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Dynamic Aspect of Electro-Opto-Mechanical Effects in Swollen Nematic Elastomers KENJI URAYAMA, ATSUSHI FUKUNAGA, TOSHIKAZU TAKIGAWA, Dept. Mater. Chem., Kyoto Univ., ANTONIO DESIMONE, SISSA, LUCIANO TERESI, SMFM, Univ. Roma III, KYOTO UNIV. TEAM, SISSA COLLABORATION, UNIV. ROMA III COLLABORATION — The nematic elastomers swollen by low molecular mass liquid crystals exhibit a macroscopic deformation with a significant change in birefringence in fast response to electric fields. We experimentally characterize the dynamics of this “electro-opto-mechanical effect.” The optical and mechanical rise times (in response to field-on) decrease in nearly proportion to the square of field strength, while the corresponding decay times (in response to field-off) are almost independent of field strength. The optical rise and decay times are about one order of magnitude smaller than the mechanical ones. We also propose a minimal model to describe the main features of both static and dynamic characteristics of this phenomenon observed experimentally. 1) Urayama, K., Honda, S., Takigawa, T., *Macromolecules*, **2006**, 39, 1943. 2) Fukunaga, A., Urayama, K., Takigawa, T., DeSimone, A., Teresi, L., *Macromolecules*, in press.

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