

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**Magnetotransport and structure of  $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$  ultrathin films**<sup>1</sup> ADELE RUOSI<sup>2</sup>, Dipartimento di Fisica, Università di Napoli Federico II, 80126, Naples, Italy, SANGHAN LEE<sup>3</sup>, Dept. of Materials Science and Engineering, Univ. Wisconsin-Madison, T. HERNANDEZ, Dept. of Physics, University of Wisconsin-Madison, YANJUN MA, Dept. of Materials Science and Engineering, Univ. Wisconsin-Madison, M.S. RZCHOWSKI, C.B. EOM, Dept. of Physics, University of Wisconsin-Madison — Since the discovery of superconductivity in iron-based materials significant progress has been made in the fabrication of high quality bulk and thin film materials to explore their intrinsic properties and evaluate novel device applications. For both pathways, the best crystalline quality and optimal superconducting properties are required. Here Co-doped Ba-122 thin films grown on various substrates and thicknesses down to 6 nm, have been investigated. Crystal structure analysis was used to investigate the Fe-As-Fe bond angle and the Fe-As distance, and magnetotransport measurements were used to evaluate the electronic characteristics of the thin films. In particular, we observe an anomalous Hall effect that depends on temperature and film thickness. Success in very thin film fabrication involving pnictides will serve to spur progress in heterostructured systems exhibiting novel interfacial phenomena and device applications.

<sup>1</sup>The work at the University of Wisconsin was supported by funding from the DOE Office of Basic Energy Sciences under award number DE-FG02-06ER46327.

<sup>2</sup>Also at Physics Dept, Univ. Wisconsin-Madison

<sup>3</sup>Now at Gwangju Institute of Science & Technology

Mark Rzchowski  
Univ of Wisconsin, Madison

Date submitted: 15 Nov 2013

Electronic form version 1.4