Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Electrical transport and contact characteristics of single layer MoS_2 devices JEN-RU CHEN, PATRICK ODENTHAL, ROLAND KAWAKAMI, Membership Pending — MoS_2 and related metal dichalcogenides ($MoSe_2$, WS_2, WSe_2) are layered two dimensional materials with analogous structure to graphene. The monolayer MoS_2, where the Mo layer is sandwiched between two sulfur layers, is a semiconductor with a direct band gap (1.8 eV) at valley K and K' points. These materials are of significant technological interest for nanoscale electronic devices with high on off ratio, opto-electronics, and gas sensing. Also, due to giant spin-orbit coupling and spin splitting ($\sim$ 150 meV) in the valence band of monolayer MoS_2, monolayer MoS_2 has great potential for fascinating spin behavior, including the intrinsic spin Hall effect. Towards investigating spin transport in monolayer MoS_2, we have investigated ferromagnetic metal contacts on monolayer MoS_2. Through transport measurements, we are able to determine the Schottky barrier height between the Co contact electrodes and monolayer MoS_2 with characteristic temperature dependence.

Jen-Ru Chen
Membership Pending

Date submitted: 28 Nov 2012 Electronic form version 1.4