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Effects of annealing time and temperature on the transition temperature and low temperature state of AFe₂As₂ materials SHENG RAN, SERGEY BUD'KO, ALEX THALER, Ames Laboratory U.S. DOE and Department of Physics and Astronomy, Iowa State University, DOMINIC RYAN, Physics Department/McGill University, YUJI FURUKAWA, BEAS ROY, ANDREAS KREYSSIG, ROBERT MCQUEENEY, DANIEL PRATT, ALAN GOLDMAN, PAUL CANFIELD, Ames Laboratory U.S. DOE and Department of Physics and Astronomy, Iowa State University — Over the past couple of years the AFe₂As₂ (A = Ca, Sr, Ba) family of compounds has become a model system for the study of FeAs-based superconductivity. Superconductivity can be stabilized by hole and electron doping (on A and Fe sites) as well as hydrostatic pressure and isoelectronic substitutions on both the Fe and As sites. In all cases the adequate suppression of the structural / antiferromagnetic phase transition appears to be a necessary condition for the appearance of superconductivity. In this talk we will review the effects of annealing time and temperature on the structural / antiferromagnetic phases of AFe₂As₂. Transition temperature / time and transition temperature / annealing temperature plots will be presented and discussed.

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