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Large Single Crystal growth of Bi-2212 superconducting oxide GENDA GU, GANGYONG XU, Condensed Matter Physics and Materials Science, BNL, USA, JOHN TRANQUADA, BNL — A floating zone method was used to study the effects of the growth velocity and starting composition of the feed rod on the crystal growth behaviour of Bi-2212 superconducting materials. It shows that a necessary condition for large single crystal growth is that the solid-liquid interface of a rod maintains a planar interface during crystal growth. The planar solid-liquid interface tends to break down into the cellular interface while increasing the velocity from 0.3 mm/h, or while deviating from the optimum starting composition of the feed rod $Bi_{2.1}Sr_{1.9}Ca_{1.0}Cu_{2.0}O_x$. The single crystals up to $100_*7_*3.8$ mm^3along the a-, the b- and the c-axis have been grown in a Φ7mm rod with optimum growth conditions. The single crystals of up to 50*7*3.8 mm^3 have been picked up from the cut section of the as-grown rod. The neutron measurements show that the quality of the single crystals is good. The superconducting transition temperature Tc_{onset} by SQUID is 91K for as-grown crystals.

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