SPACE SYSTEMS SYMPOSIUM (D1)
Enabling Technologies for Space Systems (2)

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ADVANCED MATERIALS AND MANUFACTURING PROCESSES FOR NEXT GENERATION SPACECRAFT

Abstract

This paper identifies new developments in the advanced materials and manufacturing processes areas, and analyses their projected impact on the performance of future spacecraft. When looking at the past, developments in these cross-sectional areas have spurred innovation in many areas. Many of these materials and processes are spin-in technologies benefiting from research cost in other high technology sectors, reducing the resource strain on space technology development programmes. Some examples of advanced materials of high interest for the space sector discussed in this paper include Metamaterials, Nanosurfaces, Graphenes, Metal Foams, Self-Healing Materials, Aerogels and Zeolites. The paper focuses also on advanced manufacturing processes currently under development such as Additive manufacturing (and other 3D printing methods) and advanced CFRP production methods.