

Supplementary Information

One-Phase Synthesis of Gold Nanoparticles with Varied Solubility

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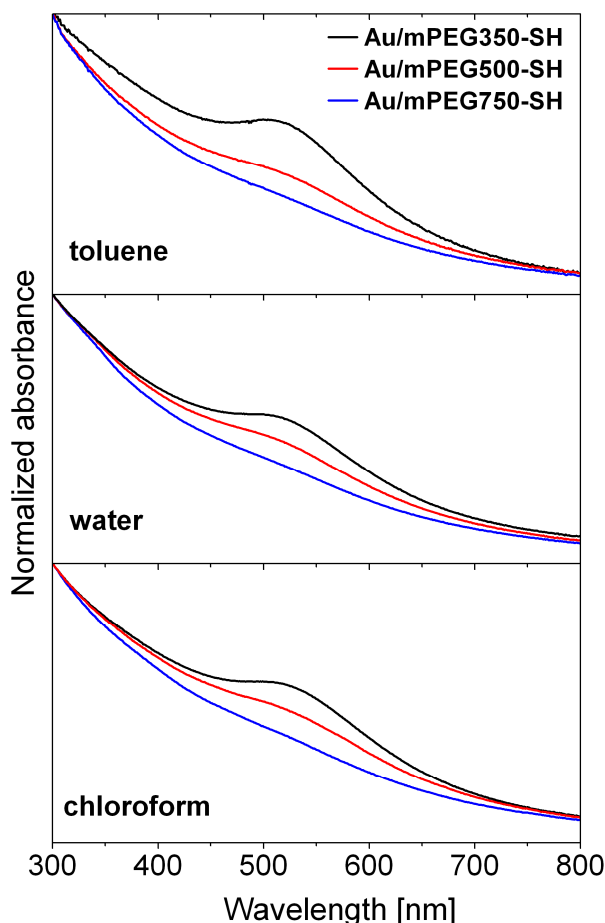


Figure SII. Absorption spectra of Au NPs stabilized by mPEG-SH of different molar weights in water and after their redissolving in toluene and chloroform.

Synthesis of mPEG-SH stabilizer

Briefly, 6.29 g (24 mmol) of triphenylphosphine was mixed with 150 mL of THF and cooled down to -20–25°C in Ar atmosphere. Afterwards, 4.75 g (24 mmol) of diisopropyl azodicarboxylate were dropped into the flask under intensive stirring. Adduct obtained was treated further by mixture of dry mPEG-OH (5.6 g, 16 mmol) and 1.827 g (24 mmol) of thioacetic acid in 30 mL of THF and left stirring overnight. The solvents were evaporated under the vacuum. Intermediate product was dissolved in water and washed twice by diethyl ether and then concentrated by reduced pressure. The viscous residue was washed by pentane and boiled in 50 mL of 0.1 M HCl in CH₃OH.

DLS measurements

Dynamic light scattering (DLS) measurements were performed at room temperature using a Beckman Coulter Delsa Nano C Particle Analyzer. Prior to the measurements, the Au NP colloids were filtered through Millipore membranes (0.2 μm pore size). The solvodynamic size was averaged over five measurements for toluene and water solutions and over three measurements for chloroform. Figure SI2 shows typical DLS results. According to the measurements, an average solvodynamic diameter of Au/mPEG350-SH NCs in toluene, water and chloroform is 77, 41 and 24 nm, respectively. Corresponding average polydispersity indices (PDIs) are 0.30, 0.34, 0.025. As follows from the graphs and from the value of PDI, more than single species are present in toluene and water suggesting formation of some amount of small aggregates, most probably via PEG-PEG interaction.

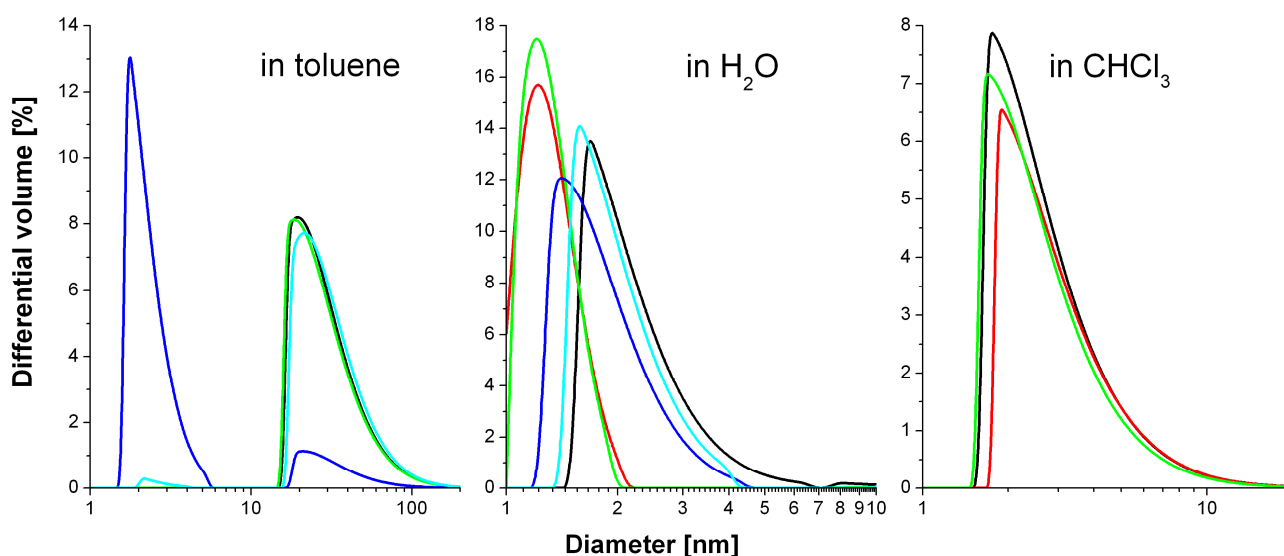


Figure SI2. Results of DLS measurements of Au/mPEG350-SH NPs in different solvents.