

Liquid Crystalline Aromatic Polyesters
with Two Different Mesogenic Groups

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Numerous investigations have been made on binary mixtures of low molecular weight mesogens. These mixtures have played an important role in display technology because of their improved properties compared to the single component, including a broader temperature range of the mesophase and a better orientational behavior. Contrary to such low molecular weight mesogens, very few research results were published on the polymeric binary systems containing two different mesogenic repeating units. The investigation of the polymeric binary systems is of considerable importance because of both the possible exploitation of modified mesogenic materials with unique properties and profound understanding on the nature of polymeric mesophases.

The objective of this study therefore is to investigate the mesomorphic properties of binary systems formed by random copolymers and blends which contained both nematic and smectic type repeating units. In order to investigate the structural effects of both rigid mesogenic group and the flexible spacer on the crystalline and liquid crystalline phases of the copolymers, two types of such binary systems were prepared. The first type contained two components which differed in the rigid mesogenic groups and the second contained those with differing in the length of flexible segment. Thermal behavior of the copolymers and blends was determined by differential scanning calorimetry (DSC) and by the polarizing microscopy.