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**Structure, Chemistry and Property Correlations in FeSe and 122 Pnictides**[1]

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Determining how crystal structure and chemical bonding influence the properties of solids is at the heart of collaborative research programs between materials physicists and solid state chemists. In some materials, the high Tc copper oxides and colossal magnetoresistance manganates, for example, the subtleties of how structure, bonding and properties are coupled yields an almost baffling complexity, while in others, such as many classical intermetallic superconductors, the properties are more easily understood, with bonding and structure playing a less profound role. The new superconducting pnictides appear to fall somewhere between these two limits, and have so far been the subject of relatively little study by solid state chemists. Here I will describe some of our recent work on superconducting FeSe and superconductor-related "122" ($ThCr_2Si_2$-type) solid solution phases as examples of the kinds of insights that structural and chemical studies can contribute to understanding these important materials.

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