Experimental and Theoretical Study of Bi-Metallic Rh-Pd Particles.

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Bimetallic nano-particles are of great interest in nano-science and nano-technology because they have demonstrated very interesting properties in catalysis, sensors and optical filters. However, experimentally are relatively difficult to obtain homogeneous distribution of metallic nano-particles. In this work, Rh-Pd particles were synthesized using an acrylamide Sol-Gel technique. Through X-Ray Diffraction, Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) the obtained particles were studied experimentally. Alloyed nano particles of two nanometers were observed in our TEM studies. The Rh-Pd system was modeled using DFT methods, taking the nano particle geometries observed in our TEM images. Charge transfers between the Rh and Pd were determined using differences of electron densities.