

Abstract Submitted
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Varying the optical properties of cholesteric liquid crystals SABRINA RELAIX, MICHELE MOREIRA, PETER PALFFY-MUHORAY, Liquid Crystal Institute, KSU, MICHEL MITOV, CEMES/CNRS — Cholesteric Liquid Crystals (CLCs) are of particular interest as they form self-assembled photonic band gap (PBG) structures - a macroscopic helical structure, leading to a selective reflection of light - which can be easily tuned by external fields. As PBG materials, CLCs have been used as mirrorless lasers with low lasing thresholds since the density of photon states is suppressed in the reflection band and is enhanced at its edges [1]. The modification of the cholesteric organization – either by the introduction of a pitch gradient across the cell or by the incorporation of nanoparticles in the medium – has direct consequences on the PBG and hence the reflected intensity [2,3]. In this presentation, I will describe the variations in the optical properties of CLC caused by these modifications and will discuss possible applications, such as tuning the CLC laser wavelength or adjusting the laser threshold.

[1] P. Palffy-Muhoray et al., *Phil Trans R Soc A* 364, 2747 (2006)

[2] S. Relaix et al., *Appl. Phys. Lett.* 89, 251907 (2006)

[3] S. Relaix et al., *Liq. Cryst.* 34, 1009 (2007)

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