

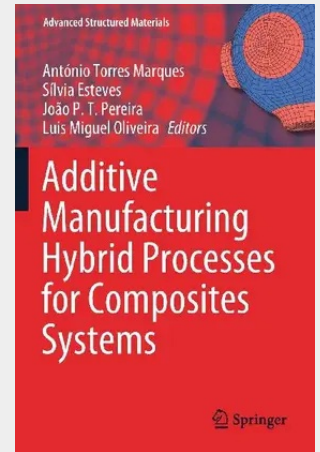
Additive Manufacturing Hybrid Processes for Composites Systems

This book focuses on the emerging additive manufacturing technology and its applications beyond state-of-the-art, fibre-reinforced thermoplastics. It also discusses the development of a hybrid, integrated process that combines additive and subtractive operations in a single-step platform, allowing CAD-to-Part production with freeform shapes using long or continuous fibre-reinforced thermoplastics. The book covers the entire value chain of this next-generation technology, from part design and materials composition to transformation stages, product evaluation, and end-of-life studies.

Moreover, it addresses the following engineering issues:

- Design rules for hybrid additive manufacturing; • Thermoplastic compounds for high-temperature and -strength applications; • Advanced extrusion heads and process concepts; • Hybridisation strategies; • Software ecosystems for hAM design, pre-processing, process planning, emulating and multi-axis processing; • 3D path generators for hAM based on a multi-objective optimisation algorithm that matches the recent curved adaptive slicing method with a new transversal scheme; • hAM parameters, real-time monitoring and closed-loop control; • Multiparametric nondestructive testing (NDT) tools customised for FRTP AM parts; • Sustainable manufacturing processes validated by advanced LCA/LCC models.

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