Effects of annealing on Ba(Fe$_{1-x}$Co$_x$)$_2$As$_2$ and Ba(Fe$_{1-x-y}$Co$_x$TM$_y$)$_2$As$_2$ (TM=Mn,Cr) single crystals\textsuperscript{1} ALEX THALER, SHENG RAN, Iowa State University/Ames Lab, ALFRED KRACHER, Retired, WARREN STRASZHEIM, JIA YAN, SERGEY BUD’KO, PAUL CANFIELD, Iowa State University/Ames Lab — Single crystals of Ba(Fe$_{1-x-y}$Co$_x$TM$_y$)$_2$As$_2$ (TM=Cr, Mn) have been grown and characterized by structural, magnetic and transport measurements, both in the as-grown state (quenched from $\sim$ 1000$^\circ$ C) as well as after post-growth annealing. This phase space has many parameters and is rich and complex, with superconducting transition temperatures depending upon $x$ and $y$, as well as annealing temperature and time. In this talk, we will present T-x and T-y, as well as T-time and T-T (for annealing) phase diagrams and discuss the implications for future research into these complex materials.

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