

ELECTRIC AND MAGNETIC FIELD EFFECT STUDIES ON THE HOLOGRAPHIC RECORDING IN ORGANIC FILMS

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Practically significant possibility to steer the holographic information recording by external electric or magnetic field is based on electrooptic and magneto-optic effects. If the frequency of light irradiation is close to the resonance frequency of a material, these effects can become observable. In both electric and magnetic field cases transmission holographic gratings with 2.0 μm period were recorded by 632.8 nm He-Ne laser light. Recording beam polarizations were *s-s*, *p-p*, *L-L* and *L-R*. 17 kV/cm dc electric field was applied perpendicularly to the grating fringes at the distance of 0.2 mm from the organic azobenzene-based molecular film (ZWK-2TB, WE-3, ZWK-3, IWK-2D) surface. Recording time dependence of self-diffraction efficiency (SDE) was measured in each case. Electric field was also switched off and on during the exposure. No effect of electric field was found within the measurement accuracy (1-5%).

0.15 T dc magnetic field was applied parallel to grating fringes. In these experiments only the best sample IWK-2D was studied with *s-s* and *p-p* polarizations. It was found that SDE increases by 1.9% in the *s-s* case whereas it decreases by 4.9% in the *p-p* case. Recording energy decreased in both cases by 1.9% and 9.1%, respectively. Unfortunately, these results are within experimental errors (15-20%).

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