

Abstract Submitted
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Synthesis and characterization of single crystal of iso-valent doped $K_{1-x}Na_xFe_2As_2$ YU LI, CHENGLIN ZHANG, PENGCHENG DAI, Rice Univ — KFe_2As_2 is a very special member of iron based superconductors and has attracted a lot of attention. With peculiar topology of Fermi surfaces and incommensurate spin fluctuation due to nesting between hole pockets and the electron-like band above Fermi level, different electron pairing symmetries were proposed. However, due to the limitation of single crystal size, there are not so many experiments (especially neutron scattering) on KFe_2As_2 systems. To solve this problem, we grow iso-valent doped $K_{1-x}Na_xFe_2As_2$. Big crystals are grown and they are much easier to handle than KFe_2As_2 . By magnetic susceptibility and ICP measurements, we find a small doping dependent of T_c from 3.3K to 2.8K, confirming the chemical pressure effect of Sodium doping. Our neutron scattering data on nominal $K_{0.5}Na_{0.5}Fe_2As_2$ also shows identical incommensurate fluctuation discovered in KFe_2As_2 , suggesting similar magnetic behavior between both of them. We will present some inelastic neutron scattering results on this system.

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