(P 290) Novel PHB/PCL Scaffolds Produced by Melt Base Technologies.

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On this work, the natural origin polymer Polyhydroxybutyrate (PHB) was melt blended with synthetic aliphatic polyester Poly-ε-caprolactone (PCL). The ratio of PHB/PCL was varied from 25% to 75% by weight. These blends were further injection moulded and characterized. The thermal properties of the developed blends were accessed by differential scanning calorimetry (DSC). The effect of the ratio PHB/PCL on the mechanical properties (tensile modulus and tensile strength) was determined by tensile tests.

After being characterized, the blends were compression molded with salt (salt particles size: 250–500 mm) having two different levels of salt content (60% and 80%) by weight. By leaching the salt particles it was possible to produce porous scaffolds with distinct morphologies. The relationship between scaffold morphology and mechanical properties was evaluated using scanning electron microscopy (SEM), micro-computed tomography (mCT), compression testing and differential scanning calorimetry (DSC). The produced scaffolds are characterized by having different morphologies depending on the amount of NaCl used. Specimens with higher porosity level have a less organized pore structure but increased interconnectivity of the pores. A decrease in the salt particle content used to create the porosity caused in general an increase in the mechanical properties of the foams. Cytotoxicity tests were also carried out using standard tests namely MTS test with a 24h extraction period, showing the low level of cytotoxicity of the materials developed.