The Maine Chapter of the Electron Device and Solid State Circuits Societies of the Institute of Electrical and Electronic Engineers proudly presents:

**Challenges and Reliability in Automotive Power Electronics Packaging**

*When:* Thursday, November 18, 2021  
*Where: University of Southern Maine John Mitchell Center  
67 Campus Ave.  
Gorham, ME 04038  
*Cost:* No cost  
*Contact:* Yong Liu (207-761-3155)  
yong.liu@onsemi.com

**Agenda:**  
12:30 PM - 01:00 PM Lecture/Q&A

**Lecture Summary**

Power electronics is the fastest growing segment. It has obtained wide applications in the electronic industry due to the rapid advances in power IC fabrication and the demands of a growing market in almost all areas of electronic application, particularly in automotive industry HEV/EV green cars. However, due to the intrinsic structural nature, the requirement for automotive power product and its reliability is extremely high. This talk will present the overview of recent advances in power electronic device and packaging, including SiC applications. A review of recent advances in reliability of automotive power electronic packaging and modeling is presented based on the development of power device integration. The talk will cover in more detail of reliability issues and challenges in assembly process and the reliability tests. Along with new automotive power packaging development, the role of modeling is a key to assure successful new technology development. Challenges of automotive power electronic packaging in next generation materials, core technologies and modeling are presented and discussed.

**About the speaker:**

Dr. Yong Liu has been with ON Semiconductor Corp in South Portland, Maine since Sept, 2016 as a Principal Member of Tech Staff. Before Fairchild was acquired by ON Semiconductor, he was with Fairchild Semiconductor as a Distinguished Member Technical Staff since 2015. His main interest areas are advanced analog and power electronic packaging, modeling and simulation, reliability and material characterization. He has been invited to give numerous keynotes talks, presentations and professional short courses. He has authored and co-authored 3 books, 3 book chapters and over 180 papers in journals and conferences and has been granted 48 US patents. He has received numerous IEEE Awards including 2013 IEEE CPMT Exceptional Technical Achievement Award and 2021 IEEE EPS Electronics Manufacturing Technology Award. He was elevated as IEEE fellow in 2015.

Please pre-register online at: [https://events.vtools.ieee.org/m/289160](https://events.vtools.ieee.org/m/289160)
The Maine Chapter of the Electron Device and Solid State Circuits Societies of the Institute of Electrical and Electronic Engineers proudly presents:

Overview of Semiconductor Devices and Reliability

When: Thursday, November 18, 2021
Where: University of Southern Maine
John Mitchell Center
67 Campus Ave.
Gorham, ME 04038
Cost: No cost
Contact: Jifa Hao (207-775-8767)
jifa.hao@onsemi.com

Agenda:
01:00 PM - 01:30 PM Lecture/Q&A

Lecture Summary

In this talk, we will briefly review semiconductor history, MOSFET scaling-down issues, and concept of the 3D MOSFET-FinFET. Then we will discuss fundamental physical limit, breakthrough, and new materials such as SiC and GaN for semiconductor power devices. The talk will cover device physics and reliability physics for most important semiconductor power devices: Trench gate MOSFET, IGBT, Charge balance devices, SiC and GaN devices, and LDMOS in power IC.

About the speaker:

Jifa Hao received his Ph.D. in Physics from Stony Brook University (State University of New York at Stony Brook) and did his post-doctoral work in Applied Mathematics also at Stony Brook. Currently he works for Onsemi as a Senior Member of technical staff, and is responsible for process & device development as well as new technology reliability including SiC devices. He has worked in the semiconductor industry for over 25 years in reliability R&D, technology development, and process & device development in power devices and analog IC with Fairchild, Allegro Microsystems, Intersil, and Harris Semiconductor. His research interests include semiconductor devices physics, reliability physics and characterization, power devices, analog IC, and many-body quantum theory.

He has presented many invited talks at IEEE international conferences, Electrochemical Society conferences, and Universities. He is a technical committee member for IEEE international conferences IRPS and EDTM, and a committee member of IEEE Electron Device Soc. Device Reliability Physics 2016-2018. He is an adjunct professor at Penn State University.

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