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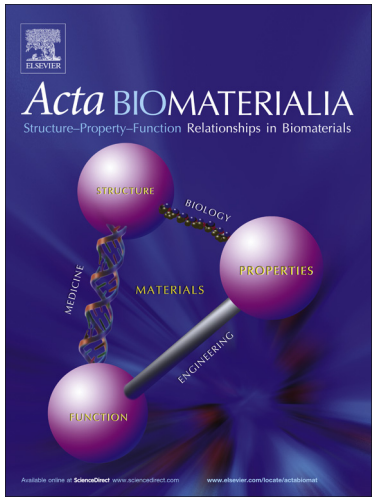

Full length article

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Accelerated hardening of nanotextured 3D-plotted self-setting calcium phosphate inks

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Abstract

Direct ink writing (DIW) techniques open up new possibilities for the fabrication of patient-specific bone grafts. Self-setting calcium phosphate inks, which harden at low temperature, allow obtaining nanostructured scaffolds with biomimetic properties and enhanced bioactivity. However, the slow hardening kinetics hampers the translation to the clinics. We explored different hydrothermal treatments for the consolidation of DIW scaffolds fabricated with an α-tricalcium phosphate /pluronic F127 ink, comparing them with a biomimetic treatment. Three different scaffold architectures were analysed. The hardening process, associated to the conversion of α-tricalcium phosphate to hydroxyapatite was drastically