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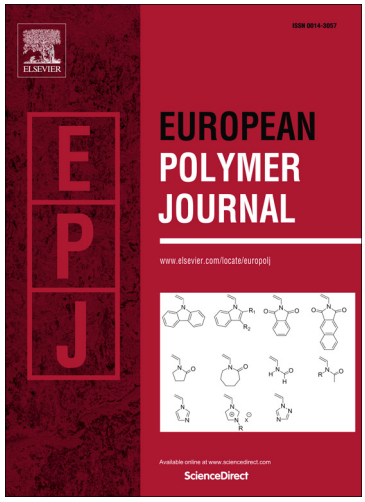

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Synthesis and characterization of photo-crosslinkable linear segmented polyurethanes based on coumarin

Rubén Seoane Rivero[1], Rodrigo Navarro[2], Pilar Bilbao Solaguren[1], Koldo Gondra Zubieta[1], José María Cuevas[1], Angel. Marcos-Fernández[2]*

[1] Gaiker Centro Tecnológico, Parque Tecnológico Edificio 202, 48170 Zamudio, Spain, Tel.: +34 94 6002323, Fax: +34 94 6002324

[2] Instituto de Ciencia y Tecnología de Polímeros (CSIC), Juan de la Cierva 3, 28006 Madrid, Spain, Tel.: +34 915622900, Fax: +34 915644853

*Corresponding author: amarcos@ictp.csic.es

Abstract

Linear segmented polyurethanes with 10% weight of coumarin groups within the soft segment, the hard segment or equally distributed between both segments were successfully prepared. These polyurethanes, based on polycaprolactones, isophorone diisocyanate, butanediol and a dihydroxylated coumarin monomer, were completely amorphous and homogeneous with a single phase morphology. In non-irradiated polyurethanes T_g value varied linearly with hard segment content that in turn was the main factor influencing the mechanical properties. Photo-dimerization at 354 nm produced crosslinked materials with little change on the T_g and outstanding mechanical properties, as high as 54 MPa, better than that of any other coumarin-containing polymer described.

Keywords

Coumarin; ring-opening polymerization; polycaprolactone; segmented polyurethanes; photo-dimerization