Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

The Influence of Layer Thickness-Ratio on Magnetoresistance in $La_{2/3}Ca_{1/3}MnO_3/La_{1/3}Ca_{2/3}MnO_3$ Exchange Biased System MARIA ELENA GOMEZ, SANDRA MILENA DIEZ, LINA MARIA CUARTAS, Universidad del Valle, LORENA MARIN, Ina Universidad de Zaragoza, PEDRO PRIETO, CENM Excellence Center for Novel Materials — Isothermal magnetic field dependence of the resistance in $La_{2/3}Ca_{1/3}MnO_3$ (F-LCMO)/ $La_{1/3}Ca_{2/3}MnO_3$(AF-LCMO) bilayer and AF-LCMO/F-LCMO/AF-LCMO trilayer at temperatures below Néel temperature of the antiferromagnetic layer were carried out to study the thickness layers influence on magneto transport properties. We grew multilayers using a high oxygen pressure sputtering technique. We systematically varied the thickness of the F-LCMO layer, t_F, maintaining constant the thickness of the AF-LCMO layer, t_{AF}. We studied the influence of the thickness ratio t_F/t_{AF} on the ZFC and FC magnetoresistance (MR) loops. H_{FC} was varied from 100 Oe to 400 Oe. We found that MR has hysteretic behavior as observed in $[La_{2/3}Ca_{1/3}MnO_3/La_{1/3}Ca_{2/3}MnO_3]_N$ superlattices, where MR increases with the increasing field from H=0 to a maximum and then it decreases continuously. The position and magnitude of the maximum is not symmetric with respect to the axis H=0 for both FC and ZFC loops. We found that magnetoresistance behavior of the bilayer and trilayer is thickness-ratio dependent for both ZFC and FC loops.

Maria Elena Gomez
Universidad del Valle

Date submitted: 17 Nov 2011 Electronic form version 1.4