

Abstract Submitted  
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**Infrared-active excitations related to the  $R^{3+}$  ligand-field splitting in  $RMn_2O_5$  ( $R=Ho, Dy, Tb$ )<sup>1</sup>** A. A. SIRENKO, S. M. O'MALLEY, T. D. KANG, K. H. KAHN, Department of Physics, NJIT, Newark, NJ, C. L. CARR, NSLS, Brookhaven National Laboratory, Upton, NY, L. MIHALY, Department of Physics and Astronomy, Stony Brook University, NY, S. PARK, S-W. CHEONG, Rutgers Center for Emergent Materials and Department of Physics and Astronomy, Rutgers University, Piscataway, NJ — Optical transitions between ligand-field split states of  $R^{3+}$  ions in  $RMn_2O_5$  multiferroic single crystals have been studied at the phase transitions in the external magnetic field up to 13 T and uniaxial pressure up to 5 kbar. Spectra of the ligand field excitations change significantly in external magnetic field and correlate with the reversal of electric polarization induced by magnetic field. The oscillator strength and selection rules for ligand field excitations change with external uniaxial pressure. We discuss the connection between the ligand field on  $R^{3+}$  with the magnetism and dielectric properties of this compounds.

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