

## **100c Synthesis and Characterization of L-Tyrosine Containing Polyurethanes: New Biomaterials for Medical Applications**

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Molecular design is implemented to synthesize new polyurethanes from L-tyrosine, an amino acid, with tunable material properties. L-tyrosine is an amino acid having a phenolic hydroxyl group. This feature makes it possible to use derivatives of tyrosine dipeptides as a motif to generate monomers, which are the important building blocks of the polymers. Polyurethanes are synthesized using tyrosine based chain extender, desaminotyrosyl hexyl ester (DTH). The soft segments in these polyurethanes are either polyethylene glycol (PEG) or polycaprolactone diol (PCL) and the diisocyanates are non-toxic and biocompatible. Apart from this, several tyrosine based chain extenders can be synthesized with variable functionalities for the fabrication of three dimensional porous scaffolds. These polyurethanes are a viable alternative as biodegradable pseudo-poly (amino acid) based on L-tyrosine that can be used for tissue engineering scaffold fabrication. The structure-property relationships of these materials are investigated for potential application in biomedical engineering. The chemical, thermal, mechanical properties are studied. These materials can be easily processed for tissue engineering scaffold fabrication. The degradation of these polyurethanes and controlled release of pharmaceuticals from these materials have been examined and the results can be correlated to the structure of the polymer. The structural modification of these polyurethanes offers the opportunity to develop this new class of materials that are biocompatible and biodegradable and possess physicochemical and engineering properties suitable for intended applications.