

21st IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND  
DEVELOPMENT (D3)

Systems and Infrastructures to Implement Sustainable Space Development and Settlement - Technologies  
(2B)

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MINIATURISED DESIGN OF ON-BOARD ANTENNA USING ADDITIVE MANUFACTURING  
TECHNIQUES

**Abstract**

Additive manufacturing (AM) where topological optimization and data, computer-aided design (CAD) software or 3D RF systems are used to guide hardware and deposit materials layer by layer into precise geometries.

As a component development, this proposal aims to develop a miniaturized onboard antenna for payload data download and TM/TC communications deployed on spacecraft. AM technology is used to manufacture IN-SPACE miniature antennas for satellites, robotics, and IN-SPACE habitation. A Surface explorations to refuel spacecrafts would be necessary for future deep space mission resulting in real time communication system to ensure a successful mission.

Keywords : Additive Manufacturing (AM), computer-aided-design (CAD), miniatures, Habitats, Robotics, Payloads, Antennas