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**Critical behavior and spin polarization of a single crystal $Mn_5Ge_3$.** T.Y. CHEN, J. VALENTINE, C.L. CHIEN, The Johns Hopkins University, C. PETROVIC, Brookhaven National Laboratory — Despite difficulties of injecting spin into semiconductor using ferromagnetic metals, spin injection into semiconductor is essential for spintronics in order to take advantage of the silicon-based electronics. The intermetallic compound $Mn_5Ge_3$ is a promising candidate as a spin injector for semiconductor because of its relatively high Curie temperature and good lattice match with semiconductors. Recent theoretical calculations show that $Mn_5Ge_3$ has a spin polarization of as much as 70% in the purely diffusive region. In this work, we have determined the critical exponents of a single crystal $Mn_5Ge_3$ using magnetometry. The critical temperature has been determined to be $T_C$ = 283.68±0.02 K from spontaneous magnetization with the critical exponents of $\beta$ = 0.358±0.005 and $\gamma$ = 1.367±0.005. The spin polarization of the crystal determined using point contact Andreev reflection (PCAR) is 54±2%, indicating that it is a good spin injector with a substantial spin polarization compared with ordinary ferromagnetic metals such as Fe, Co and Ni. Work supported by NSF grant No. DMR05-20491 and DMR04-03849.

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