Electronic Supplementary Information

Effect of particle size on electromagnetic transport properties

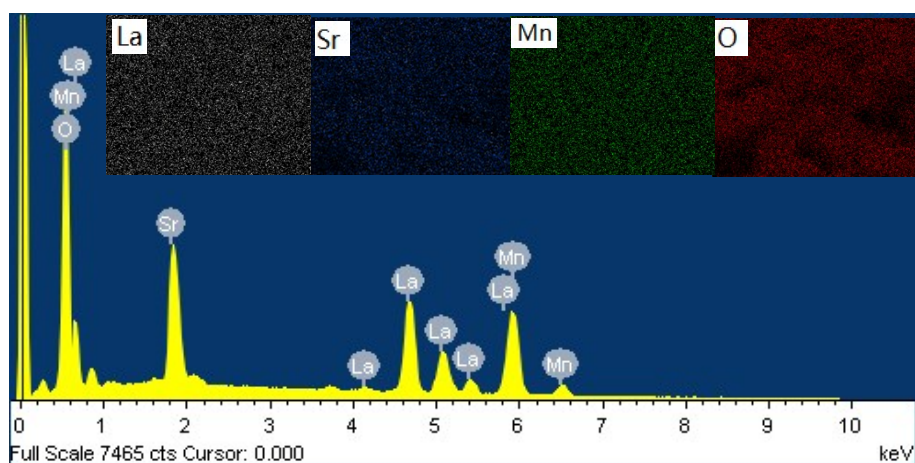# of La$_{0.67}$Sr$_{0.33}$MnO$_3$ coatings

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Fig. S1. The EDS images of elemental analysis of sample LSMO-12.

Processing option : All elements analyzed (Normalised)
Number of iterations = 4

Standard :

O	SiO_2	1-Jun-1999 12:00 AM
Mn	Mn	1-Jun-1999 12:00 AM
Sr	SrF_2	1-Jun-1999 12:00 AM
La	LaB_6	1-Jun-1999 12:00 AM

Element	Weight%	Atomic%
O K	22.05	60.78
Mn K	24.42	19.61
Sr L	14.02	7.06
La L	39.51	12.55
Totals	100.00	

Table S1. The fitting parameters obtained from resistivity data of low temperature region (5 K<T< 50 K) both in the presence and absence of a magnetic field according to the ISPT model.

Samples	r_1 (Ωcm)		r_2 (Ωcm K$^{-3/2}$)		ε		$|J|/k_B$ (K)		R^2	
	B=0 T	B=1 T	B=0 T	B=1 T	B=0 T	B=1 T	B=0 T	B=1T	B=0 T	B=1 T
LSMO-9	2.99×10^2	4.12×10^2	1.25×10^{-3}	6.66×10^{-4}	7.04×10^{-1}	5.43	1.05×10^2	9.32	0.9980	0.9905
LSMO-10	1.06×10^1	9.27	4.23×10^{-6}	5.38×10^{-6}	3.22×10^{-1}	6.55×10^{-1}	2.03×10^1	7.26	0.9993	0.9982
LSMO-11	8.91×10^{-1}	7.10×10^{-1}	6.89×10^{-7}	9.34×10^{-7}	6.06×10^{-2}	1.70×10^{-1}	1.76×10^1	2.78	0.9729	0.9886
LSMO-12	1.11×10^{-1}	1.05×10^{-1}	1.20×10^{-7}	8.10×10^{-8}	4.02×10^{-2}	7.22×10^{-2}	1.36×10^1	2.65	0.9974	0.9947

Table S2. The fitting parameters obtained from resistivity data of ferromagnetic metallic region (50 K<T< Tp) both in the presence and absence of a magnetic field.

Samples	ρ_0 (Ωcm)		ρ_2 (Ωcm K^{-2})		$\rho_{4.5}$ (Ωcm K$^{-4.5}$)		R^2	
	B=0 T	B=1 T	B=0 T	B=1 T	B=0 T	B=1 T	B=0 T	B=1 T
LSMO-9	5.13×10^2	4.46×10^2	4.72×10^{-2}	4.42×10^{-2}	-1.00×10^{-7}	-8.87×10^{-8}	0.9975	0.9970
LSMO-10	9.50	8.03	6.10×10^{-4}	6.19×10^{-4}	-4.78×10^{-10}	-4.79×10^{-10}	0.9988	0.9993
LSMO-11	8.42×10^{-1}	6.76×10^{-1}	2.72×10^{-5}	2.92×10^{-5}	-4.53×10^{-12}	-6.01×10^{-12}	0.9961	0.9978
LSMO-12	1.05×10^{-2}	8.61×10^{-3}	4.91×10^{-6}	4.91×10^{-6}	-1.41×10^{-12}	-1.66×10^{-12}	0.9998	0.9989

Table S3. The fitting parameters obtained from resistivity data of paramagnetic insulating region (Tp <T<300 K) both in the presence and absence of a magnetic field.

Samples	T_0 (K)		N (E_F) (eV^{-1} cm^{-3})		R^2	
	B=0 T	B=1 T	B=0 T	B=1 T	B=0 T	B=1 T
LSMO-9	2.31×10^6	1.85×10^6	0.88×10^{21}	1.09×10^{21}	0.9975	0.9993
LSMO-10	5.68×10^4	5.42×10^4	3.57×10^{22}	3.74×10^{22}	0.9988	0.9940
LSMO-11	6.70×10^2	6.27×10^2	3.03×10^{24}	3.24×10^{24}	0.9961	0.9960