

[V-6]

Ultraviolet Photoelectron Spectroscopy Study of Colossal Magnetoresistive $\text{La}_{0.7-x}\text{Pr}_x\text{Ca}_{0.3}\text{MnO}_3$

Chang-Won Lee, Hoon Koh, Han-Jin Noh, Jong-Hyurk Park, Hyung-Do Kim, Moonsup Han*,

Se-Jung Oh, Dai Jin Eom, Tae Won Noh

Department of Physics, Seoul National University

*Department of Physics, University of Seoul

Perovskite Manganese Oxide has been intensively investigated since the discovery of the colossal magnetoresistive(CMR) effect. In this paper, we studied the effect of temperature dependence and various doping dependence of rare earth site ions of $\text{La}_{0.7-x}\text{Pr}_x\text{Ca}_{0.3}\text{MnO}_3$ series using Ultraviolet Photoelectron Spectroscopy(UPS). They show unusual temperature dependent features and the doped rare earth ions seem to affect the electron-phonon coupling strongly. We found clear evidence of metal-insulator transition from the spectral density at the Fermi level, but the transition temperature is lower than that deduced from transport measurements. Also we found that the spectral features change as time goes on implying that the surface of these materials is somewhat unstable in the vacuum. We can conclude from these results that the surface oxygen atoms correlated to the hopping electrons can escape from the material into the vacuum and that the surface state of these material is different from the bulk state.