

Supporting information for

Multidentate Ionic Surfactant Mediated Extraction
and Dispersion of Gold Nanoparticles in Organic
Solvents

*Sangbum Han and Ramjee Balasubramanian**

Department of Chemistry and Biochemistry, Old Dominion University, Norfolk, VA 23529.

Corresponding Author

* Email: bramjee@odu.edu.

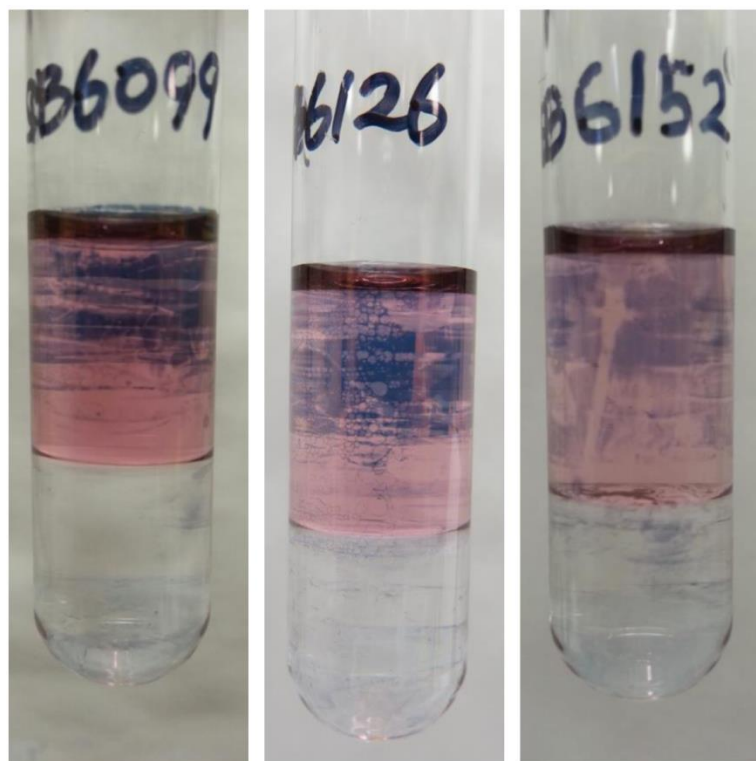


Figure S1. Photographs of various batches of 18 nm gold nanoparticles extracted with resorcinarene **3**.



Figure S2. TEM image (scale bar = 100 nm) of 18 nm citrate stabilized gold nanoparticles.

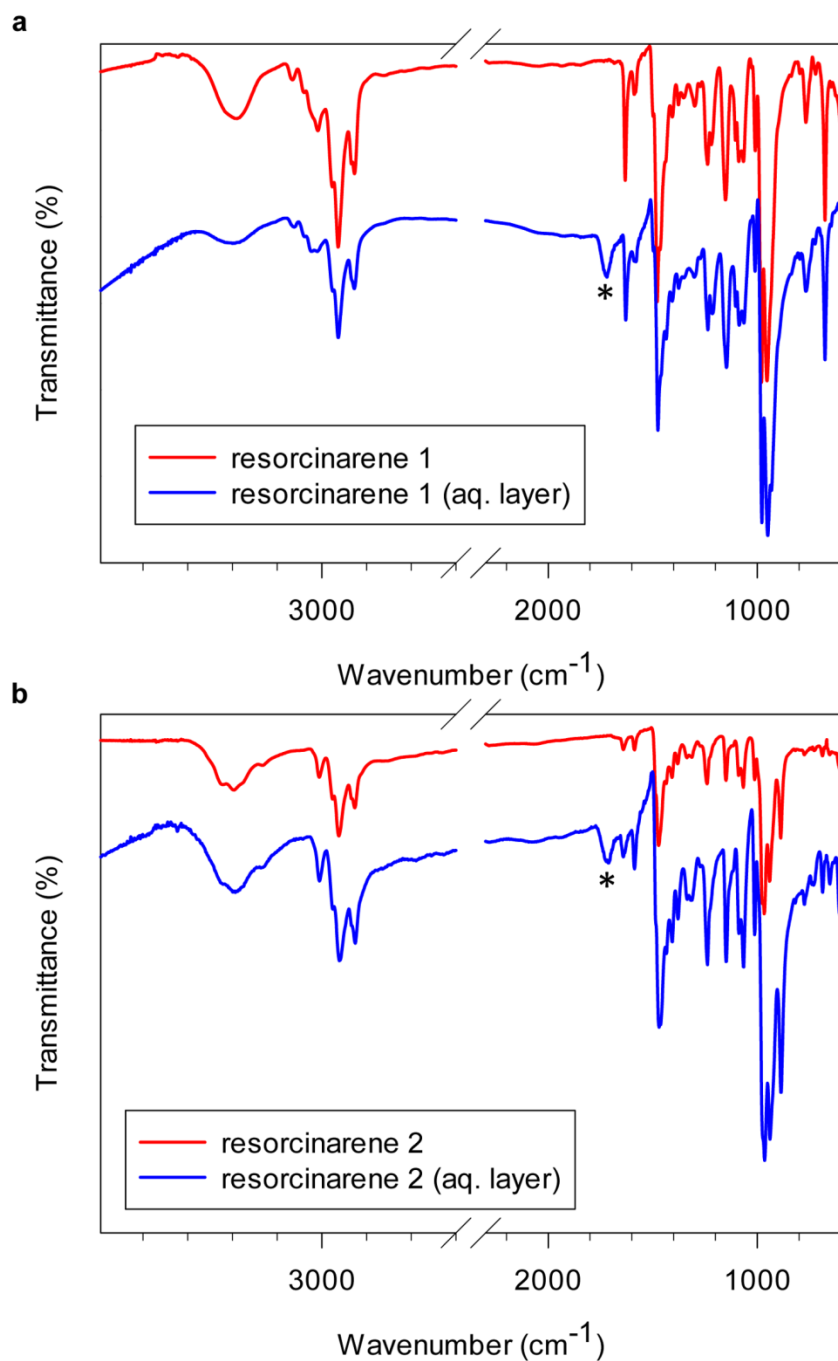


Figure S3. FTIR spectra of resorcinarenes **1** (a) and **2** (b) and the compounds recovered from the aqueous (aq.) layer after the extraction of the nanoparticles into organic phase. *Note that the peak marked with * around $\sim 1720\text{ cm}^{-1}$ observed in the recovered compounds could be from the protonation of citrate.*

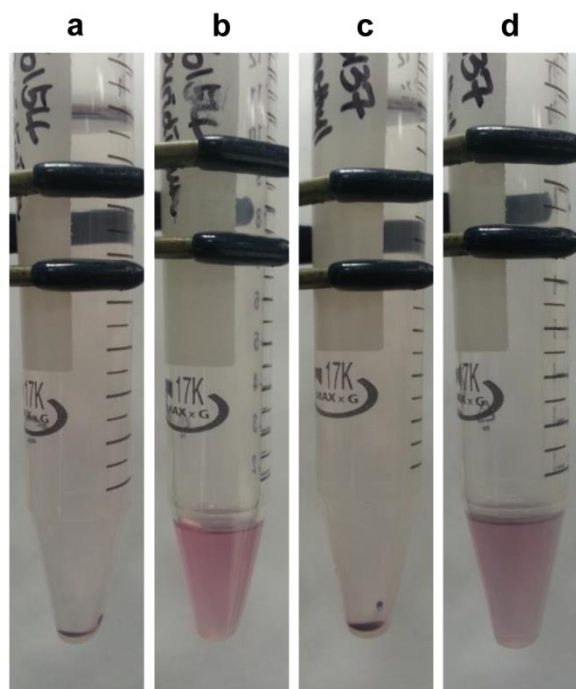


Figure S4. Photographs of precipitated (a and c) and redispersed nanoparticles (b and d) extracted by resorcinarene **1** (a and b) and **2** (c and d).

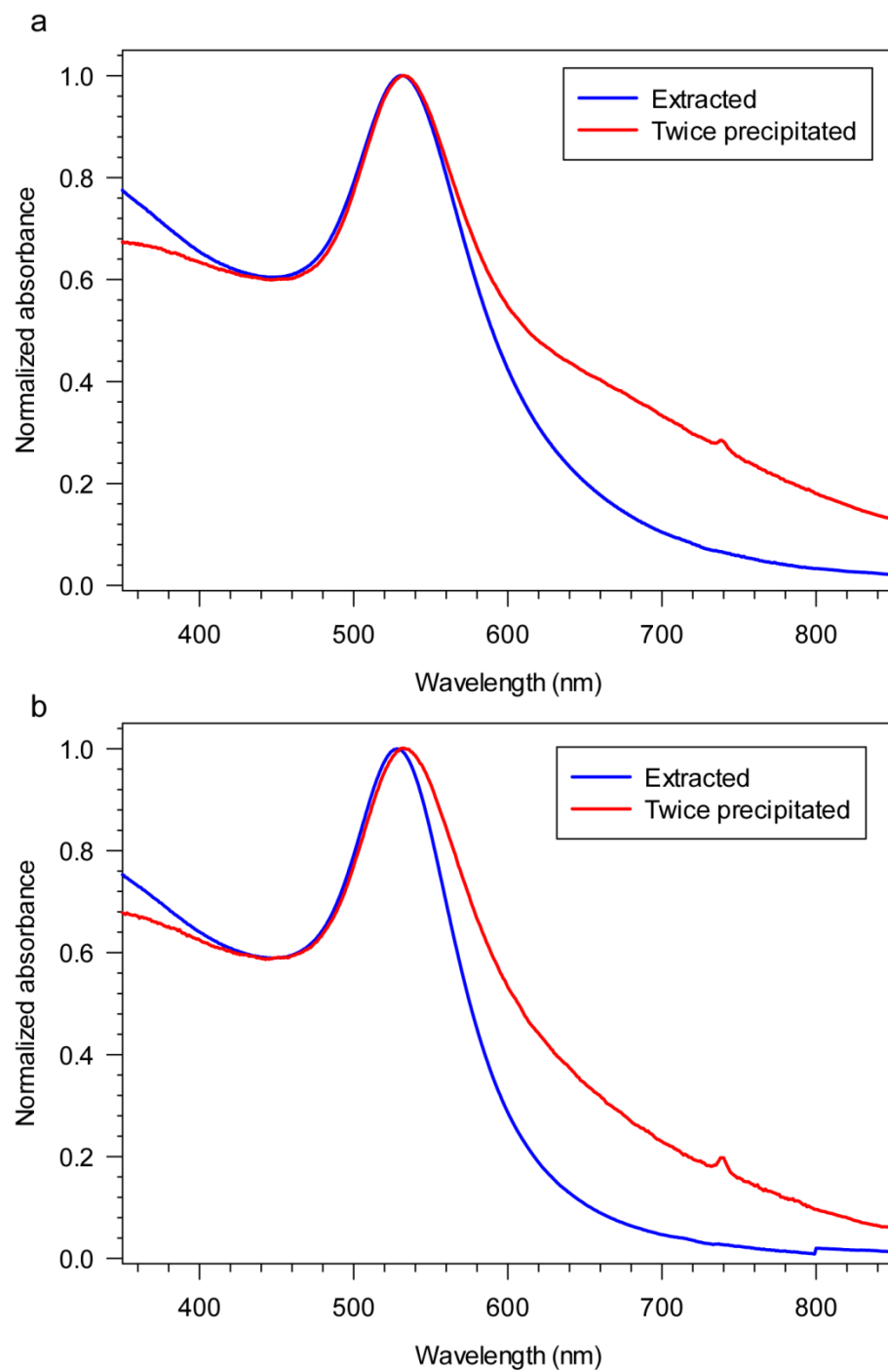


Figure S5. UV-vis spectra of nanoparticles extracted into toluene-acetonitrile mixture by resorcinarene **1** (a) and **2** (b) and nanoparticles twice precipitated and redispersed in chloroform.

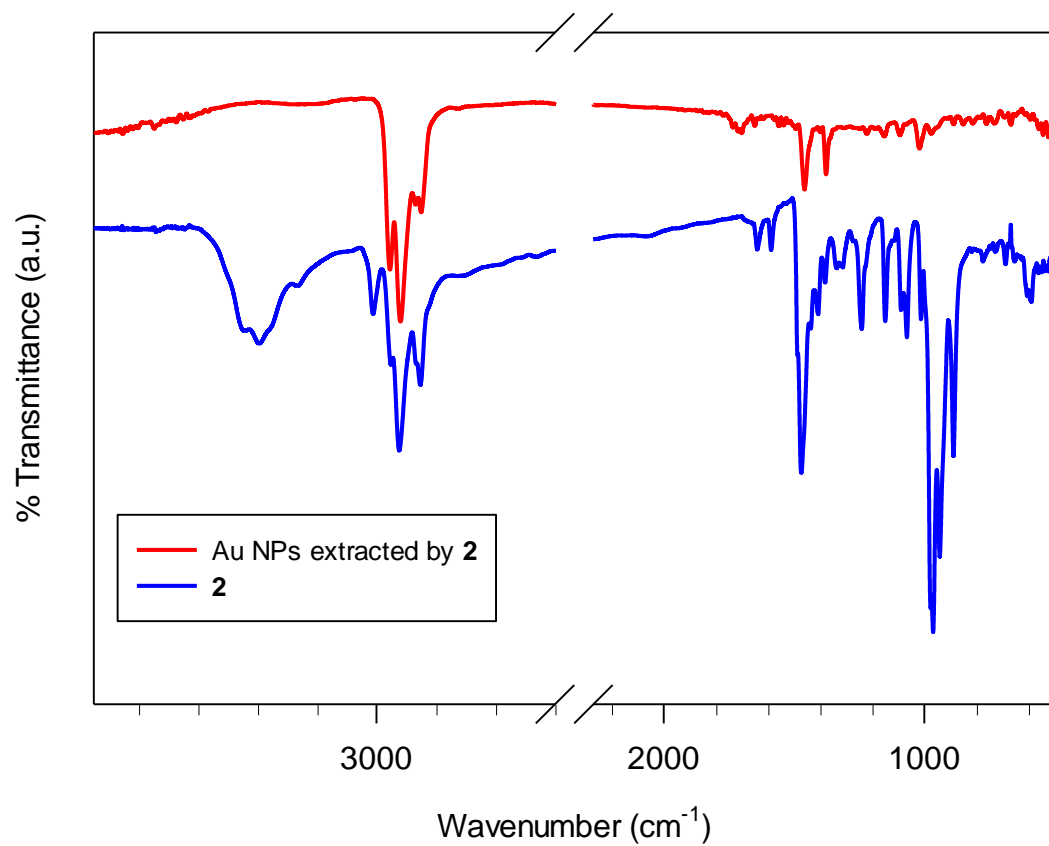


Figure S6. IR spectra of 18 nm gold nanoparticles extracted by **2** (twice precipitated) and **2**. **2** was drop cast from methanol.

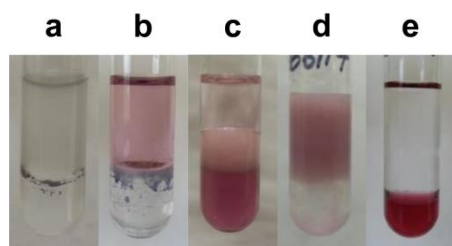


Figure S7. Extraction experiments carried out with 18 nm gold nanoparticles in the presence of (a) CTAB in toluene-acetonitrile (b) reduced concentration of resorcinarene **2** in toluene-acetonitrile (c) resorcinarene **2** in toluene-acetonitrile in the presence of acetic acid (d) resorcinarene **2** in water-toluene system in the absence of acetonitrile and (e) resorcinarene **2** in chloroform-methanol.

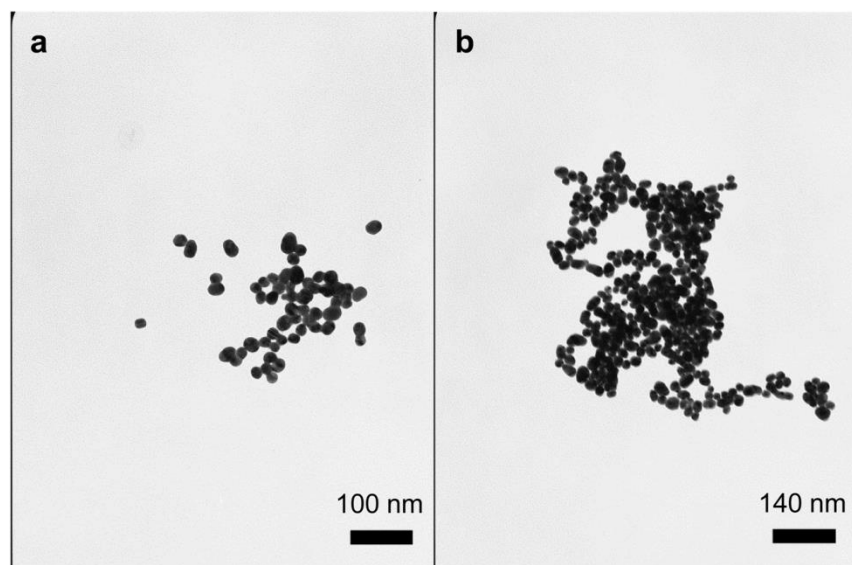


Figure S8. TEM image of 23 ± 3 nm (a) and 29 ± 8 nm (b) citrate stabilized gold nanoparticles.

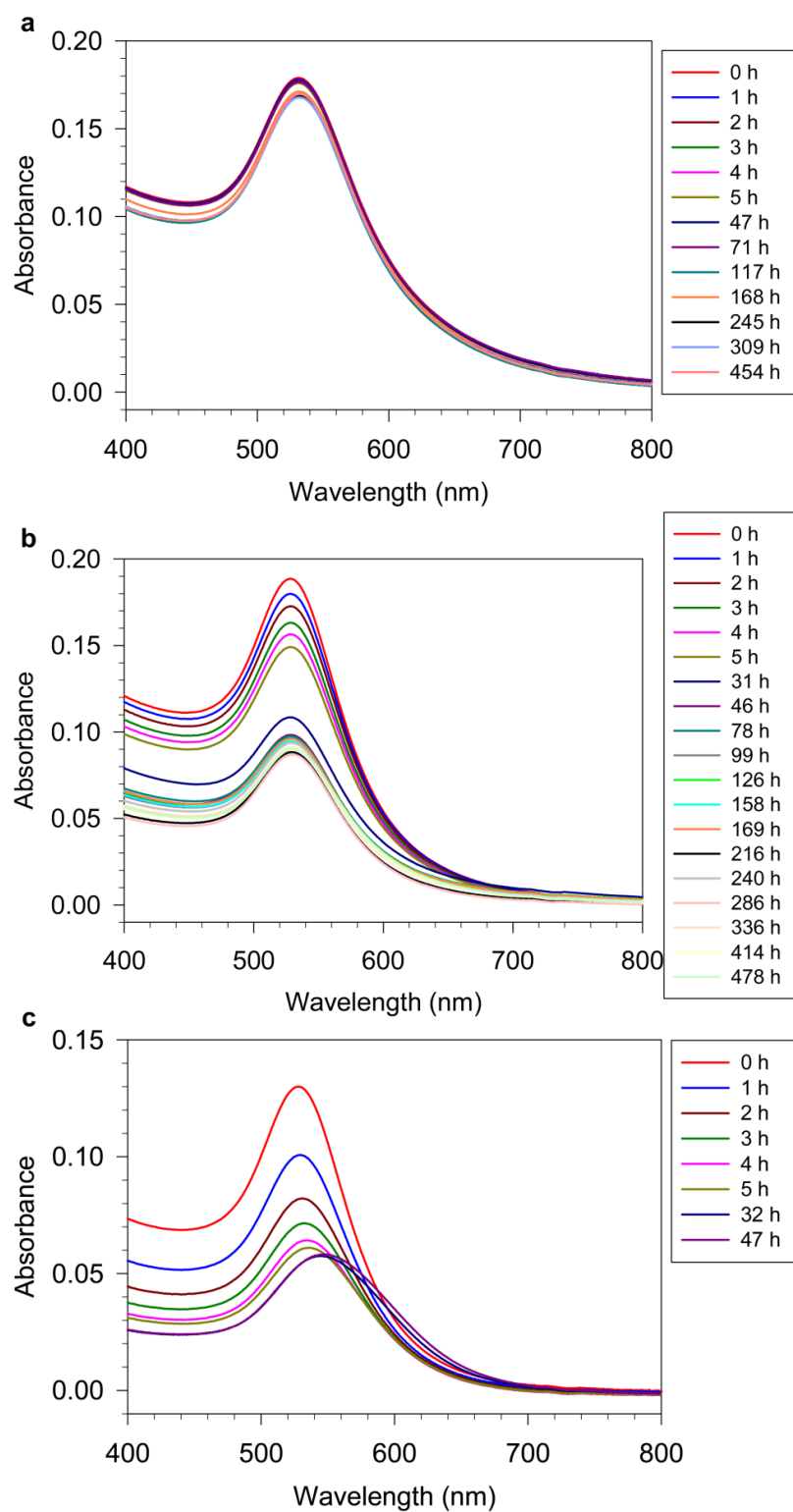


Figure S9. UV-vis spectra of gold nanoparticles (18 nm) extracted by (a) **1** (b) **2** and (c) **3** at various time periods.

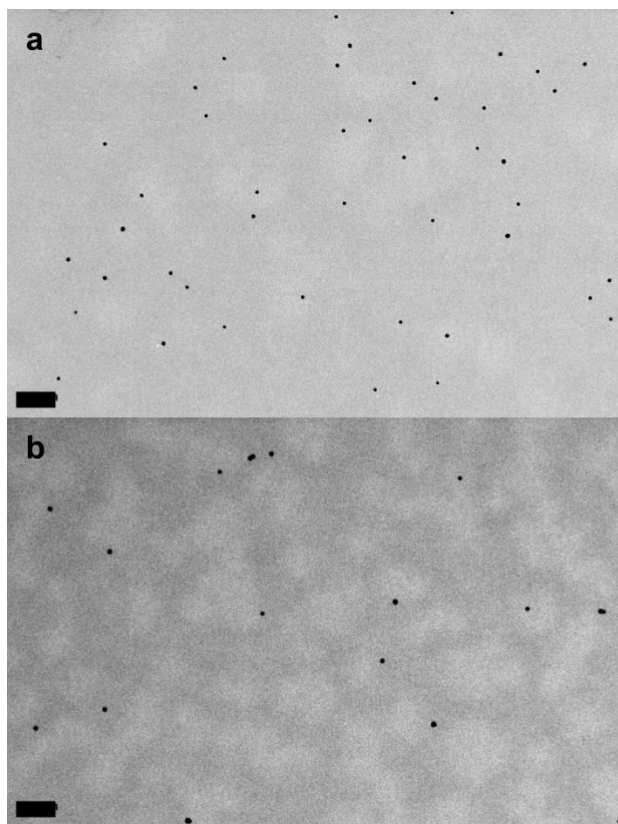


Figure S10. TEM image (scale bar = 200 nm) of 18 nm gold nanoparticles extracted by (a) **1** (~312 h) and (b) **2** (after 480 h).