

Abstract Submitted  
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**Formation and characterization of large area monolayer films from colloidal solutions of Pt and Au/Pt core/shell nanoparticles<sup>1</sup>**

JIE REN, Department of Chemistry and Biochemistry, University of Delaware, ROBERT SCHMIDT, Department of Physics and Astronomy, University of Delaware, KLAUS THEOPOLD, Department of Chemistry and Biochemistry, University of Delaware, KARL UNRUH, Department of Physics and Astronomy, University of Delaware — Large area monolayer films of Pt and Au/Pt core/shell nanoparticles have been prepared by transferring a self-assembled film formed at the planar interface between two immiscible fluids to a glass substrate. The formation of the interfacial film was initiated and controlled by the addition of ethyl alcohol (EtOH) to phase separated solution of the aqueous metal colloid and hexane. Dynamic light scattering, zeta-potential, and UV-vis spectrophotometry measurements have been used to study and characterize the formation of the interfacial film. The results of these measurements indicate that significant interfacial film formation takes place for EtOH/water concentrations between about 10 and 40% corresponding to a zeta potential between about -60 and -20mV, and that about 50% of the colloidal particles can be trapped at the interface. After transferring the interfacial film to a glass substrate, optical and electron microscopy, atomic force microscopy, and x-ray diffractions measurements were carried out on the dried films. These measurements confirm that the dried film structure consists of a single layer of nearly close-packed nanoparticles.

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Jie Ren  
Department of Chemistry and Biochemistry, University of Delaware

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