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A Review of Fused Deposition Modeling Process: Parameter Optimization, Materials and Design

Authors : Elisaveta Doncheva, Jelena Djokikj, Ognen Tuteski, Bojana Hadjieva

Abstract : In the past decade, additive manufacturing technology or 3D printing has been promoted as an efficient method for fabricating hybrid composite materials and structures with superior mechanical properties and complex shape and geometry. Fused deposition modeling (FDM) process is commonly used additive manufacturing technique for production of polymer products. Therefore, many studies and experiments are focused on investigating the possibilities for improving the obtained results on product properties as a key factor for expanding the spectrum of their application. This article provides an extensive review on recent research advances in FDM and reports on studies that cover the effects of process parameters, material, and design of the product properties. The paper conclusions provide a clear up-to date information for optimum efficiency and enhancement of the mechanical properties of 3D printed samples and recommends further research work and investigations.

Keywords : additive manufacturing, critical parameters, filament, print orientation, 3D printing
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