

**Studies on a terephthalic acid and dihydroxydiphenylsulfone liquid
crystalline copolymer and its composites with different thermoplastics**

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ABSTRACT

A liq. cryst. polymer (LCP) was synthesized by an interfacial polycondensation reaction at room temp. from terephthaloyl chloride and p,p'-dihydroxydiphenyl sulfone. The LCP synthesized was so stable and molecularly rigid that it did not show any phase transition until it degraded at about 320°. Composites of the LCP with polycarbonate (PC), polystyrene (PS), and sulfonated polystyrene (SPS) were formed by compression molding at a temp. at which the thermoplastic matrix was in the melt state. They were thermally analyzed by differential scanning calorimetry. Tensile specimens were cut from the compression-molded plates, and mech. tests were performed. The morphol. of the material systems was studied by performing SEM anal. on cryogenically fractured specimens. For LCP/PS and LCP/SPS systems, a sharp two-phase morphol. was formed, which suggested poor interfacial adhesion. The tensile strength of both systems decreased with LCP addn. The LCP/PC system also revealed a two-phase morphol.; however, the interfaces between the LCP domains and the PC matrix were not so well defined, showing better interfacial adhesion than the two previous systems studied. Stronger bonding between the LCP and PC resulted in a significant improvement in the mech. behavior of PC by LCP addn.