

Abstract Submitted
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Superconductivity in (Sr,Ba)Fe₂As₂ single crystals by Pt substitution¹ TYLER DRYE, SHANTA SAHA, KEVIN KIRSHENBAUM, NICHOLAS BUTCH, JOHNPIERRE PAGLIONE, Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland, College Park, MD, PETER ZAVALIJ, Department of Chemistry and Biochemistry, University of Maryland, College Park, MD — Iron-based superconducting materials with the ThCr₂Si₂ tetragonal crystal structure appear to show a maximum superconducting transition temperature of $T_c \sim 20\text{-}25$ K when transition metals (e.g., Co, Ni, Ru, Rh, Pd, or Ir) are substituted for Fe, effectively doping d-electrons and suppressing the antiferromagnetic order of the parent compounds. However, this trend is known to be broken in the case of SrFe_{2-x}NixAs₂ and SrFe_{2-x}PdxAs₂, which both have lower optimal T_c values near 10 K. We will present our recent work on Pt substitution in single crystalline BaFe₂As₂ and SrFe₂As₂, which induces a maximum T_c of 23 K and 17 K, respectively. The relation between Pt substitution in these systems and the related cases of isoelectronic Ni and Pd substitution will be discussed.

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