Giant spin-lattice coupling in magnetic oxides with rare earths
SANG-WOOK CHEONG, N. HUR, S. PARK, S. GUHA, A. BORISSOV, V. KIRYUKHIN, Rutgers University — Recently, the astonishing interplay between magnetic and lattice properties has been discovered in magnetic oxides with rare earths, including multiferroic Tb(Dy)MnO$_3$, Tb(Dy)Mn$_2$O$_5$, HoMnO$_3$. The discovered effects include reversible flipping of polarization (magnetization) by applied magnetic (electric) field, and the giant change of dielectric constant in applied magnetic field. We have investigated other magnetic oxides with various rare earths in order to reveal new phenomena of spin-lattice coupling as well as to find out the exact role of rare earths in the coupling. The results of our extensive investigation will be discussed.