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Structural and Superconducting Properties of $K_{0.8}Fe_{1.6+x}Se_2$ single crystals SU JUNG HAN, GENDA GU, QIANG LI, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, New York 11973-5000, USA — We report structural and superconducting properties of K0.8Fe1.6+xSe2 single crystals. Superconducting properties were studied by using transport, specific heat and magnetization measurements, and compared with that of $FeSe_{1-x}Te_x$. We found the *c*-axis resistive transition and specific heat behavior are distinctively different in these two classes of materials. Structural properties were studied via transmission electron microscopy and energy-dispersive X-ray spectroscopy. We found large scale structural and chemical disorder in the K0.8Fe1.6+xSe2 samples. The relationship between structural and superconducting properties in K0.8Fe1.6+xSe2 will be discussed.

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