567b L-Tyrosine Based Polyurethane Blends for Tissue Engineering Applications

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Polyurethanes from L-tyrosine, an amino acid, based chain extender are suitable for developing polymer scaffolds for tissue engineering applications. The soft segments of the parent polyurethanes are either polyethylene glycol (PEG) or polycaprolactone diol (PCL) and the chain extender is desaminotyrosyl hexyl ester (DTH). The diisocyanates used in these materials are potentially biocompatible so that the material yields non toxic products upon degradation. These polyurethanes can be used to design scaffolds due to the biocompatibility and biodegradation. The blends of these polyurethanes are studied in order to develop a family of materials with wide ranging properties that are pertinent to tissue engineering applications. The morphological, thermal, mechanical and degradation properties of these blends are investigated. Three dimensional porous scaffolds can be fabricated by utilizing solvent casting/particulate leaching method. By changing the composition of the parent polyurethanes and the blends the material properties can be easily tuned for the application of scaffold formation. These materials possess suitable properties for easy processing and fabrication. This new group of polyurethanes based on L-tyrosine shows the potential for a new biomaterial.