Supporting information for

Synthesis of Gold Nanoparticles Modified with Ionic Liquid Based on Imidazolium Cation

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Figure 1S. Wavelength maximum versus time for the solution (0.5 mg of the **1**-modified gold nanoparticles, containing 2.1×10^{-4} mmol of **1**) after addition of different amount of HI (a) 0.8×10^{-3} mmol, (b) 4.0×10^{-3} mmol and (c) 20×10^{-3} mmol.

Figure 2S. Wavelength maximum versus time for the solution (0.5 mg of the **1**-modified gold nanoparticles, containing 2.1×10^{-4} mmol of **1**) after addition of different amount of HBF_4 (a) 0.8×10^{-3} mmol, (b) 4.0×10^{-3} mmol and (c) 20×10^{-3} mmol.

Figure 3S. Wavelength maximum versus time for the solution (0.5 mg of the **1**-modified gold nanoparticles, containing 2.1×10^{-4} mmol of **1**) after addition of different amount of HPF_6 (a) 1.6×10^{-4} mmol, (b) 0.8×10^{-3} mmol and (c) 4.0×10^{-3} mmol.

Figure 4S. TEM image of the resulting ionic liquid phase after transfer of the gold nanoparticles.

Figure 1S.

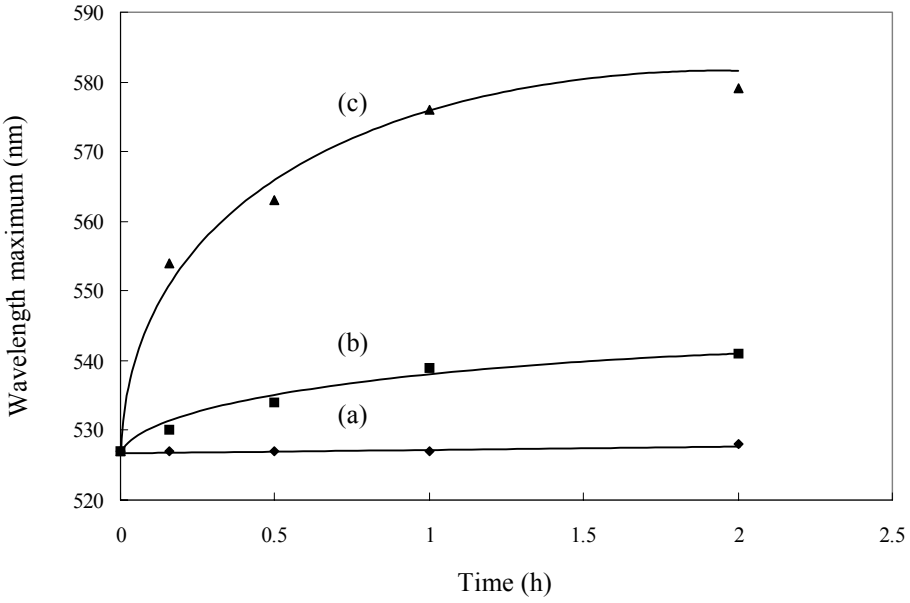


Figure 2S.

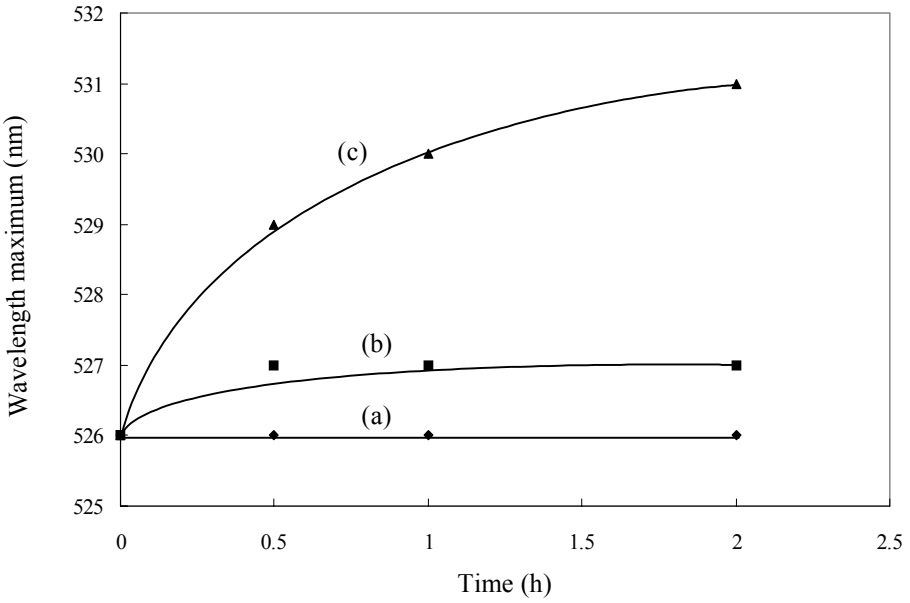


Figure 3S.

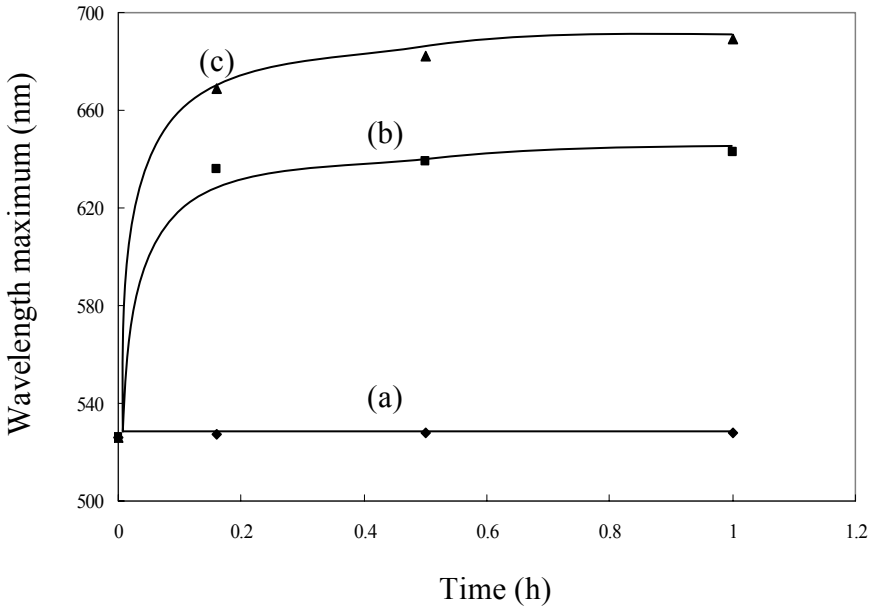
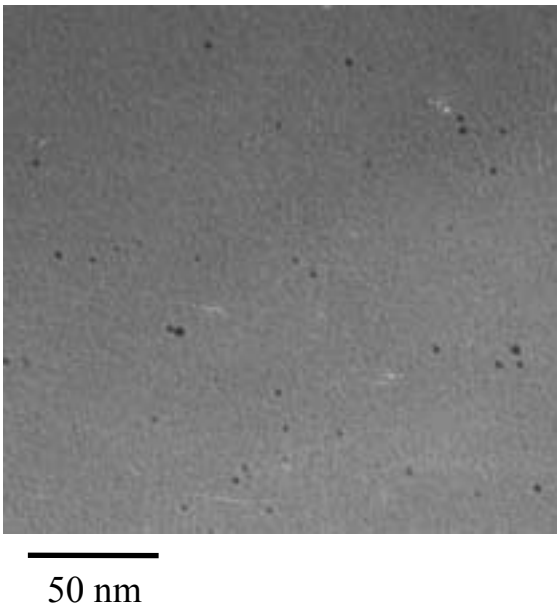


Figure 4S.



Experimental Section

Preparation and spectroscopic date for **1**: To a solution of 6-mercapto-1-hexanol (5 ml, 36.5 mmol) in ethanol (20 ml) was added iodine (13.8 g, 54.7 mmol). The mixture was stirred for 24 h at room temperature. After the removal of the solution under reduced pressure, the residue was added to *t*-butyl methyl ether (30 ml) and the mixture was extracted with water containing sodium hydrogensulfite (10 mg/ml) several times. After the removal of the solution under reduced pressure, thionyl chloride (5 ml) was added and the resulting mixture was stirred for 24 h at room temperature. After stirring, the solution was evaporated under reduced pressure. The remained liquid was subjected to column chromatography. The first fraction containing product was concentrated by evaporation and dried under reduced pressure. The obtained liquid was added to 1-methylimidazole (10 ml, 125 mmol). The mixture was heated at reflux for 48 h. The resulting liquid was washed with ethyl acetate several times and dried under reduced pressure. ^{1}H NMR (D_2O) : δ1.22-1.42 (4H, m), 1.68 (2H, t), 1.88 (2H, t), 2.74 (2H,t), 3.90 (3H, t), 4.19 (2H, t), 7.48 (2H, t), 8.71 (1H, s). IR (NaCl) : 2929, 2856, 1566, 1453, 1165, 1081, 1020 cm^{-1}. Anal. calc. for $C_{20}H_{36}N_4S_2Cl_2$ (467,57) : C 51.37, H 7.76, N 11.98, S 13.72, Cl 15.17 ; found : C 51.10, H 7.88, N 11.75, S 13.83, Cl 15.44.