Linear and Non-linear Dielectric Pretransitional Behavior Near the Isotropic-nematic Phase Transition for 4-cyano-4-*n*-pentylbiphenyl (5CB)

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Z. Naturforsch. **57a,** 244–246 (2002); received March 9, 2002

Linear and non-linear dielectric permittivity measurements for *n*-pentylcyanobiphenyl 5CB are presented. By two different experimental methods the same value of the temperature discontinuity for the isotropic-nematic transition was obtained. Broadband dielectric relaxation tests showed a significant influence of the pretransitional behavior on the dynamic properties above and below the nematic clearing temperature (T_{I-N}). The form of the loss curves is clearly non-Debye'an and can be portrayed within the Cole–Davidson approximation (CD). In the isotropic and nematic phases the CD parameter β_{CD} drops on approaching the clearing temperature. This is connected with the broadening of the dielectric absorption width.