Electron spin resonance studies in the $Pr_{0.2}Sr_{0.8}Mn_{1-x}Ru_xO_3$ (x = 0, 0.1)

C. Autret*[1], M. Gervais[1], S. Roger[1], F. Gervais[1], N. Raimboux[2], P. Simon[2]

1 Laboratoire LEMA, UMR 6157 CNRS-CEA, Faculté de Sciences et Techniques, Université François Rabelais, Parc Grandmont, 37200 Tours, France

2 Laboratoire CRMHT,UPR4121 CNRS, 1D avenue de la Recherche Scientifique, 45071 Orléans Cedex 02, France

The effect of the substitution of ruthenium for manganese in a series of $Pr_{0.2}Sr_{0.8}MnO_3$ has been studied by electron spin resonance (ESR) for temperature ranging from 130 K to 300 K. The ESR spectra display a single line in the whole temperature range. The temperature dependence of the line width and the effective g factor (g_{eff}) show the presence of the C-type antiferromagnetic to paramagnetic (AFM-PM) transition at about 275 K for both doped and undoped samples. The larger increase of g_{eff} for the composition $Pr_{0.2}Sr_{0.8}Mn_{0.9}Ru_{0.1}O_3$ was attributed to the presence of ferromagnetic (FM) interactions in the AFM state. Such a presence was confirmed by an increase of the magnetization values to $0.17\mu_B$ at 5 K.