ICAM26

International Conference on Advanced Manufacturing

Research to Application through Standardization

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Industrial Sector: Space and In-Space Manufacturing

The Space sector is a unique industry that utilizes several forms of advanced manufacturing technologies to their fullest potential, often resulting in geometrically and functionally complex designs. More recent advanced manufacturing processes, such as additive manufacturing (AM), has further increased the possibilities to meet the requirements and expectations of the Space industry, particularly NewSpace. Examples are novel or integrated design solutions, optimal material utilization and material alloy development. However, there is still a need to revise current standards, qualification procedures, and certification practices before they can be fully leveraged for AM parts used in spaceflight applications.

Topics of interest include but are not limited to:

- Qualification strategies for AM Space Flight hardware
- Certification strategies for Suppliers of AM Space Flight hardware
- Quality Assurance including testing for the cleanliness of AM Space Flight hardware
- Application of computational approaches to accelerate AM across the full lifecycle
- Application of Machine Learning to create Digital Twins for Space Flight Hardware manufacturing systems
- Alloy development, post-processing, and efficient mechanical testing approaches
- Applications and development of multi-material assemblies to meet diverse requirements
- AM for extreme environment materials
- Novel design approaches for AM Space hardware
- Innovation for In-space Servicing, Assembly and Manufacturing (ISAM) AM systems capable of processing in-situ resources (regolith-derived metals, recycled materials, etc.)
- Cost factors and business case analysis for printed spaceflight hardware
- Existing technical and supply chain bottlenecks that can be solved by large-scale AM
- Sustainability, waste, and environmental concerns in the production of AM parts for space exploration
- Potential and challenges in large scale AM of space hardware
- Innovation in Additive Manufacturing of propulsion systems
- Functional integration and part count reduction opportunities for AM space hardware
- Innovative design strategies for AM Space hardware: leveraging AI tools for enhanced development and real-time monitoring

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SYMPOSIUM ORGANIZERS

Zach Courtright
LeapFast Manufacturing, USA

Christo Dordlofva
GKN Aerospace, Sweden

Ilana Lu
Blue Origin, USA

Shahrooz Nafisi
Rocket Lab, USA

Xueyong (Kevin) Qu
The Aerospace Corporation, USA

Mirko Riede
Fraunhofer IWS, Germany