

Abstract Submitted
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Magneto-optical imaging of flux distribution in single crystals $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ of various doping level x . ERICK C. BLOMBERG, Ames laboratory and Department of Physics & Astronomy, Iowa State University, P. PROMMAPAN, M. A. TANATAR, V. G. KOGAN, N. NI, S. L. BUD'KO, P. C. CANFIELD, R. PROZOROV — Near optimal doping of $\text{Ba}(\text{Fe}_{0.93}\text{Co}_{0.07})_2\text{As}_2$ crystals exhibit uniform superconductivity and vortex properties similar to high- T_c cuprates ¹. In this contribution, single crystals of $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ with the measured doping level $x=3.8\%$, 4.7% , 5.8% , 7.4% , 10% , and 11.8% , covering all regimes - from underdoped to overdoped were studied using real-time magneto-optical imaging. Inhomogeneity of the superconducting state as well as field and temperature dependencies of the magnetic induction distribution were analyzed. Superconductivity is homogeneous at all except for the highest doping level. The results are correlated with macroscopic transport and magnetic measurements.

¹R. Prozorov *et al.*, Phys. Rev. B in print (2008). arXiv:0810.1338

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