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Preparation and characterization of annealed single crystals of $Ba(Fe_{1-x}Co_x)_2As_2$ at and near optimally doped, $0.07 \leq x \leq 0.095$[1] G.R. STEWART, B.D. FAETH, J.S. KIM, G.N. TAM, Department of Physics, University of Florida — Using self flux single crystal growth and long term annealing in the presence of an As vapor source, we report resistivity, magnetic susceptibility and specific heat characterization of optimized samples at and near to optimally doped $Ba(Fe_{1-x}Co_x)_2As_2$. The ultimate achievable T_c in 122 $BaFe_2As_2$ doped on the Fe layers will be discussed, along with the variation with composition on a very fine scale of the linear T term in the resistivity and the discontinuity in the specific heat, $\Delta C/T_c$, on both the overdoped and underdoped (coexistent with magnetism) sides of optimally doped.

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