

Thermodynamic Measurements on CH_3CCl_3 , $(\text{CH}_3)_2\text{CBr}_2$, and on $n\text{C}_{20}\text{H}_{42}$ at High Pressures

Albert Würflinger and Luis Carlos Pardo^a

Institute of Physical Chemistry II, Ruhr-University, D-44780 Bochum

^a Departament de Física i Enginyeria Nuclear (ETSEIB), UPC, Universitat Politècnica de Catalunya, Diagonal 647, 08028 Barcelona, Catalonia (Spain)

Reprint requests to Prof. A. W.; Fax: 0234-32-14183;

E-mail: Albert.Wuerflinger@ruhr-uni-bochum.de

Z. Naturforsch. **57 a**, 177–183 (2002); received February 27, 2002

1,1,1-Trichloroethane (CH_3CCl_3), 2,2-Dibromopropane ($(\text{CH}_3)_2\text{CBr}_2$), and Eicosane ($n\text{C}_{20}\text{H}_{42}$), have been investigated with differential thermal analysis (DTA) under high pressure using compressed argon and helium as a pressure medium. In the case of the chemically reactive halogenated samples the measurements were performed in open DTA containers. It was found that compressed helium modified the phase boundaries much less than compressed argon. In the case of eicosane there was no reaction with the DTA containers, and the measurements performed in closed containers were well reproducible, independent of the pressurized gas used. Furthermore pVT measurements have been carried out in the neighbourhood of the melting region for CH_3CCl_3 and $(\text{CH}_3)_2\text{CBr}_2$. The pVT measurements yield the volume change of melting, from which the enthalpy change is calculated with the aid of the Clausius-Clapeyron equation. The specific volumes of the solid phases below the melting point are compared with crystallographic data.

Key words: Plastic Crystals; Eicosane; DTA; pVT ; Phase Transition; High Pressure.