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Valence band study of $Sm_{0.1}Ca_{0.9-x}Sr_xMnO_3$ using high resolution photoemission spectroscopy[1] MANAS KUMAR DALAI, Department of Physics, University of Illinois at Urbana Champaign, 1110 West Green Street, Urbana, IL 61801, USA, BIJU RAJA SEKHAR, Institute of Physics, Sachivalaya Marg, Bhubaneswar - 751005, India, DEEPNARAYAN BISWAS, SANGEETA THAKUR, KALOBARAN MAITI, Department of Condensed Matter Physics and Materials' Science, Tata Institute of Fundamental Research, Colaba, Mumbai 400 005, India, TAI-CHANG CHIANG, Department of Physics, University of Illinois at Urbana Champaign, 1110 West Green Street, Urbana, IL 61801, USA, CHRISTINE MARTIN, Laboratoire CRISMAT, CNRS UMR 6508, 6 Boulevard Maréchal Juin, 14050 Caen cedex, France — We have studied the valence band electronic structure of $Sm_{0.1}Ca_{0.9-x}Sr_xMnO_3$ (x = 0, 0.1, 0.3 and 0.6) at various temperatures using high resolution photoemission spectroscopy (HRPES). The data were taken using a Scienta R4000 energy analyser and the resolution was set at 5 meV. The doping dependent studies of $Sm_{0.1}Ca_{0.9-x}Sr_xMnO_3$ at 50 K, 100 K and 295 K are quite interesting. The density of e_g states near the Fermi level decreases with Sr substitution at the Ca site at 50 K. Also the similar trend has been observed at 100 K. At 295 K the changes in the e_g states is quite different than the earlier temperatures where the intensity remains the same for x = 0, 0.1 and 0.3 and then decreases for x = 0.6. These changes in the density of states near the Fermi level will be explained by taking into account the structural, electrical and magnetic properties associated with this system.

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