Abstract Submitted
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Lasing Thresholds of Obliquely Pumped Cholesteric Liquid Crystal Lasers[1] MICHELE MOREIRA, BAHMAN TAHERI, PETER PALFFY-MUHORAY, Liquid Crystal Institute, KSU, VLADIMIR BELYAKOV, LD Landau Institute for Theoretical Physics — Cholesteric liquid crystals (CLCs) in the helical cholesteric phase are 1D photonic band gap materials. Mirrorless lasing has been achieved in dye doped CLC systems. An area of great interest is the reduction of the lasing threshold for optically pumped CLCs. The effects of sample thickness and dye concentrations have been investigated and optimized for CLC systems [1]. However, the pump beam geometry has remained unchanged in most experiments. Numerical calculations of the DFB lasing threshold as function of the angle of incidence have been recently carried out for helical cholesterics [2]. The results predict that the lasing threshold is reduced at oblique incidence for critical angles, and the minimum threshold occurs at the first critical angle closest to the band edge. We have carried out measurements of the lasing thresholds of a variety of cholesteric samples as function of the angle of incidence. The samples were pumped by both ns and ps sources. We present our experimental results, and compare these with predictions of theory. [1]. W. Cao et al, *Mol. Cryst and Liq. Cryst.*, **429**, 101 (2005). [2] V.A. Belyakov, *Mol. Cryst and Liq. Cryst.*, **453**, 43 (2006).

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