Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Electrically Controlled Bandgap in a Chiral Material JUAN REYES CERVANTES, AKHLESH LAKHTAKIA, Instituto de Física UNAM — The propagation of light along the axis of nonhomogeneity of a structurally chiral medium (SCM) under the influence of a low– frequency (dc) electric field aligned along the same axis is investigated. The Pockels effect is assumed to occur, and the SCM is taken to possess locally a $\bar{4}2m$ point group symmetry. The frequency–domain Maxwell curl equations are cast in a 4×4 matrix representation, and the Oseen transformation is invoked. The band structure is analyzed, as are also the eigenvectors as well as the transfer matrix. Finally, the reflection and transmission of a plane wave due to a SCM of finite thickness is considered. The low–frequency electric field is shown to control the bandgap.

Juan Reyes Cervantes
Instituto de Física UNAM

Date submitted: 13 Dec 2005 Electronic form version 1.4