



## BIONANOCOMPOSITES BASED ON POLY( $\epsilon$ -CAPROLACTONE) AND TITANIUM

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The increasing problems posed by waste management have stimulated interest in biodegradable materials. To solve this problem, attempts are made to replace synthetic polymers by biodegradable ones, mainly for short time applications, such as, packaging. Among others, poly( $\epsilon$ -caprolactone) (PCL) is a biocompatible, non-toxic, biodegradable and permeable biopolymer that could be used in a wide range of potential applications. However, it has low melting point resulting in processing difficulties and poor mechanical properties. Thus, in order to overcome these disadvantages bionanocomposites of PCL and titanium were developed using the sol-gel process. The synthesis was performed in the molten state using PCL and titanium alkoxides precursor, as inorganic phase. The obtained material was characterized by XPS, XRD, DSC, SEM and FTIR techniques. The rheological behaviour and mechanical properties were also evaluated. The procedure used allowed to obtain hybrid polymers with the desired properties.