

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Infrared longitudinal and Hall conductivity of SrRuO₃ and Ga_{1-x}Mn_xAs films obtained by magneto-polarization measurements¹ M.-H. KIM, G. ACBAS, M.-H. YANG, J. CERNE, Dept. of Physics, Univ. at Buffalo, SUNY, Buffalo, NY, I. OHKUBO, Dept. of Applied Chemistry, Univ. of Tokyo, Tokyo, Japan, H. CHRISTEN, D. MANDRUS, Oak Ridge National Lab., Materials Science and Technology Division, Oak Ridge, TN, M.A. SCARPULLA, O.D. DUBON, Dept. of Materials Science and Engineering, Univ. of California, Berkeley, CA, Z. SCHLESINGER, Dept. of Physics, Univ. of California, Santa Cruz, CA — By measuring the changes in the polarization of transmitted (Faraday effect) and reflected (Kerr effect) mid-infrared (MIR: 115-366 meV) light induced by an external magnetic field, we determine the complete complex magneto-conductivity tensor in SrRuO₃ and Ga_{1-x}Mn_xAs films. Thick film transmission and reflection equations are used to convert the measured complex Faraday and Kerr angles into the MIR complex longitudinal conductivity σ_{xx} and the complex transverse (Hall) conductivity σ_{xy} . The resulting σ_{xx} is consistent with the values obtained from conventional transmittance and reflectance measurements on these films, as well as the results from Kramers-Kronig analysis of reflectance measurements on similar films.

¹Supported by the Research Corporation Cottrell Scholar Award and NSF CAREER Award

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Date submitted: 20 Nov 2006

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