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PCL/Eggshell Scaffolds for Bone Regeneration

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Eggshell (ES) is one of the most common biomaterials in nature. For instance, the ES represents 11% of the total weight of a hen's egg and it is composed of calcium carbonate, magnesium carbonate, tricalcium phosphate and organic matter. Hen ES are also a major waste product of the food industry worldwide. Recently, ES have been used for many applications such as coating pigments for inkjet printing paper, catalyst for biodiesel synthesis, bio-fillers for polymer composites and matrix lipase immobilization. It is also considered a natural biomaterial with high potential for the synthesis of calcium enriched implants that may be applied in tissue engineering applications, such as bone regeneration. The aim of this research regards the production of poly(ε-caprolactone) (PCL) scaffolds enriched with hen ES powder for bone regeneration applications, using an extrusion-based process called Dual-

scaffolds enriched with hen ES, demonstrated the interconnectivity of the pores within the scaffold and revealed that the addition of the ES powder combined with the screw rotation velocity has a large influence on the resulting filament diameter and consequently on the porosity of the scaffolds.

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