

# Simultaneous observation of anti-damping and inverse spin Hall effect in $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3/\text{Pt}$

Pushpendra Gupta,<sup>1</sup> Braj Bhusan Singh,<sup>1</sup> Koustuv Roy,<sup>1</sup> Anirban Sarkar,<sup>2</sup> Markus Waschk,<sup>2</sup> Thomas Brueckel,<sup>2</sup> and Subhankar Bedanta<sup>1</sup>

<sup>1</sup>*Laboratory for Nanomagnetism and Magnetic Materials (LNMM),  
School of Physical Sciences, National Institute of  
Science Education and Research (NISER), HBNI,  
P.O.- Bhipur Padanpur, Via -Jatni, 752050, India*

<sup>2</sup>*Forschungszentrum Jülich GmbH,  
Jülich Centre for Neutron Science (JCNS-2) and Peter Grünberg Institut (PGI-4),  
JARA-FIT, 52425 Jülich, Germany*

Manganites have shown potential in spintronics due to their low Gilbert damping ( $\alpha$ ) and insulating characteristics. Here, LSMO (20 nm)/Pt ( $t_{\text{Pt}} = 0, 3$  and 10 nm) bilayer samples have been prepared on  $\text{SrTiO}_3$  (001) substrate using an oxygen plasma assisted molecular beam epitaxy system. ISHE measurements are performed using home modified coplanar wave-guide (CPW) based ferromagnetic resonance (FMR) spectroscopy [1]. We have studied the static and dynamic properties of the LSMO/Pt systems. A decrease in  $\alpha$  has been observed with increase in Pt thickness. We performed angle dependent ISHE to disentangle other rectification voltage from spin pumping voltage. From angle dependent ISHE measurement spin Hall angle were calculated 0.033 and 0.014 for samples with 3 and 10 nm of Pt, respectively [2]. High spin pumping voltage and reduction in Gilbert damping makes this system ideal for the spintronic applications.

## References:

- [1] B. B. Singh, Phys. Status Solidi Rapid Res. Lett. **13**, 1800492 (2019)
- [2] P. Gupta, Phys. Nanoscale **13**, 2714-2719 (2021)

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