Our research group has an interest in compounds containing three parts. The first part is a transition metal, it can be any metal within the transition metal series. The second and third parts of the material are related in that they combine with each other to form an anion, an ion with a negative charge, which can bridge the transition metal atoms in an extended structure. These are parts are a chalcogenide (S, Se, or Te) and tin. When mixed in the correct ratios an assortment of different anions can be formed. For example is 2 equivalents of tin are mixed with 6 equivalents of sulfur in the correct conditions $[\text{Sn}_2\text{S}_6]^{4-}$ can be produced. If 1 equivalent of tin is mixed with 4 equivalents of sulfur the anion $[\text{SnS}_4]^{3-}$ can be formed instead. There are many more examples of these small changes which can produce different anions, not to mention only sulfur has been discussed, compounds containing either selenium or tellurium can also be synthesized. This unique ability allows for us to tailor anions for use in our synthetic endeavors. Currently our goal is to synthesize thermoelectric materials, or materials which transform heat energy into electrical energy, using high temperature solid state methods. Efforts using copper and cobalt as the transition metal and selenium as the chalcogenide will be discussed.