Abstract Submitted
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Characterization of Palladium and Gold Nanoparticles Using X-ray Reflectivity, EXAFS and Electron Microscopy.[1] YUAN SUN, Dept. Mat. Sci. & Engr., SUNY at Stony Brook, ANATOLY FRENKEL, Dept Phys, Yeshiva Univ., New York, NY, REBECCA ISSEROFF, CHERYL SHONBRUN, MICHELLE FORMAN, Stella K Abraham High School, Hewlett, NY, KWAN-WOO SHIN, Dept Mat Sci & Engr, K-JIST, Korea, TADANORI KOGA, HENRY WHITE, MIRIAM RAFAILOVICH, JONATHAN SOKOLOV, Dept. Mat. Sci. & Engr., SUNY at Stony Brook — We compared the characteristics of thiolate Pd and Au nanoparticles synthesized by 1-phase and 2-phase methods. HRTEM showed that the 1-phase Pd particles had an ordered core surrounded by a disordered shell structure while the 2-phase Pd particles appeared to be crystalline throughout; and multiple twinning existed in both the 1-phase and 2-phase Au particles. EXAFS measurements revealed that Pd particles contained large amount of disordered Pd-S compounds while the 1-phase Au particles have a larger fraction of amorphous or defective structures and higher grafting density of thiol chains than the 2-phase Au particles. Lattice expansion was found in the Pd particles, compared with lattice contraction in the Au particles. Only the 2-phase Pd and Au particles spread at the air/water interface and formed Langmuir films, which were deposited onto solid substrates and examined by x-ray reflectivity and EXAFS.

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