Switchable two-dimensional gratings based on field-induced layer undulations in cholesteric liquid crystals

B. I. Senyuk, I. I. Smalyukh, and O. D. Lavrentovich

C t tt t C , t , t tt t , t, . 44242

Received September 17, 2004

We propose switchable two-dimensional (2D) diffractive gratings with periodic refractive-index modulation arising from layer undulations in cholesteric liquid crystals. The cholesteric cell can be switched between two states: (1) flat layers of a planar cholesteric texture and (2) a square lattice of periodic director modulation associated with layer undulations that produces 2D diffraction patterns. The intensities of the diffraction

 $2,3$ in which the diffraction pattern is switched by changing the director field in the