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## **ABSTRACT - POSTER**

## Additive manufacturing of bioceramics at GREEnMat

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For the past two decades, the potential of patient-specific synthetic grafts for bone repair has driven significant advancements in 3D printing of bioceramics due to their unique biological properties. Ideally, the resorption rate of synthetic implants should match tissue regeneration while ensuring adequate mechanical strength during the bone regeneration process.

At GREEnMat (ULiège), the specific control of materials physico-chemical properties is the primary concern. The laboratory is developing innovative synthesis and shaping processes for optimized applications in the bone repair area.

Regarding the synthesis of bioceramics, bio-sourced hydroxyapatite is produced by either calcination or oxidative hydrothermal treatment from bovine bones. Silicate and borate bioactive glasses are either synthesized by melt quenching or by an optimized sol gel process for scale-up production.

Additive Manufacturing, especially vat photopolymerization (SLA and DLP), is used to produce unique implants with complex structures and diverse geometries. Mono- and multi-materials 3D parts are printed to achieve optimal biomechanical performance. Functionalization with biomolecules or active ingredients is possible with different grafting techniques.

The GREEnMat is open to collaborations for bioceramics synthesis, shaping and testing. Let us become your academic partner for applied research on materials for energy, environment & health applications.