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Copper Substitution in Iron Telluride: A Phase Diagram PATRICK VALDIVIA, THOMAS FORREST, UC Berkeley, COSTEL ROTUNDU, JINSHENG WEN, EDITH BOURRET-COURCHESNE, Lawrence Berkeley Lab, ROBERT BIRGENEAU, UC Berkeley, BIRGENEAU GROUP TEAM — Investigations of superconductivity in the FeCh family (Ch=S,Se,Te) have produced rich physics and notable materials challenges despite the ostensible simplicity of the system. We have studied the effects of copper substitution in iron-telluride. Our interests in this system are two-fold: to compare the properties of copper substitution in iron-telluride with those in the selenium-substituted compounds, and to study if there are additional controllable factors in this system such as the total excess metal content, and the distribution of iron and copper atoms over the two sites. Our initial investigations into this phase diagram involve both diffraction and transport measurements which may be used address these research goals.

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