

Dielectric Studies of a Substance with Negative Dielectric Anisotropy

S. Urban, B. Gestblom^a, R. Dąbrowski^b, and H. Kresse^c

Institute of Physics, Jagellonian University, Reymonta 4, 30-059 Cracow, Poland

^a Institute of Physics, Uppsala University, S-75121 Uppsala

^b Institute of Chemistry, Military Academy of Technology, Warsaw, Poland

^c Institute of Physical Chemistry, Martin Luther University, Halle/S., Germany

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The results of dielectric studies of 6BAP(F) (1-[4-(hexylbicyclo[2,2,2]octyl)]-2-(3-fluoro-4-methoxyphenyl)ethane) in the nematic and isotropic phases are presented. The substance has a negative dielectric anisotropy. By applying two experimental techniques, using a network analyzer and time domain spectrometer (TDS), the two main relaxation processes, connected with the molecular reorientation around the short and long axes, respectively, were resolved in the phases studied. The activation barriers hindering the motions were obtained. By extrapolation of the longitudinal and transverse relaxation times from the isotropic to the nematic phase the retardation factors, g_{\parallel} and g_{\perp} , and the nematic potential versus temperature could be calculated. These are discussed together with the order parameter S obtained from the refractive index, and are compared with the predictions of the mean-field theories.

Key words: Liquid Crystals, Dielectric Anisotropy, Dielectric Relaxation, Retardation Factors.

Reprint requests to Prof. S. Urban. Fax: 0048-12-6 33 70 86