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Effect of crosslinking agent and nature of solvent on the swelling behavior of pIBOA-co-2-EHA.

Copolymers are widely employed in industrial processes because their physico-chemical properties, like strength, elasticity or thermal behaviour, can be modified by varying their macromolecular composition. Poly isobornyl acrylate (PIBOA) is a commercial available polymer with many attractive, industrial qualities, including excellent transparence, low refractive index, low thermal expansion, high weather resistance, and low birefringence [1,2]. In this work, we are interested in the development of a copolymer based on two acrylic monomers: Isobornyl Acrylate (IBOA) and 2- Ethylhexyl Acrylate (2-EHA). For this purpose we have prepared networks containing 60 wt.% of IBOA and 40 wt.% of 2-EHA using two different crosslinking agents: hexane-1,6-diol-diacrylate (HDDA) and acrylicacid 6- (4)-(6-acryloyloxy-hexyloxy) biphenyl-4-yloxy hexyl ester (AHBH) and as a photoinitiator: 2-Hydroxy-2-methyl-1-phenyl-propan-1-one (Darocur). The mixtures obtained were irradiated under UV ($\lambda = 365$ nm). The polymerization was followed by Fourier Transform Infrared (FTIR) spectrophotometry, showing rapid kinetics in the presence of EHA. Then all the networks were characterized by the differential scanning calorimetry (DSC) [3,4] to determine the glass transition temperature (T_g) for the two copolymers. The swelling was studied by polarized light optical microscopy (POM) for the IBOA/EHA/HDDA copolymer, using organic solvents such as toluene and 1-heptanol. In addition the swelling study of IBOA/EHA/AHBH was investigated in nematic solvent 4- cyano-4'-n-pentylbiphenyl (5CB).

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Preferred topic

Other

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