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Thermal effects on magnetic resonance in single crystal $Co_{1-x}Fe_xS_2$[1] B. KASTER, M. PECHAN, Department of Physics, Miami University, Oxford, OH 45056, M. MANNO, A. BARUTH, C. LEIGHTON, Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, Minnesota 55455 — Many spintronic applications require spin injection from spin polarized ferromagnetic materials. A promising model system for fundamental studies of such processes is CoS_2, which has -56% spin polarization at the Fermi level and is tunable with Fe doping in $Co_{1-x}Fe_xS_2$ to over 85%. Single crystals of $Co_{1-x}Fe_xS_2$ have been successfully prepared with close to ideal sulfur stoichiometry using chemical vapor transport methods. We have employed variable temperature ferromagnetic resonance (FMR) at 9.2 GHz to investigate the magnetodynamic properties of this system for x=0, 0.05, 0.12 and 0.17. Resonance signals are observed upon cooling to 160 K, well above the Curie temperature, suggesting short-range order enhancements to the susceptibility lead to observable resonances. All concentrations exhibit increasing resonance position, and decreasing damping, with increasing temperature. Both the resonance position and the damping decrease with increasing Fe concentration - the former revealing Fe concentration effects on the moment and anisotropy, while the latter reflects the spin polarization influence on the damping.

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Brian Kaster
Department of Physics, Miami University, Oxford, OH 45056

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