
Field-dependence of Competing AFM and SC in underdoped (Ba_{1-x}K_x)Fe₂As₂

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We have investigated the electronic and magnetic properties of a high quality single crystal of (Ba_{0.84}K_{0.16})Fe₂As₂ by bulk and high magnetic field NMR measurements. The magnetic susceptibility, the resistivity and the specific heat reveal a structural and an AFM transition around $T_0 = 110$ K. Coexistence of AFM order and bulk SC is evident below $T_c = 20$ K as inferred from the ⁷⁵As NMR spectra and spin-lattice relaxation rate, $1/T_1$. Based in our NMR results, the spin structure in the ordered state is determined to be AFM stripe-type in agreement with the neutron scattering data reported for the parent BaFe₂As₂. Surprisingly, the spontaneous internal hyperfine field B_{int} generated by the AFM order at the As site is enhanced by high magnetic fields with B perpendicular to the c -axis. As consequence, a possible enhancement of the ordered moment at the Fe site is suggested from our high field data. We thus conclude that the magnetic field may be considered as a tuning parameter on this material.