

Abstract Submitted
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Isolation and structural characterization of a silver-platinum nanocluster, $\text{Ag}_4\text{Pt}_2(\text{DMSA})_4$ ¹ ANTHONY PEDICINI, ARTHUR REBER, Virginia Commonwealth University, SCOTT BILTEK, AYUSMAN SEN, Pennsylvania State University, SHIV KHANNA, Virginia Commonwealth University — Cluster assembled materials offer an attractive prospect of making nanoscale materials with tunable characteristics. Here, we report the synthesis, isolation, and characterization of the ligand-protected bimetallic cluster, $\text{Ag}_4\text{Pt}_2(\text{DMSA})_4$ (DMSA=meso-2,3,-dimercaptosuccinic acid) and its analogue, $\text{Ag}_4\text{Pd}_2(\text{DMSA})_4$. The procedure is similar to the one employed previously for the synthesis of $\text{Ag}_4\text{Ni}_4(\text{DMSA})_4$. Theoretical studies show that the Pt and Ni atoms are square planar in configuration. Furthermore, the dependence on the optical spectrum due to congener replacement of the transition metal is highlighted. Since the crystal field splitting of 5d orbitals is typically larger than that for 3d orbitals, we show the Pt-based cluster has an optical spectrum that is significantly blue shifted as compared to the Ni-based cluster.

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Anthony Pedicini
Virginia Commonwealth University

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