A series of hydrophobic gold nanoparticles were prepared using thiols with chain lengths ranging from C6-C18 as capping ligands. Solutions of the purified nanoparticles were cast as monolayers upon the air-water interface of a Langmuir trough. After measuring collapse pressures for each monolayer film, another set of nanoparticle films was crosslinked by dodecanedithiol to create a networked structure. It was discovered that crosslinking increases collapse pressures if the nanoparticles are capped with ligands containing fewer than 16 carbons. The films were easily transferred to a substrate, and TEM analysis revealed that the crosslinked films retained a flexible, membrane-like morphology.