

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Magneto-Optical Approach in Characterization on Ferrites in Millimeter Waves¹ KONSTANTIN KOROLEV, MOHAMMED AFSAR, Department of Electrical and Computer Engineering, Tufts University — Complex magnetic permeability and dielectric permittivity characteristics of yttrium iron garnets (YIG), aluminum and gadolinium substituted YIG and nickel ferrite materials in broad band millimeter wave frequency range have been obtained. The measurements have been done using free-space quasi-optical millimeter wave spectrometer in magnetic fields up to 1 T. A set of backward wave oscillators have been used as sources of high power coherent radiation, tunable in 30 – 120 GHz frequency range. Magneto-optical approach has been successfully employed for the separation of dielectric and magnetic effects and simultaneous determination of complex dielectric permittivity and magnetic permeability of ferrite materials. Frequency dependences of real and imaginary parts of magnetic permeability of ferrites have been obtained. Strong frequency dependence of complex magnetic permeability in external magnetic field has been found for these ferrites materials.

¹This work was supported by the contract from U.S. Army National Ground Intelligence Center

Konstantin Korolev
Department of Electrical and Computer Engineering, Tufts University

Date submitted: 06 Nov 2006

Electronic form version 1.4