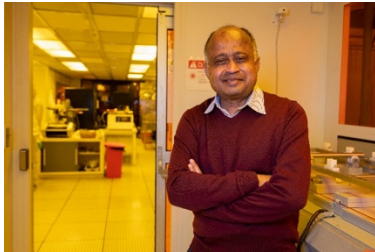


Tutorial 4: Advanced Packaging and Heterogeneous Integration - Past, Present & Future

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Abstract:

The global semiconductor industry is projected to become a trillion-dollar industry by 2030. This is historic considering that it took the industry 55 years to reach half a trillion dollars in size and will take just another 10 years to double in size to a trillion dollars. Advanced packaging as it relates to heterogeneous integration will play an important role in making this happen.

This tutorial will cover the fundamentals of advanced packaging covering the past and present state of the art including what is necessary in the future to enable heterogeneous integration. Metrics used to compare these technologies will be discussed.

Bio:

Prof. Madhavan Swaminathan is the Department Head of Electrical Engineering and is the William E. Leonhard Endowed Chair at Penn State University. He also serves as the Director for the Center for Heterogeneous Integration of Micro Electronic Systems (CHIMES), an SRC JUMP 2.0 Center. Prior to joining Penn State University, he was the John Pippin Chair in Microsystems Packaging & Electromagnetics in the School of Electrical and Computer Engineering (ECE), Professor in ECE with a joint appointment in the School of Materials Science and Engineering (MSE), and Director of the 3D Systems Packaging Research Center (PRC), at Georgia Tech (GT). Prior to GT, he was with IBM working on packaging for supercomputers.

He is the author of 550+ refereed technical publications and holds 31 patents. He is the primary author and co-editor of 3 books and 5 book chapters, founder and co-founder of two start-up companies, and founder of the IEEE Conference on Electrical Design of Advanced Packaging and Systems (EDAPS), a premier conference sponsored by the IEEE Electronics Packaging Society (EPS). He is a Fellow of IEEE, Fellow of the National Academy of Inventors (NAI), and has served as the Distinguished Lecturer for the IEEE Electromagnetic Compatibility (EMC) society. He received his MS and PhD degrees in Electrical Engineering from Syracuse University in 1989 and 1991, respectively.