

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Negative Refraction in Gyrotropic Media by Polaritons**

VLADIMIR AGRANOVITCH, Institute of Spectroscopy, Moscow, ANVAR ZAKHIDOV, University of Texas at Dallas, INSTITUTE OF SPECTROSCOPY TEAM, UTD TEAM — We discuss the negative refraction in isotropic gyrotropic (chiral) Materials (having natural optical activity) from the point of view of crystal optics with account of a spatial dispersion, i.e. the linear dependence of the dielectric tensor  $\varepsilon(\omega, \mathbf{k})$  on the  $\mathbf{k}$ -vector. We show that in the media with high enough rotatory power, (such as polylactic acid), negative refraction can be observed at optical frequencies for additional waves. We make computer modeling of lensing effect in naturally gyrotropic rectangular lenses and compare our results of spatial dispersion, polaritonic approach with those, demonstrated recently by J.B. Pendry (Science, v.306, p.1353) for a negative refraction near electrical dipole resonance.

Anvar Zakhidov  
University of Texas at Dallas

Date submitted: 01 Dec 2004

Electronic form version 1.4