Abstract Submitted
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Single crystal growth and superconductivity of Fe-Te-Se materials[1] G.D. GU, JINSHENG WEN, ZHIJUN XU, M. ENOKI, Z.W. LIN, QIANG LI, J.M. TRANQUADA, Brookhaven National Laboratory — A number of Fe-base superconducting materials with critical superconducting temperature up to 56K have been discovered in 2008. Fe-Te-Se is "11" system superconductor which has the simplest crystal structure. We have grown a number of the $FeTe_{1-x}Se_x$ single crystals (x = 0∼0.7) by using a Bridgman growth technique. The effects of the growth condition and the composition of a feed rod on the single crystal growth of $Fe_{1+y}Te_{1-x}Se_x$ have been studied. The single crystals of the PbO-type tetragonal structure $Fe_{1+y}Te_{1-x}Se_x$ with high extra Fe (*ie* y>0) are not superconducting. When Se substitutes for Te in $FeTe_{1-x}Se_x$ single crystals, the superconducting transition temperature increases with increasing Se content. The maximum Tc of $FeTe_{0.5}Se_{0.5}$is 15K.

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