Poster Presentation
Solid State Synthesis of Two Copper Thiostannates
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Chalcogenidostannes are compounds that contain a chalcogenide (S, Se, or Te) and tin. These materials have been studied for decades, but recently have gained more attention due to their interesting physical properties. More specifically SnSe among other selenidostannates have been found to be excellent thermoelectric materials. A thermoelectric material is a material that takes heat and transforms it into electrical energy. Our interests are in the field of solid state inorganic chemistry. We use high temperature methods to synthesize single crystals of materials we believe will have interesting physical properties. This poster will focus on two recent examples of materials we have synthesized by high temperature solid state methods. The first is Cu$_2$SnS$_3$ and the second is Cu$_4$Sn$_7$S$_{16}$. Both of these materials have been synthesized previously as single crystals, but their physical property measurements were not performed on the single crystals. Both of these materials have been reported to be narrow gap semiconductors. A narrow gap semiconductor is simply a semiconductor that has a smaller band gap than silicon. It is our goal to examine these materials to test their thermoelectric properties and also reacquire physical measurements anisotropically. This poster will focus on the synthesis and selection of these interesting materials.