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12-Amorphous, Imperfectly Ordered and Quasi-periodic Materials

PS-12.03.10 THE DICHOISM OF THE DYE SENSITIZED FERROELECTRIC POLYMER FILMS.

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We have investigated the dichroism of vinylidene fluoride - trifluoroethylene copolymers VDF-TrFE doped by rhodamine 6G (R6G). Using spectrophotometric method we observe the dichroism and anomalous birefringence of films in the region of absorption band of R6G, which were equal to $4 \cdot 10^{-4}$ and $1-4 \cdot 10^{-3}$ correspondingly. Unlike the absorption spectrum there are two maxima of dichroism, the maximum value at $\lambda = 0.49 \mu\text{m}$ is connected with dimer and at $\lambda = 0.52 \mu\text{m}$ with monomer of R6G dye. After applying the electric field to the sample ($E > E_{\text{coercive}}$) the value of dichroism decreased in 4 times what was probably connected with R6G molecules orientation perpendicularly to the surface of the sample. In the case of nonpolar film obtained after heating above T_c and subsequent cooling the value of dichroism returns to the previous value. The effect is reversible.

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The fan-shaped structural modulation of the liquid crystal smectic C phase

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To explain the structural incommensurable modulation of the liquid crystal smectic A phase a fan-shaped scattering model is developed [1, 2, 3]. According to this model the scattering distance calculated using the Bragg's equation should be corrected after the angular distribution of the smectic units. Furthermore, the translational correlation length of the smectic layers can be identified from the X-ray scattering profiles.

In this paper we expand the fan-shaped scattering model to the tilted S_C -Phase. The dependence of the structural periodic property on the distribution of the smectic scattering units is discussed. The validity of this model is confirmed by the comparison of the theoretical scattering patterns with the experimental observation.

References

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