

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Thermal spin current generation and spin transport in Pt/magnetic-insulator/Py heterostructures** CHING-TZU CHEN, IBM TJ Watson Research Center, CHRISTOPHER SAFRANSKI, ILYA KRIVOROTOV, UC Irvine, JONATHAN SUN, IBM TJ Watson Research Center — Magnetic insulators can transmit spin current via magnon propagation while blocking charge current. Furthermore, under Joule heating, magnon flow as a result of the spin Seebeck effect can generate additional spin current. Incorporating magnetic insulators in a spin-orbit torque magnetoresistive memory device can potentially yield high switching efficiencies. Here we report the DC magneto-transport studies of these two effects in Pt/magnetic-insulator/Py heterostructures, using ferrimagnetic CoFe<sub>2</sub>O<sub>4</sub> (CFO) and antiferromagnet NiO as the model magnetic insulators. We observe the presence and absence of the inverse spin-Hall signals from the thermal spin current in Pt/CFO/Py and Pt/NiO/Py structures. These results are consistent with our spin-torque FMR linewidths in comparison. We will also report investigations into the magnetic field-angle dependence of these observations.

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Date submitted: 12 Nov 2016

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