

Dynamic Properties of Ferroelectric Liquid Crystal Molecules Depending on Anisotropic Surface Characteristics

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Ferroelectric liquid crystal (FLC) exhibits various structures and characteristics depending on the anisotropic interactions at FLC/polymer interfaces, aligning properties, applied electric field, and so on. Particularly, knowledge of the interfacial interactions is of great importance for understanding the mechanism of the molecular reorientation and the polarization reversal occurred in the surface layer of FLCs. The molecular switching of FLCs has been extensively studied by polarization reversal [1], stroboscopic micrography [2], and electro-optic measurements [3]. However, many areas for understanding the dynamics of FLC switching are remains.

In this work, we describe how the interfacial interactions influence the dynamics of the polarization reversal and the associated molecular reorientation processes of FLC molecules. For controlling the properties of anisotropic interfaces between FLC and polymers, we used the mixture of FLC and UV-curable reactive mesogens (RM). Depending on the concentration of RMs in FLC, we discuss the interfacial properties at FLC/RM polymer, structure of FLC, and current peaks associated with molecular reorientation processes in the polarization reversal.

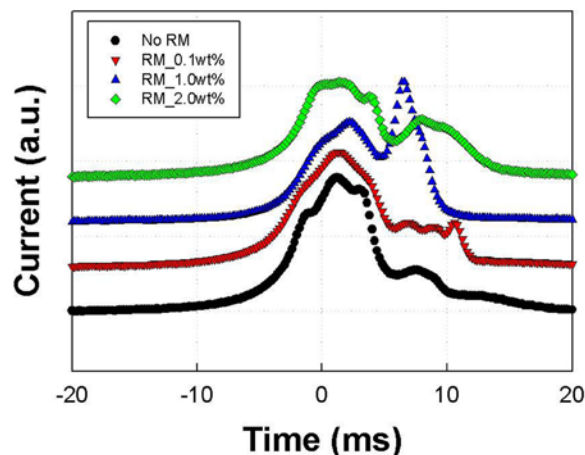


Figure 1. The polarization reversal currents at various concentration of RMs within FLC

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