1077-VG-2510 **Eric P Choate***, echoate@nps.edu. *Laser propagation in biaxial liquid crystal polymers.*

We examine the propagation of a laser beam through a liquid crystal polymer (LCP) layer using the finite-difference time-domain (FDTD) method. Anchoring conditions on two supporting glass plates induce an orientational sturcture in the LCP between the plates. This orientation can deflect energy away from the direction of propagation of the incident beam when the optical axis or major director of a uniaxial medium is neither parallel nor orthogonal to the incident beam. The maximum energy deflection occurs when the angle between the indicent beam and the major director of the orientation is 45 degrees, but for spatially uniform orientations, polarization orthogonal to the plane containing the major director and the propagation direction is unaffected. We investigate how to overcome this by twisting the anchoring aligment on the plates with respect to each other to generate a helical structure in the orientation across the gap. We also examine the difference between the commonly used Leslie-Ericksen theory for the LCP, which assumes a uniaxial orientation, and the more general Doi-Marrucci-Greco orientation tensor model, which allows for both biaxial structures and oblate defect phases. (Received September 22, 2011)