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### **Ligand-Mediated Synthesis of Colloidal Nanoparticle Alloys**

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Small molecule ligand chemistry is used to mediate the incorporation and distribution of metals in and on discrete, colloidal nanoparticle substrates. Specifically, we examine the case of late d transition metals in Au and Pt hosts. The resulting structures are characterized by a variety of methods including X-ray absorption spectroscopy, electron microscopy, and photoelectron spectroscopy techniques. These multimetallic nanoparticles exhibit previously unobserved mixtures of metals such as continuously tunable Au-Co composition ratios, as well as unique physical properties including composition-tunable near-infrared photoluminescence.