NEXAFS Study of $Pr_{0.65}Ca_{0.35}MnO_3$ Films

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9.7 cm

The magnetic and electronic properties of the colossal magnetoresistnace (CMR) compounds have been traditionally explained by the double-exchange model which considers the transfer of an electron (or a hole) between neighboring Mn^{3+} and Mn^{4+} ions. $Pr_{0.65}Ca_{0.35}MnO_3$ compound belongs to a family of perovskite-like manganite system which shows the CMR properties. The $Pr_{0.65}Ca_{0.35}MnO_3$ system consists formally of the Mn^{3+} and Mn^{4+} ions. The magnetic and transport proterties of perovskite manganite system can be varied by changing the Mn^{3+}/Mn^{4+} ratio. The prepared $Pr_{0.65}Ca_{0.35}MnO_3$ films have different structures according to the substrate structure through the chemical compositions are same for all the films, which are also induced by the change in the Mn^{3+}/Mn^{4+} ratio. In this study, the polycrystalline $Pr_{0.65}Ca_{0.35}MnO_3$ films were prepared by laser ablation on various substrates, i.e., Polico, YSZ, SiTiN, and $LaAlO_3$(100) single crystal. We investigated the properties according to the substrates by using Pr $M_{4,5}$-, Ca $L_{2,3}$-, Mn $L_{2,3}$-, and O K-edge x-ray absorption spectroscopy.

13.4 cm

Subject category :

2. Magnetic Films, Surfaces and Multilayers

Presentation mode :
poster

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