

Soft X-ray Spectroscopic Studies on Multiferroic Materials

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Recently, multiferroic oxide material research has become a hot topic in the condensed matter physics due to their exotic coexistence of ferroelectricity and magnetic ordering. Such coexistence has been considered to involve complex couplings of spin, charge, orbital, and lattice. Here I will present recent soft x-ray spectroscopic results, including the polarized x-ray absorption spectroscopy (PXAS) and the x-ray absorption magnetic circular dichroism (XMCD) results, on multiferroic materials, GaFeO_3 , YMnO_3 , and LuFe_2O_4 , and discuss the microscopic mechanisms based on their electronic structure.