

ASTM INTERNATIONAL CONFERENCE ON ADVANCED MANUFACTURING

Research to Application through Standardization

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Non-Metallic Materials: Electronics

Additive Manufacturing (AM) has gained significant attention in many industries. Among other applications, Additively Manufactured Electronics (AME) is gaining an increased interest due to the digital nature and flexibility to design and fabricate electronic circuits and devices, providing enhanced solutions for the electronics industry. This is even more prominent with the advent of multi-materials/multi-layer manufacturing capabilities enabling electronic structures not possible or cost-effective by other means. Broadly, the symposium will address three major sub-categories: 1) The direct manufacturing of electronic circuits and devices that utilize complex geometries and mass customization offered by AME; 2) Emerging manufacturing technologies that enable high-value complex components and devices in the electronics industry; 3) Application of AME as a complement to other technologies for integration into large-scale electronic devices.

Topics of interest include but are not limited to:

- Applications
 - 3D fabrication of complex and mass customized electronic devices and circuits
 - Next-generation electromagnetic structures, including antennas and filters
 - 3D fabrication of sensors and sensor systems
 - Fabrication of flexible and wearable electronics
 - Patient-specific smart devices and implants, smart home devices, and printed batteries
 - Applying DFX for components used in semiconductor equipment using AM
- Processing
 - Hybrid processes that enhance traditional 3D printing to embed electronics
 - Multi-materials printing of complex multifunctional devices and systems
 - Micro- and nano-scale fabrication of device architectures
 - Post-processing in the fabrication of electronic structures
 - AME on semiconductor chips during or after their fabrication
 - Reliability and reproducibility
 - Innovative sintering process for printed electronics
- Materials, Design, & Testing
 - Materials for the fabrication of AME circuits and devices: dielectrics, metals, resistors, ferrites, etc.
 - Standards development for materials currently used in AME
 - Adopting new materials for AME with a focus on sustainability, including those currently used in electronics and related industries (e.g., semiconductors etc.)
 - Adopting important materials commonly used in electronics and related industries (e.g., semiconductors, photonics, optoelectronics, quantum technology, etc.).
 - Design and simulation of the different 3D fabricated circuits and devices such as sensors including ECAD and MCAD and reviewing a simplified workflow platform with automated rule checking.
 - Testing and quality control procedures in manufacturing of AME devices and circuits



Symposium Organizers

- Matthew Krohn, Penn State University Applied Research Lab, USA
- Samuel Gatley, New Jersey Institute of Technology, USA
- Mijal Ines Mass, Instituto Nacional de Tecnología Industrial (INTI), Argentina
- Liem Tran, Nano Dimension, USA



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Research to Standards

ADDITIVE MANUFACTURING