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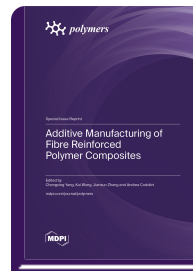
Special Issue Reprint

Additive Manufacturing of Fibre Reinforced Polymer Composites

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Edited by
Chengxing Yang
Kui Wang
Jianxun Zhang
Andrea Codolini

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Special Issue ‘Additive Manufacturing of Fibre-Reinforced Polymer Composites’ has 13 pioneering studies advancing AM-FRPCs. Covering aerospace, automotive, energy, sustainability, it presents integration of novel materials, process/structural innovations, smart functionalities. It shows AM enables complex geometries, multifunctional parts with tailored mechanical, thermal, sensing properties. Articles address interlaminar toughness, porosity, fibre misalignment via nano-fillers, hybrid reinforcements, optimised paths.

The highlights include laser-induced graphene for real-time damage sensing; eco-friendly biocomposites (chem-treated natural fibres); and spatial 3D printing for low-density, high-strength trusses. Mechanical testing uses experimental/numerical methods: acoustic emission, digital image correlation, finite element simulation, and Taguchi optimisation. Integrating AI and neural networks in print tuning and performance prediction marks a shift to intelligent manufacturing. From boosting buckling in anisotropic grids to refining laser-sintering via thermal simulation, this Special Issue offers insights into current research and future opportunities in process control, defect mitigation, and in situ monitoring. It is a timely collection of scientific breakthroughs and engineering practices driving next-gen FRPCs via AM, aiding researchers, engineers, and designers using AM’s unique high-performance composite advantages.



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