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Anomalous Hall effect in epitaxial Ba(Fe1-x Cox)2As2 pnictide superconducting thin films and superlattices[1] NEIL CAMPBELL, MARK RZCHOWSKI, JULIAN IRWIN, Dept of Physics, Univ of Wisconsin, JONG-HOON KANG, CHANG-BEOM EOM, SANGHAN LEE, Dept of MatSci and Engr, Univ of Wisconsin, ADELE RUOSI, Dipt di Fisica, Univ di Napoli Federico II — Iron-based superconductors have been worked with to the point that now growth of various thin films is very-well controlled, allowing in depth study of associated structures. One exciting pathway of study for pnictides is that they show similarities to cuprate superconductors, regarded as an avenue toward high-Tc superconductors. Specifically, these heterostructures allow study of the competition between antiferromagnetism and superconductivity at the interface between the undoped parent compound, and optimally-doped compound, BaFe2-xCoxAs2 (Ba122). At room temperature, these pnictides exhibit anomalous Hall effect (AHE). There is strong evidence for the interface dominating AHE, allowing control AHE with type of substrate, surface termination, and superlattice configuration. We characterized samples of thicknesses from 6nm to 300nm, and with up to 12 interfaces. Such samples have been characterized via magnetotransport measurements at temperatures ranging from 5K to 300K, and magnetic fields up to 8T applied normal to the basal plane with Van der Pauw and Hall geometries. Additionally, we measured magnetization with vibrating sample magnetometry. These properties will aid novel device development, making pnictides interesting.

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Neil Campbell
Dept of Physics, Univ of Wisconsin

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