

ADSORPTION OF WATER SOLUBLE THIOLS ONTO AU SURFACES: KINETICS AND APPLICATIONS

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Many of the proposed applications of gold colloids include targeted delivery of therapeutic or diagnostic agents to a cell of interest; therefore, there is a need to produce nanoscale shuttles capable of surviving the stringent *in vivo* environment. Ligand exchange reactions were utilized in the production of aggregation-resistant gold nanoparticles, having an average diameter of 5 nm, comprising a gold core capped with a mixed shell of citrate and zwitterionic ligands. In order to better understand the mechanism of water soluble self-assembled monolayers (SAMs) formation on gold surfaces and their stability, SAMs of short chain thiols, were formed on 20 nm Au films. The adsorption mechanism of a neutral thiol, 2-mercaptopropanol, was compared to that of the negatively charged 2-mercaptopropane sulfonic acid (MESA), using four point conductivity measurements. In order to discern between the tail group charge and size effects, SAMs of MESA having counterions of different sizes were investigated.