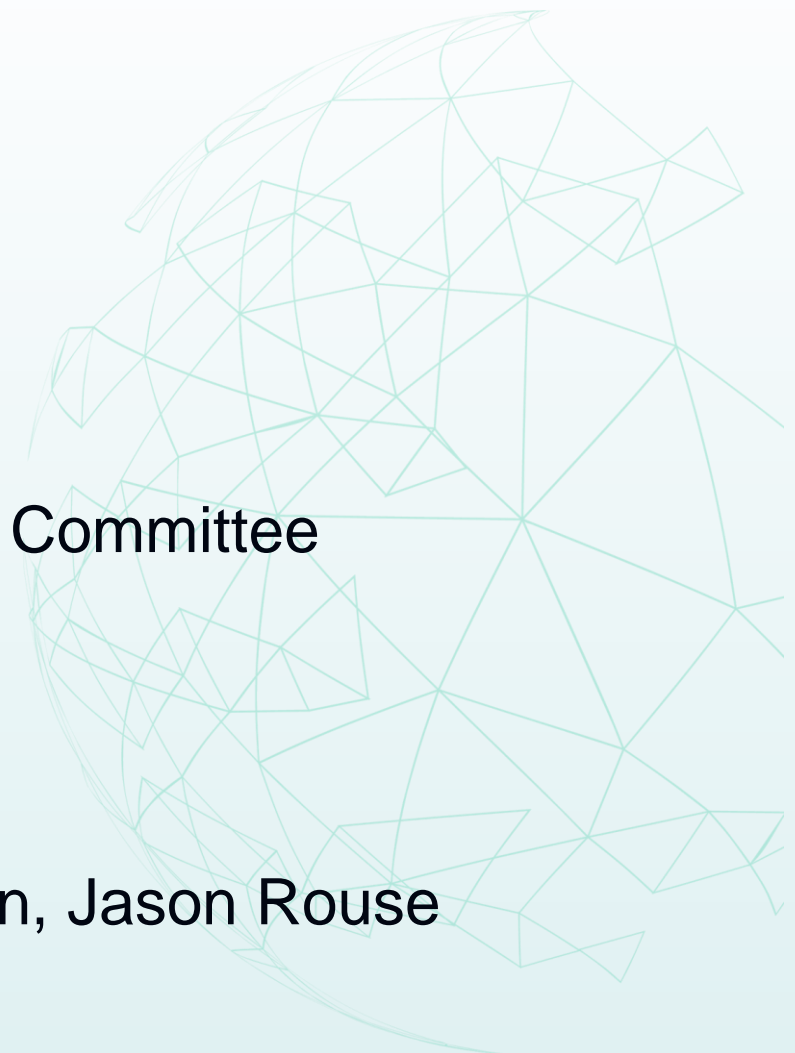


The Multinational Power Electronics Association

PSMA
Packaging/Manufacturing Committee

July 9th, 2024

John Bultitude, Brian Narveson, Jason Rouse
Co-chairman



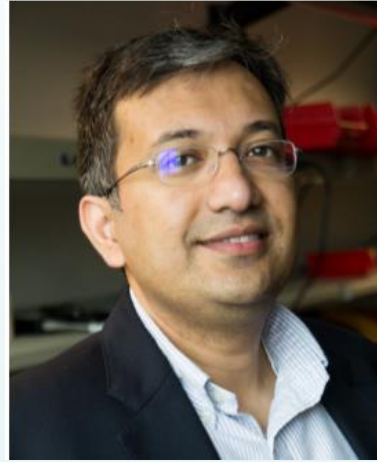
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Meeting Agenda

- **3D-PEIM 2025 Update**
 - **3D-PEIM Organizing Committee – Update**
 - **3D-PEIM Technical Committee Update**
- **IWIPP 2025 Update**
 - **Call for Papers**
- **Pwr Soc 2025 Update**
- **Power Technology Report on Embedded and Integrated Magnetics- Update**
- **APEC 2024 Industry Session Summary**
- **APEC 2025**
 - **Speaker Recruitment**

3D-PEIM 2025



3D-PEIM is held every 2 years to bring together technologists interested in merging of power packaging, circuits, components and manufacturing to create high performance power solutions using 3D packaging technology and manufacturing techniques.

3D-PEIM

- **Dr. Faisal Khan Chief Researcher/Scientist NREL – General Chairman**
- **July 8-10, 2025 Sheraton West Denver**
- PSMA sole Financial Sponsor, IEEE EPS Technical Sponsor - **Board Approved**
- **Hotel Contract Signed**
- **July Priorities are Website and Partner Recruiting**

3D-PEIM 2025 Technical Co-chairs Chairs

Sreekant Narumanchi, Ph.D.,

ASME Fellow

Group Manager, Advanced Power Electronics and
Electric Machines Group

Center for Integrated Mobility Sciences

National Renewable Energy Laboratory, MS 1633

Email: sreekant.narumanchi@nrel.gov

Jason Rouse Ph.D.,

Manager Strategic Growth & Ventures

Taiyo America Inc.

Email: jhrouse@taiyo-america.com

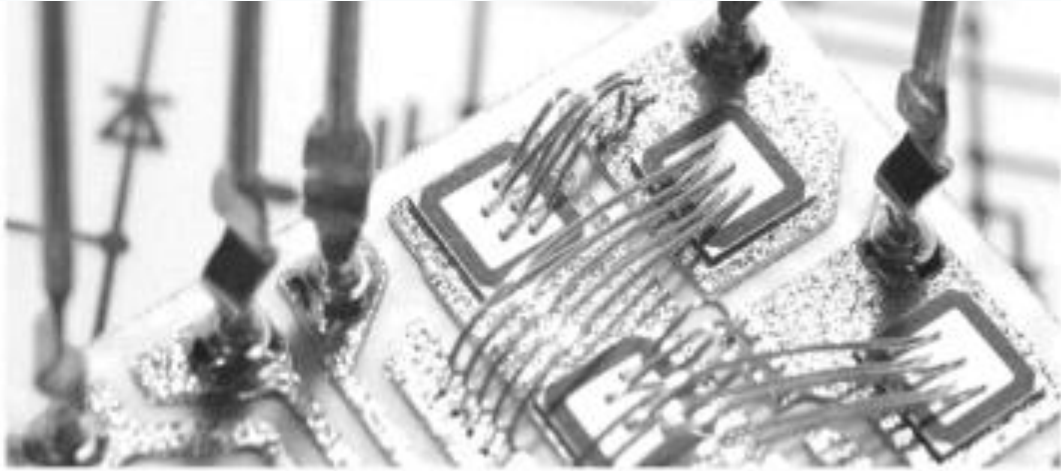
• Technical Committee

- Faisal Khan (General Chair
- Matt Wilkowski
- Brian Narveson
- John Bultitude
- Doug Hopkins
- Jong Eun Ryu
- Jared Hornberger
- Patrick McCluskey
- G.-Q. Lu
- Brian Rowden
- Tim McDonald
- Cian O'Mathuna
- Przemek Gromala
- Raj Pulugurtha
- Thomas Gottwald
- Katsuaki Suganuma
- Eric Dede
- Chris Kapusta
- Adam Wilson

• Proposed Sessions

- Session 1 - Inverter/Converter Integration, Manufacturing and Assembly
- Session 2 - Thermal Management
- Session 3 - Reliability
- Session 4 - Module Integration
- Session 5 - Passive Components
- Session 6 - Partner Presentations
- Session 7 - Poster, Benchtop and Exhibit Session
- Session 8 - Materials – Attachments, Interconnects, Substrates, Heat Exchangers
- Session 9 - Advanced Modeling Techniques (including AI and ML)

IWIPP 2025 – Call for Papers



CALL FOR PAPERS

**INTERNATIONAL WORKSHOP ON
INTEGRATED POWER PACKAGING 2025**

April 8th – 10th 2025

**University of Alabama
Tuscaloosa, Alabama, USA**

This workshop aims to unite power electronics packaging researchers to advance high-density, high-efficiency power converters. We seek papers tackling challenges in power electronic components and systems, offering solutions for enhanced reliability, manufacturability, and performance at lower costs. Submissions are solicited on all power packaging topics ranging from component-level to system-level.

IWIPP 2025 – Status

- Call for Papers out [Call for Papers - IWIPP](#)
- Technical Program Structure Complete
- Hotel Contract Signed
- Recruiting Speakers
 - Contact Brian bcnarveson@gmail.com if you would like to be considered for an invited presentation

IWIPP 2025 – Call for Papers

IWIPP COMMITTEE

General Chair: Andrew Lemmon, Univ. of Alabama

Technical Chairs: Nick Baker, Univ. of Alabama
Arthur Boutry, Univ. of Alabama

Publicity Chairs: Ivana Kovacevic-Badstuebner, ETH Zurich
Xiaoling Li, NREL

Publications Chair: Cyril Buttay, CNRS

Treasurer: Yue Zhao, Univ. of Arkansas

Sponsorship Chair: Jim Gafford, Univ. of North Carolina

Local Org. Chair: Adrienne Hall, Univ. of Alabama

PSMA Liaison: Brian Narveson

DEADLINES

Abstract Submission: **November 1, 2024**

Notice of Acceptance: December 20, 2024

Final Paper Submission: February 7, 2025

Submission Portal (available Sept. 1, 2024):

<https://epapers.org/iwipp2025/>



WWW.IWIPP.ORG

PwrSoC 2025

- The Packaging Committee supports PwrSoC
- Steering Committee approved a proposal from Prof. Jaeha Kim, Seoul National University.
- Exact Date TBD Sept/Oct 2025

Sponsors



Power Technology Report on Embedded and Integrated Magnetics

- **Board Approved July 3rd**
- **Tyndall selected to author the report**
- **Kick off meeting with Tyndall this Thursday, July 11th**



APEC 2025 Topic Brainstorm – **Speaker Recruitment Discussion**

- The following high level topics were discussed with the goal of Improving attendance at our APEC Session to this audience as well as promoting our Packaging & Manufacturing workshops
 - Manufacturing
 - Speaker from DARPA to present industry challenges
 - System house to discuss power packaging challenges
 - Packaging alternatives for AI processors or processor boards
 - SiC & GaN Power Packaging
 - Cooling AI power
 - Packaging of power solution for AI requiring 1000A art 1V.

APEC 2025 Topic Brainstorm – **Speaker Recruitment Actions**

- Following our discussions we decided to focus on 2 key Power Packaging Areas; Auto/Vehicle and AI
- The following actions were identified to recruit potential speakers (7) for our session at APEC 2025 that will be held at Georgia World Congress Center Atlanta, GA March 16-20, 2025:
- We need to reserve one speaking slot for presentation of the Committee Magnetics Technnology Report

Speaker / Organization	Packing (Manufacturing) Subject	Committee Contact	Response
Brij Singh / John Deere	Vehicle Power	Douglas C. Hopkins	Confirmed
Vicor	AI	Andy Mackie	
Peter Friedrichs / Infineon	Vehicle Power / AI	John Bultitude	Confirmed
Caresoft Global	Vehicle Power teardowns	Jason Rouse	
AEC	Vehicle Power reliability standards	Jason Rouse	
Qing Lui	AI	GQ	
Nvidia	AI power and packaging	Jason Rouse	

APEC 2025 – Draft Industry Session Proposal

The PSMA Packaging Committee is organizing and proposing an Industry Session for APEC 2024 that is focused on advances in 3D-Packaging Technology for AI and EV power. The session will focus on new technologies that address the need to achieve high packaging densities while addressing issues such as thermal management, noise and improved efficiencies. This industry session will focus on the advanced power packaging needs for improved performance in these critical application areas. The challenges and benefits associated with SiC and GaN will be reviewed. This session will bring together leading academic and industrial researchers in this area to review the current technology and future needs.

Presentation Subject/Title	Presenter	Title/Affiliation
Heavy Duty Electrical Vehicle Power	Brij Singh	Technical Fellow / John Deere
Power Packaging for AI & EV/Modern power conversion enabled by WGB semiconductors and innovative package solutions	Peter Friedrichs	Senior Director Wide Band Gap / Infineon Technologies
AI/Power & Packaging	Mark Gerber	Technical Fellow/ASE
Power Technology Report on Embedded and Integrated Magnetics	Tyndall	TBD
Packaging of power supplies for AI	Ian Chan	CTO & Managing Director/Cyntec Co. Ltd.
AI power challenges	TBD	
Vehicle power reliability standards	TBD	

Thank You

Next Committee Meeting
Tuesday August 6th, 11 am Central Time?



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IWIPP 2025

- IWIPP International Workshop on Integrated Power Packaging is a biennial IEEE event dedicated to advancing the state of the art in power semiconductor packaging, which is widely recognized as one of the critical factors influencing the performance and reliability of today's power electronics
- **IWIPP April 8-10, 2025**
- **Dr. Andy Lemon – General Chairman**
- In-person Conference
- University of Alabama, **Tuscaloosa, Alabama**
- Connect with world's top power, device, integrations and system researchers
- PSMA Board Approved Sponsorship at January 2024 Meeting



IWIPP is Sponsored By:



APEC 2024 Industry Session - Wednesday February 28

IS10 Advances in 3D-Packaging Technology for Power Electronics

Focus:

The PSMA Packaging Committee is organizing and proposing an Industry Session for APEC 2024 that is focused on advances in 3D-Packaging Technology for power electronics, such as embedding, with a range of different applications of AI higher power systems. More efficient power electronics will be described. The latest developments in onshoring of packaging will also be presented. This session will bring together leading academic and industrial researchers in this area.

- **APEC 2024 was well attended**
- **Presentation attendees in range 30-80**

Attendance in RED

Start	Finish	ID	Presentation Title	Presenter	Title/Affiliation
8:30 AM	8:55 AM	IS 10.1	Common Mode Noise and Minimizing Emissions through Packaging Technology	Douglas C. Hopkins	Professor in Electrical and Computer Engineering, Director of the Laboratory for Packaging Research in Electronic Energy Systems (PREES), NC State, USA
8:55 AM	9:20 AM	IS 10.2	Packaging for IoT Device Energy Harvesting Solutions – Roadmap and Considerations	Mike Hayes / Brian Zahnstecher	Head of Group ICT for Energy Efficiency, Tyndall National Institute, County Cork, Ireland / Founder & Principal, PowerRox, Niantic, CT, USA
9:20 AM	9:45 AM	IS 10.3	Efficiency improvements for power conversion units by means of PCB embedding technology for fast switching devices like SiC and GaN	Thomas Gottwald	Vice President Technology Schweizer Electronic AG, Germany
9:45 AM	10:10 AM	IS 10.4	Innovation and Collaboration in Power Module Packaging and HVM in the fast-changing world	Thomas Wang	Director of ASE Corporate R&D, ASE, Taiwan
10:10 AM	10:40AM	BREAK			
10:40 AM	11:05 AM	IS 10.5	On-Shoring Power Packaging	Charles Woychik	Enhanced Semiconductor, Inc. formerly Sr. Director Advanced Packaging Platforms at Skywater Technology Foundry, Kissimmee, Florida, USA
11:05 AM	11:30 AM	IS 10.6	Chiplets and Integration in Power Distribution Networks	Siddarth Ravichandran	Chipletz, Austin, TX, USA
11:30 AM	11:55 AM	IS 10.7	AI-Driven Reliability of Solar Power Inverters	Patrick McCluskey	Professor and Director of Undergraduate Studies Dept. of Mechanical Engineering University of Maryland, College Park, MD USA

Power Technology Report on Embedded and Integrated Magnetics – Pending Board Approval

- Purpose
 - To provide and up to date reference for member companies on the present state of integrated and embedded magnetics.
 - The report will follow the format of the previous 3 Technology Reports
 - The report will deep dive into the explosion of integrated and embedded PCB magnetics
 - The report would look at
 - What's available today and the applications they are used in.
 - What is in the pipeline for the next 2-3 years.
 - Potential roadmap for the future.
 - What the main roadblocks are.
 - Supported by the Packaging and Magnetics Committee
 - Brian Narveson – Subcommittee Chair – Pkg Committee Co-Chair
 - John Bultitude – Yageo – Pkg Committee Co-chair
 - Cian O Manthuna –Tyndall – Pkg Committee
 - Matt Wilkowski – Würth– Pkg and Magnetics Committee
 - George Salma – Würth – Magnetics Committee
 - Justin Henspeter – IBM – Packaging Committee
 - Dr. PM Raj – Florida International University – Packaging Committee
 - RFP Sent, responses due May 17th
 - 4 organizations have indicated they provide a response
 - Next Sub-committee meeting Thursday May 23rd
 - Target Publication APEC 2025