

# Phase Diagram and Dielectric Relaxation Studies of *n*-Hexyl-isothiocyanato-biphenyl (6BT) in the Smectic E Phase under High Pressure

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The pressure-temperature phase diagram of *n*-hexyl-isothiocyanato-biphenyl (6BT) at up to 190 MPa and 250 - 400 K was established with the aid of DTA. The dielectric relaxation measurements in the SmE phase of 6BT were performed in the pressure range of 0.1 - 150 MPa and the temperature range of 320 - 350 K. The Debye-type relaxation process was observed in the frequency range of 100 Hz - 100 kHz. The longitudinal relaxation time  $\tau$  characterizing the molecular reorientations around the short axis was analyzed with respect to the pressure and temperature dependencies, yielding the activation volume,  $\Delta^{\#}V = RT(\partial \ln \tau / \partial p)_T$ , and activation enthalpy,  $\Delta^{\#}H = R(\partial \ln \tau / \partial T^{-1})_p$ , respectively. The results are compared with the analogous data obtained recently for 8BT and other similar compounds having the nematic and SmA liquid crystalline phases.

**Key words:** Liquid Crystals; Smectic E; DTA; Phase Diagram; Dielectric Relaxation; High Pressure.