

Additive Manufacturing of Composites: Techniques, Applications, and Future Directions

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Abstract: Additive manufacturing (AM), or 3D printing, of composite materials represents a significant leap in material science and manufacturing has revolutionized the production of high performance components, allowing the creation of complex, lightweight, and high-strength components with enhanced performance characteristics. This paper explores the various techniques employed in the additive manufacturing of composites, such as fused deposition modelling (FDM), stereolithography (SLA), and continuous fibre 3D printing. Additionally, the paper reviews the key applications of Additive manufacturing composites across industries including aerospace, automotive, and biomedical fields. Finally, the challenges and future trends, including advancements in multi material printing and sustainability, are discussed.

Keywords: Additive manufacturing, 3D printing, FDM, SLA