

Thermodynamic Measurements on the Binary System Bis{[2,2-di(*n*-hexyloxycarbonyl)ethenyl]phenyl} Biphenyl-4,4'-dicarboxylate and 4-*n*-Octyloxyphenyl 4-*n*-Pentyloxybenzoate at Elevated Pressures

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Thermodynamic measurements have been carried out on the binary system of a swallow-tailed liquid crystal A = bis{[2,2-di(*n*-hexyloxycarbonyl)ethenyl]phenyl} biphenyl-4,4'-dicarboxylate (4DS6) and B = 4-*n*-octyloxyphenyl 4-*n*-pentyloxybenzoate (5O/O8). A filled smectic A phase is induced in the concentration range $0.11 < x_A < 0.75$. The maximum of the SmA-N transition temperature (365 K) is observed for $x_A = 0.33$. Dilatometric measurements show that the packing density in the filled phases is increased. High-pressure DTA is employed in order to investigate the coexistence range of the liquid crystalline phases and the slopes of the transition lines. The slopes of the melting curves for the mixtures are significantly smaller than those for the pure components. The slopes for the smectic - nematic - isotropic transitions are considerably larger. The coexistence range for the (smectic + nematic) phases does not seem to be pressure-limited, rather it increases with pressure.

Key words: Phase Transitions; DTA; High Pressure; Swallow-tailed Liquid Crystals.