

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Tuning Magnetic Interactions in a Two Dimensional Matrix<sup>1</sup>**

TIMOTHY KIDD, MICHAEL ROTH, PAUL SHAND, TYLER RASH, LAURA STRAUSS, BRODIE WANDLING, University of Northern Iowa — The layered dichalcogenides can be used as a matrix for incorporating and manipulating dopants in dimensionally constrained manner. The crystal structure of the dichalcogenides is formed of two-dimensional strongly bound layers separated by a van der Waals gap. Dopants can be incorporated between the layers as intercalants through a variety of methods to form semi-ordered phases. These intercalants have a strong impact on the electronic and magnetic properties of the overall system and can be used to tune existing or induce new phase transitions in the pure parent compounds. For magnetic intercalants, RKKY interactions, which have a strong dependence on the ion-ion spacing, appear to determine the overall magnetic character of the system. Herein, we discuss how Coulomb interactions between intercalated magnetic and non-magnetic ions can be used to influence the spacing between magnetic species and drastically alter the overall magnetic properties of the system.

<sup>1</sup>This work was supported by the Iowa Office of Energy Independence Grant # 09-IPF-11.

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Date submitted: 27 Nov 2009

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