Suppression of superconductivity and spin-glass behavior in Cu-doped K0.8Fe2Se2

RONGWEI HU, JOHN-PIERRE PALIONE, SHANTA SAHA, RICHARD GREENE, Center for Nanophysics & Advanced Materials and Department of Physics, University of Maryland — Single crystals with nominal compositions of K0.8Fe2-xCuxSe2 were grown and studied with low temperature electrical transport and magnetic susceptibility measurements. We show that the superconductivity present in undoped K0.8Fe2Se2 crystals with transition temperature of 31 K is very quickly suppressed with Cu doping into the Fe site, and the system very quickly becomes insulating. We discuss anomalous behavior at higher doping, including spin-glass like behavior with further Cu doping.

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