Coexistence of Superconductivity and Magnetism in $K_{0.8}Fe_2Se_{1.4}S_{0.4}$

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High-quality single crystals of $K_{0.8}Fe_2Se_{1.4}S_{0.4}$ are successfully synthesized by self-flux method with the superconducting transition temperatures $T_c^{onset} = 32.8$ K and $T_c^{zero} = 31.2$ K. In contrast to external pressure effect on superconductivity, the substitution of S for Se does not suppress T_c, which suggests that chemical doping may mainly modulate the anion height from Fe-layer rather than compressing interlayer distance. The investigation of electron spin resonance shows clear evidence for strong spin fluctuation at temperatures above T_c. Accompanied by the superconducting feature spectra, a novel resonance signal develops gradually upon cooling below T_c, indicating the coexistence of superconductivity and magnetism in $K_{0.8}Fe_2Se_{1.4}S_{0.4}$ crystal.