Pattern of liquid crystalline droplets induced by two beam interference in azobenzene derivative.

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A pattern of liquid crystalline droplets dispersed in the isotropic liquid can be formed during illumination by two interfering laser beams in certain range of the temperature and the light intensity. Azobenzene derivative substituted by long alkyl and alkoxy chains exhibiting smectic phases has been used for the study. The pattern can be reversibly erased and rewritten by shutting down and opening of the interfering beams. Polarized microscope images have shown the formation of numerous liquid crystalline droplets at bright regions of the interference fringes. Influence of the temperature and the light intensity has been studied by measuring the diffraction efficiency dynamics. Photothermal and photoorientational mechanisms of the formation of liquid crystalline droplets pattern have been proposed and discussed.

Słowa kluczowe

liquid crystals, lquid crystalline domains, Azobenzene, phase transition, two wave mixing, switching

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