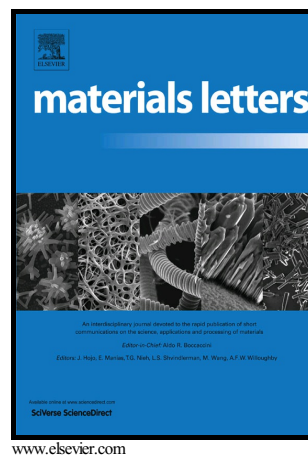


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Mechanical and physical properties of highly ZrO₂/ β -TCP filled polyamide 12 prepared via fused deposition modelling (FDM) 3D printer for potential craniofacial reconstruction application

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Abstract

This research aims to evaluate the mechanical and physical properties of highly ceramic filled polyamide 12 fabricated via FDM 3D printer for potential craniofacial reconstruction application. Unfilled, as well as 30, 35 and 40 wt% of ceramics filled PA 12 filament feedstock were prepared to fabricate tensile and flexural specimens via FDM 3D printer, prior to characterization. The mechanical and physical properties of the composites were insignificantly affected by the increment of filler loading. The mechanical properties of the composites were lower than expected; however, they did exhibit high surface roughness - which is desirable for biomaterial applications.

Keywords: FDM, 3D Printing, PA 12, ZrO₂, β -TCP, filament feedstock

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