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Symposium Information & BOOK of ABSTRACTS

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ptics

& *its applications*

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Тезисы докладов*

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Asymmetric transmission in liquid-crystals of two cholesterics with different pitches and chiralities

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The spectral peculiarities of cholesteric liquid-crystalline (CLC) system of different pitches and chiralities during the diffusion process were experimentally and theoretically demonstrated. The asymmetric transmission phenomenon at different moments of diffusion in mentioned cell was shown, i.e. this CLC structure can work as optical diode in some spectral regions. Chirality of the CLC layers plays a major role in the observed nonreciprocal transmission effect. On the base of the transmittance curves we perform the calculations of $\Delta T_{\text{eff}} = (T_1 - T_2) / (T_1 + T_2)$ value which shows the effective difference of the transmission spectra from different sides of the CLC system. In case of different chiralities of our CLC system, diffusion passes more slowly and therefore it is possible to conduct more thorough research on long enough period of time, as well as the procedure of "freezing" of certain frequency is more easy when one use cell prepared with this kind of mixture. By "freezing" the desired state of the diffused materials, we can obtain new applications such as: band mirrors; band filters; notch filters; and so on. Beside it, there are some essential features in the dynamics of diffusion between the two CLCs [1].

References

1. A. H. Gevorgyan, R. B. Alaverdyan, H. Gharagulyan, M. S. Rafayelyan, H. Grigoryan, «Diffusion in Liquid Crystals of Two Cholesterics with Different Pitches», Journal of Nanophotonics, (doi:10.1117/1.JNP.9.093591), 9 (1), p. 093591 (2015).