



Designs

an Open Access Journal by MDPI

CiteScore: 4.8

Special Issue Reprint

Studies in Advanced and Selective Manufacturing Technologies

Edited by: Muhannad Ahmed Obeidi

This Reprint volume highlights the evolving role of advanced manufacturing technologies as central enablers in modern engineering design. Rather than serving as a downstream activity, manufacturing is presented as an integrated component that links material selection, structural geometry, and performance outcomes. The Reprint comprises nine peer-reviewed studies that collectively explore additive manufacturing (AM), advanced material processing, architected structures, surface engineering, and selective machining. A key focus is the capability of AM to produce complex geometries and tailored internal architectures, enabling precise control over mechanical properties such as stiffness, strength, and energy absorption. The contributions emphasise how process parameters directly influence material behaviour, defect formation, and overall structural performance. Complementary advances in powder-based processing and surface engineering further enhance mechanical efficiency, durability, and multifunctionality. Architected materials, including lattice and TPMS structures, are examined for their high performance-to-weight potential, highlighting the importance of aligning design with manufacturing constraints. Additionally, non-traditional machining techniques are discussed as viable solutions for difficult-to-process materials. Overall, the volume underscores the necessity of a holistic approach that integrates materials, processes, and design to achieve innovative, efficient, and application-specific engineering solutions.



<https://www.mdpi.com/books/reprint/12817>