S9-5 Recent Advances and the Future of Additive Manufacturing

SHORT DESCRIPTION:

Additive manufacturing (AM) is widely recognized as an enabling technology for the fabrication of ceramic components with complex architectures and optimized morphology. Great advances in terms of technologies, equipment, and feedstocks have been recently achieved, allowing additive manufacturing to transition from mere rapid prototyping to industrial-scale fabrication and distributed digital manufacturing. In particular, the hybridization of technologies, the possibility of multi-material printing, and the development of volumetric AM approaches have contributed to further widening the range of components that can be produced for such diverse fields as energy, aerospace, defense, automotive, constructions, and healthcare. This symposium will showcase recent developments in materials, technologies, equipment, design, characterization, and applications of additive manufacturing of ceramic materials. Nondestructive evaluation and in-situ monitoring of processes, cost, qualification, and certification will also be discussed. Proposed topic areas relating to the AM of traditional, advanced, functional, high and ultrahigh-temperature ceramics and composites include, but are not limited to, the sessions listed below.

SESSION TOPICS:

• Recent advances in additive manufacturing technologies for ceramics (DLP/SLA/TPP, BJ, DIW, LOM, IJP, DED, VAM, RAM)
• New additive manufacturing approaches, including multi-material and hybrid printing technologies for ceramics
• Computational design for properties and processing
• Post-processing and characterization of printed ceramics
• Additive manufacturing of fiber reinforced composites
• Qualification, certification, standards, and property database of AM ceramics
• Applications and testing of AM ceramics and ceramic components

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