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A Chemist's Perspective to Heavy Fermion Intermetallics. Robin Macaluso, Willa Williams, Julia Chan, Dept. of Chemistry, Louisiana State Univ., 232 Choppin Hall, Baton Rouge, LA 70803 USA.

Our interests are in structure/property relationships of single crystal intermetallics that exhibit exotic properties that arise from strong electron-electron correlations. These materials include Kondo insulators and low-carrier density magnets, intermetallic superconductors and heavy fermion materials. We will discuss the synthesis and structure property relationships of two classes of intermetallic alloys that show magnetic ordering and/or superconductivity: Ln_2MIn_{3n+2} (Ln = La, Ce; M = Co, Rh, Ir; n = 1, 2, ∞) and the newly discovered ternary phase Tb_4MGa_{12} (M = Pd, Pt). Single crystals of heavy fermion intermetallics Ln_2MIn_{3n+2} (Ln = La, Ce; M = Co, Rh, Ir; n = 1, 2, ∞) and have been synthesized and characterized by single crystal X-ray diffraction. The Ce-analogues exhibit antiferromagnetism and/ or superconductivity. These materials adopt a tetragonal structure in the space group *P*4/*mmm*. The *n* = 1 & 2 members are built up of Ce cuboctahedra and transition metal rectangular prisms. The structure of Tb_4MGa_{12} (M = Pd, Pt), a cubic $Im\bar{3}m$ ternary phase which consists of Tb cuboctahedra and transition metal octahedra will be compared to the Ln_2MIn_{3n+2} family of compounds. Finally, we will discuss the magnetic susceptibility, specific heat, and resistivity of these intermetallics.