

Abstract Submitted
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Energy Gap Measurements of K-Doped Iron Pnictide Superconductor Ba(1-x)KxFe2As2 using Point Contact Spectroscopy¹ OBERON WACKWITZ, LUKE CONOVER, SAM BICHE, JOSEPH LAMBERT, University of the Sciences, GUOTAI TAN, YU SONG, CHENGLIN ZHANG, PENGCHENG DAI, Rice University, ROBERTO RAMOS, University of the Sciences — We present results of low-temperature conductance measurements of the energy gap of K-doped iron pnictide Ba(1-x)KxFe2As2 superconductors, where $x = 0.6, 0.33$. Multi-gap superconductors such as iron pnictides can exhibit multiple energy gaps depending on the crystal growth conditions. These energy gaps are often anisotropic relative to the crystal lattice, with some gaps primarily conducting parallel or perpendicular to the c-axis of the lattice. We discuss how undergraduate students developed the laboratory infrastructure consisting of a 2 Kelvin cryocooler and a Helium-3 cryostat, prepared the samples from single crystals, and use point contact spectroscopy (PCS) to measure the energy gaps. We present details of how our measurements are influenced by “fritting” which is a technique of tuning the point contact region through current impulses. We present our results that show indications of multiple gaps and compare these to those of other research groups.

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