RAMAN SPECTROSCOPY OF PHASE TRANSITIONS IN NEMATIC LIQUID CRYSTALS

I. ESTRELA-LLOPIS, V. POGORELOV, *Department of Physics, Kiev Taras Shevchenko's University, Glushkov pr. 6, Kiev 252127, Ukraine.*

The systematic investigations of the connection of polymorphism spectral developments with thermal pre-history of nematic liquid crystal (LC) have been performed. Regularities connecting parameters of Raman bands with structural peculiarities of MBBA in different phases obtained at various rates of preliminary cooling of sample have been found [1,2]. Using these connections the conformational angles, energetic barriers between different conformers, order of nonarrangement of various phases, quantitative phase composition have been calculated. It has been made the analysis of forming mechanisms of Raman bands contours with using of theory of Raman effect in condensed phase. In spite of the difference of heterogeneous broadening nature for nematics and amorphous phases the proximity of Raman bands widths for these phases is stipulated one of parameters of corresponding averaging statistic distributions. The method of identification and prognostic of structural evolution of phase states for wide class of LC have been proposed.

1. V.Ye. Pogorelov, I.B. Estrela-Llopis, *Mol. Cryst. Liq. Cryst.* **265**, 237 (1995).

2. V.Ye. Pogorelov, I.B. Estrela-Llopis, *J. Mol. Struct.* **348**, 269 (1995).