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Far Infrared Anomalies in Orthorhombic Multiferroics (Bi,Pr)Mn_2O_5 N.E. MASSA, LANAIS EFO-CEQUINOR, UNLP, CP 962, 1900, La Plata, Argentina, D. DE SOUSA MENESES, P. ECHEGUT, CNRS-CRMHT-F45071, Orleans, France, M.J. MARTÍNEZ-LOPE, J.A. ALONSO, CSIC-ICMM-Cantoblanco, E28049 Madrid, Spain — We report on far infrared reflectivity between 4 K and 300 K of polycrystalline $BiMn_2O_5$ y $PrMn_2O_5$ known to sustain orbital, lattice, charge, and spin interactions. After conventional temperature mode stiffening band profiles undergo a relative intensity raise with maximum in the interval ∼40K to ∼30 K (magnetic ordering temperature, T_N, and the onset of ferroelectricity, T_C) indicative of a global electric polarization. We do not observe on cooling, in agreement with our high resolution neutron diffraction patterns, new phonon activity that might be associated to structural changes. Below 30 K there is a weak reflectivity attenuation at about the temperature in which the spin glass sets in. In contrast with $BiMn_2O_5$, in $PrMn_2O_5$ we found a Drude shaped overdamped band centered at zero frequency that, active at all temperatures, develops substructure below 15 K. We associate this feature to collective modes responsible for ferroelectricity of magnetic origin ascribed to coupling spins with electronic polarization without atomic displacement In overall, our spectra suggest a qualitative agreement with magnetoferroelectricity originating in spin dislocation and commensuration.

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