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Light-induced Anchoring Evolution in Nematic Phase of Liquid Crystal Doped with Azo-dye

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We report an experimental study of light-induced anchoring evolution of azo-dye-doped liquid crystal (LC) in nematic phase and present a model of this effect. To describe the experimental results we considered the gliding effect as a result of light-induced anisotropic adsorption/desorption of dye molecules on/from the boundary polymer aligning layer in the presence of light-induced bulk torque due to ordering of absorbing dye molecules. Our model qualitatively describes the observed drift of the light-induced easy axis.

Keywords: drift of the easy axis; dye-doped liquid crystal; light-induced adsorption and desorption; light-induced anchoring; nematic

1. INTRODUCTION

Known since 1995, light-induced anchoring of liquid crystals (LC) [1] still attracts close attention of scientists [2–7] due to fascinating science and potential applications. It was found that irradiation of a planar cell with the nematic LC 5CB doped with azo-dye Methyl Red (MR) produced an easy orientation axis on a non-photosensitive aligning surface at illumination with polarized light in the absorption band of MR. Voloshchenko *et al*. [1] suggested that photo-excited dye

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