

Abstract Submitted  
for the MAR14 Meeting of  
The American Physical Society

**Annealing study of (Ca,R)Fe<sub>2</sub>As<sub>2</sub> single crystals synthesized using Sn flux** CONNOR RONCAIOLI, TYLER DRYE, SHANTA SAHA, JOHN-PIERRE PAGLIONE, Univ of Maryland-College Park — The superconducting parent compound CaFe<sub>2</sub>As<sub>2</sub> displays an AFM transition at 168 K that is closely linked to an orthorhombic structural distortion. Studies on self-flux (FeAs) grown crystals have revealed the ability to tune the structural and magnetic properties of this system by annealing, resulting in a phase diagram that spans from tetragonal/orthorhombic antiferromagnetism to the non-magnetic collapsed tetragonal phase. In this study, we investigate the effects of annealing on (Ca,R)Fe<sub>2</sub>As<sub>2</sub> (R=rare earth) crystals grown in Sn flux in order to understand the role of growth conditions on the resultant phase diagram. We present investigations of x-ray, EDS, electrical transport and magnetization measurements and compare the resultant phase diagram with that of the self-flux case.

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Date submitted: 15 Nov 2013

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