

DTA and pVT Measurements on 4-cyanobenzyl-5-(4-*n*-octyloxybenzoyloxy)-2-undecyloxybenzoate up to 250 MPa and 383 K

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The phase diagram of 4-cyanobenzyl-5-(4-*n*-octyloxybenzoyloxy)-2-undecyloxybenzoate (4CNOUB) has been established with differential thermal analysis (DTA). The pressure range for the smectic A phase is limited, resulting in a triple point at 165 MPa and 378.26 K. p , V_m , T data have been measured for the smectic and isotropic phases of 4CNOUB between 243 and 383 K and up to 250 MPa. The volume changes accompanying the crystal – smectic and smectic – isotropic transitions have been determined. The corresponding enthalpy changes have been calculated using the Clausius-Clapeyron equation. The p , V_m , T data enable also to estimate the volume entropy for the smectic – isotropic transition and the volume dependence of the clearing temperature.

Key words: Aryl-branched Liquid Crystals; High Pressure; pVT ; Phase Transitions; Thermodynamics.