A study of the effect of polystyrene sulfonation on the performance of terephthaloyl chloride-dihydroxydiphenyl sulfone copolymer/polystyrene system. Kahraman, R.; Kahn, K. A.; Ali, S. A.; Hamid, S. H.; Sahin, A. Z. King Fahd University of Petroleum and Minerals, Dharhan, Saudi Arabia. Journal of Materials Engineering and Performance (1998), 7(6), 739-746. Publisher: ASM International, CODEN: JMEPEG ISSN: 1059-9495. Journal written in English. CAN 130:154317 AN 1999:16840 CAPLUS (Copyright (C) 2008 ACS on SciFinder (R))

Abstract

Thermal, morphol., and mech. properties of composites of a liq. cryst. copolymer (LCP) poly(terephthaloyl chloride)-co-(p,p'-dihydroxydiphenyl sulfone) with polystyrene (PS) and sulfonated polystyrene (SPS) are presented and discussed. Sulfonation of polystyrene was expected to improve the interfacial adhesion by introducing hydrogen bonding in the LCP/PS system. The degree of sulfonation was 11 %. The incompatibility (lack of proper interfacial adhesion) of the LCP/PS system resulted in sharp decrease in the composite tensile strength with LCP addn. The performance of the system did not change when processed at a higher temp. (270°C instead of 225 °C). While a composite plate of 25 % LCP/PS could not be fabricated, it was possible for LCP/SPS (processed at 215 °C), indicating some improvement in interfacial bonding by sulfonation. Sulfonation of PS resulted in fracture with some degree of plastic deformation for pure SPS matrix and also the LCP/SPS system with the lowest LCP content (1 wt. %), whereas plastic deformation was not obsd. for PS used as received. The strength of the LCP/SPS system also decreased with increase in LCP content, indicating that 11 % sulfonation is not sufficient to introduce significant compatibility, but it was not as dramatic as that for LCP/PS. The performance of the LCP/SPS system was not affected significantly by heat treatment at the process temp.