Asynchronous time-resolved FT-IR study of the dynamical behavior of ferroelectric liquid crystal with a tolane ring.

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Streszczenie

Transient infrared spectra of a ferroelectric liquid crystal with a tolane ring, (S)-4-methylhexyl-4-[4-(decyloxy)phenylethynyl]-2-fluo- robenzate, in the smectic C* phase have been measured under various temperatures and voltages by use of an asynchronous timeresolved FT-IR method. The effects of temperature and voltage on the rate and tilt angle of the electric field-induced reorientation of the molecule have been studied. The absolute values of the observed intensity changes and their sign during the switching can be explained by the static properties of the sample. The spectra obtained under the different experimental conditions suggest that the temperature and applied voltage alter the tilt angle and angular velocity of reorientation of the liquid crystal, respectively. Dominant infrared bands show very similar time-dependent intensity changes under various conditions, indicating that the whole molecule reorients simultaneously irrespective of temperature and the applied field strength as though the molecule were a rigid rod.

Adres publiczny

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