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He is the founding director of the Center for Advanced Microelectronics Manufacturing (CAMM), a New York State Center of Advanced Technology and home to the New York Node of the federally supported NextFlex Manufacturing USA. Poliks has made sustained contributions to the fields of electronics packaging, flexible and hybrid electronics that are relevant to a variety of medical and industrial applications. He has had significant experience in the electronics industry serving as a senior technical manager at the IBM Corporation and as director of R&D at Endicott Interconnect Technologies, Inc. He was the General Chair of the 69th IEEE Electronic Components and Technology Conference (ECTC). He is an elected member of the IEEE Electronics Packaging Society (EPS) Board of Governors, serves as the director of studentprograms and is an IEEE EPS Distinguished Lecturer.

Flexible and Hybrid Electronics – A Tutorial

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Flexible and hybrid electronics (FHE) combine additively printed electronics on bendable, flexible, or stretchable substrates with the performance of silicon-based semiconductors to enable applications that include wearable medical devices and industry sensors. This tutorial will review the design and fabrication challenges associated with interfacing hard and soft electronic components, materials selection, printing, processing, and testing of FHE systems. Applications to medical and industrial sensors will be incorporated throughout this presentation and their "concepts of operation" will guide the evaluation of performance and reliability. Outcomes from this work are expected to inform the eventual scale-up to large-area, roll-to-roll manufacturing or integration on complex, non-planar surfaces, and solids.

The lecture topics will be selected from the following:

- Flexible Hybrid Electronics (FHE) and heterogeneous integration
- Equipment, tools, and facilities: printing methods and more
- Substrate materials and handling for 2D and 3D applications
- Conductive inks and sintering
- Electromechanical testing of printed interconnects
- Challenges to interface hard and soft electronic components
- Interconnecting in the z direction – printed vias
- Printed discrete components: resistors, capacitors, inductors, etc.
- Highly stretchable conductive inks
- Multilayer printed and laminated structures
- Printed RF components, devices, and systems
- Device and component placement and assembly
- Approaches to assess the reliability of FHE components and systems
- Unexpected outcomes: application to high power and high temperature systems