

عنوان مقاله:

Chemical characteristics and mechanical properties of thermoplastic polyurethane nanocomposites containing organoclay and POSS nanoparticles

محل انتشار:

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خلاصه مقاله:

Thermoplastic polyurethane (TPU) elastomer is used in advanced medical applications including cardiovascular devices and orthodontic ligatures due to adjustable physical and mechanical properties, and biocompatibility. At the present study TPU was synthesized using polycarbonate (PC) as soft segments and hexamethylene diisocyanate (HDI), and ۱,۴-butanediol (BDO) as hard segments by pre-polymerization method. Afterward, polyurethane based nanocomposites containing Cloisite۱۵A organoclay and POSS nanoparticles were prepared through in-situ polymerization methods to investigate the effect of nanoparticles incorporation on mechanical properties of TPU. Chemical structure of synthesized TPUs were investigated by FTIR. According to the results the absorption bands in TPU sample confirmed the formation of the urethane linkages. The mechanical properties and elasticity of the synthesized samples were examined by tensile and elasticity tests to investigate the effects of nanoparticles incorporation on the properties of TPU.

کلمات کلیدی:

Thermoplastic polyurethane elastomer, POSS, Organoclay, Nanocomposite, Mechanical properties, Elasticity

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