

P04 THE REFRACTIVE INDEX OF CRYODEPOSITES OF ETHANOL, METHANE AND NITROUS OXIDE IN THE VICINITY OF THE PHASE TRANSFORMATION TEMPERATURE

A. Drobyshv, A. Aldiyarov, D. Sokolov, A. Shinbayeva, N. Tokmoldin

Kazakh National University, Kazakhstan

Andrei.Drobyshv@kaznu.kz

Structural-phase transformations are often accompanied by changes in the number of degrees of freedom of molecules. This is most clearly evident in cases where the change in temperature, in particular, a decreasing leads to partial or complete freezing of the orientational ordering or the rotational subsystem of cryocrystals. These are the phase transitions in solid N₂, CO, N₂O, C₂H₅OH, etc. The effect of these processes on the optical properties of thin films, such as the refractive indices and the polarizability at the moment cannot be considered as fully clarified. Especially when it comes to the effect of the condensation temperature of thin films on these parameters [1-3].

This paper presents the results of an experimental study of the temperature dependence of the refractive index of ethanol, methane and nitrous oxide in the temperature range including the temperatures of the structural transformations of these substances. Measurements were carried out using a two-beam laser interferometer [4] in the temperature range of 14-130 K. It was found that in the vicinity of the temperatures of structural transformations, the temperature dependence of the refractive index shows a clear non-monotonic behavior.

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