

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Measurement of current-generated torques in transition metal dichalcogenide / ferromagnet bilayers** GREGORY M. STIEHL, DAVID MACNEILL, MARCOS H. D. GUIMARÃES, HUI GAO, JIWOONG PARK, DANIEL C. RALPH, Cornell University — We present measurements of current-generated torques in ferromagnet / transition metal dichalcogenide (TMD) bilayers for a wide range of semi-conducting TMDs, including MoS<sub>2</sub>, MoSe<sub>2</sub>, WS<sub>2</sub> and WSe<sub>2</sub>. TMDs present a unique opportunity to study interfacial spin-orbit torques at the two dimensional limit due to a wide range in material properties and large spin-orbit coupling. Thin TMD films are either grown by chemical vapor deposition or exfoliated from readily available TMD crystals and are incorporated into ferromagnet / TMD bilayers by either evaporation or off-axis sputtering of the ferromagnet to avoid damage to the TMD surface. Measurements of the current-generated torque are made by spin transfer ferromagnetic resonance and the magneto-optical Kerr effect. Dependence on layer number, spin-orbit coupling strength, mobility and gate dependence will be explored.

Gregory Stiehl  
Department of Physics, Cornell University

Date submitted: 06 Nov 2015

Electronic form version 1.4