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Hydrostatic pressure enhancement of the Curie temperature and anomalous Hall effect in $Sb_{2-x}Cr_xTe_3$[1] JEFFREY S. DYCK, ANDREW J. LUCIANA, Department of Physics, John Carroll University, CESTMIR DRASAR, PETR LOSTAK, Faculty of Chemical Technology, University of Pardubice, Czech Republic — The narrow band gap tetradymite-type semiconductors with the form $A_2^V B_3^{VI}$ (A = Sb, Bi and B = Se, Te) are normally associated with thermoelectric cooling devices. However, Sb_2Te_3 doped with V or Cr and Bi_2Te_3 doped with Fe display a ferromagnetic transition at low temperatures. We have investigated electrical transport properties of bulk single crystals of the ferromagnetic diluted magnetic semiconductor $Sb_{2-x}Cr_xTe_3$ under varying pressure (0 GPa to 1.5 GPa), temperature (2 K to 300 K), and magnetic fields (0 T to 6 T). High pressure measurements afford a reversible way to tune both the electronic structure and magnetic interactions of these materials. The behavior of the Curie temperature T_C can be monitored via the position of the peak in the resistance data associated with the ferromagnetic transition. We observe that T_C increases with increasing pressure in this compound. The anomalous Hall effect with clear hysteresis is also observed below T_C, and trends with pressure will be discussed.

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Jeffrey S. Dyck
Department of Physics, John Carroll University

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