

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Spatially Periodic Alignment of Liquid Crystals by Patterned Photopolymerization** JIAN ZHOU, DAVID COLLARD, JUNG PARK, MOHAN SRINIVASARAO, Georgia Institute of Technology — We demonstrate an electrically switchable diffraction grating based on periodically patterning the anchoring conditions of a nematic liquid crystal (NLC) within a polymer matrix via a patterned photopolymerization. We used two comonomers with opposite tendency to align the NLC and different reactivity ratio, which lead to definition of the areas with alternating homeotropic and planar alignment of the NLC through a UV irradiation with a photomask. The photopolymerization-induced diffusion of the monomers accounts for the spatial concentration distribution of these monomers. The LC diffraction gratings we made are switchable under low electric fields, and also have structural stability offered by the polymer matrix.

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Date submitted: 01 Dec 2004

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