

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Reversibility of Superconductivity in $\text{Cu}_x\text{Bi}_2\text{Se}_3$ via Quenching Conditions¹ JOHN SCHNEELOCH, RUIDAN ZHONG, ZHIJUN XU, ALINA YANG, GENDA GU, JOHN TRANQUADA, Brookhaven National Laboratory — We investigated the effect of various growth and annealing conditions on $\text{Cu}_{0.3}\text{Bi}_2\text{Se}_3$, a compound proposed to host topological superconductivity. For annealing temperature $T > 580^\circ\text{C}$, quenching was found necessary for superconductivity, and the superconductivity loss due to not quenching after annealing was reversible by further annealing and quenching. For $T < 580^\circ\text{C}$, annealing was detrimental, even when followed by quenching. Floating zone growth and the annealing of thin (< 1 mm) crystals were found to be detrimental to superconductivity.

¹J. S., Z. X., and R. Z. are supported by the Center for Emergent Superconductivity, an Energy Frontier Research Consortium supported by the Office of Basic Energy Science of the Department of Energy.

John Schneeloch
Brookhaven National Laboratory

Date submitted: 07 Nov 2012

Electronic form version 1.4