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**Anomalous Hall Effect in Iron Silicide Thin Films**[1] JULIE KAREL, Department of Materials Science and Engineering, University of California Berkeley, HYEON-JUN LEE, Department of Physics, University of California Berkeley, FRANCES HELLMAN, Departments of Physics and Materials Science and Engineering, University of California Berkeley — Iron silicide has attracted significant attention as a potential spin injector. $Fe_3Si$ films can be grown epitaxially on various semiconductors, and recent results have demonstrated spin injection into Si with a non-local measurement. Theory has predicted $Fe_3Si$ to be nearly half metallic, and the density of states can be tuned by small changes in the Fe concentration or the addition of small amounts of Mn. The metastable bcc composition range of $Fe_xSi_{1-x}$between $0.55<x<0.75$ offers the potential to continuously tune the magnetic, structural and electronic properties, and we use thin film growth by electron beam co-evaporation of Fe and Si to probe these properties. We compare the magnetic, structural and electronic properties as a function of composition and growth conditions, with a focus on the observed Anomalous Hall Effect at both 2K and 300K. We discuss the origins of this effect and show evidence of Fe-spin polarized carrier exchange interaction in off-stoichiometry compositions.

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