

# Multimodal nonlinear optical polarizing microscopy of long-range molecular order in liquid crystals

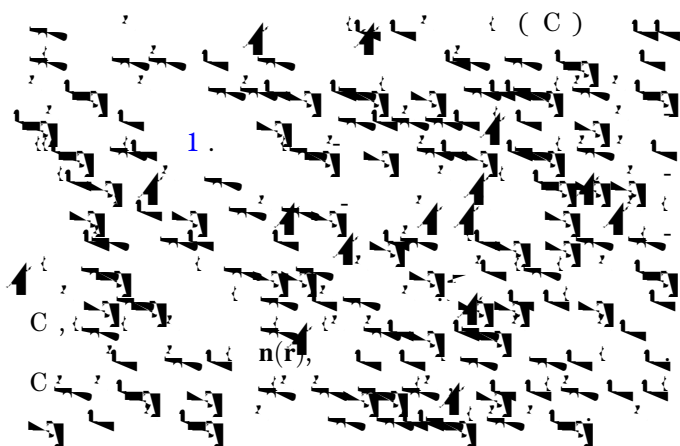
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Received August 26, 2010; accepted September 9, 2010;  
posted September 27, 2010 (Doc. ID 134049); published October 12, 2010

We demonstrate orientation-sensitive multimodal nonlinear optical polarizing microscopy capable of probing orientational, polar, and biaxial features of mesomorphic ordering in soft matter. This technique achieves simultaneous imaging in broadband coherent anti-Stokes Raman scattering, multiphoton excitation fluorescence, and multiharmonic generation polarizing microscopy modes and is based on the use of a single femtosecond laser and a photonic crystal fiber as sources of the probing light. We show the viability of this technique for mapping of three-dimensional patterns of molecular orientations and show that images obtained in different microscopy modes are consistent with each other. © 2010 Optical Society of America

OCIS codes: 110.1650, 160.3710, 180.4315, 180.6900.



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