

REVERSIBLE PHOTOTUNING OF LASING
FREQUENCY IN A DYE-DOPED
CHOLESTERIC LIQUID CRYSTAL

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S u m m a r y

We have implemented a new method of phototuning of the lasing frequency of dye-doped cholesteric liquid crystals (CLCs) fabricated on the basis of mixtures of the azoxy nematic ZhK-440 and cholesterol derivatives. The essence of the method consists in changing the helix pitch at the irradiation of a CLC with light of different wavelengths. For the majority of lasing dyes, the quantum yield of the fluorescence in such materials is found to sharply decrease at weight concentrations of 0.3–0.5%, which interferes with lasing in them. A dye of the pyrromethene class which provides a quantum yield of the fluorescence of more than 50% at the indicated concentrations is discovered. The lasing in an CLC on the basis of azoxy nematic ZhK-440 has been obtained, and the reversible phototuning by 30 nm toward shorter and by 20 nm toward longer wavelengths has been carried out.