

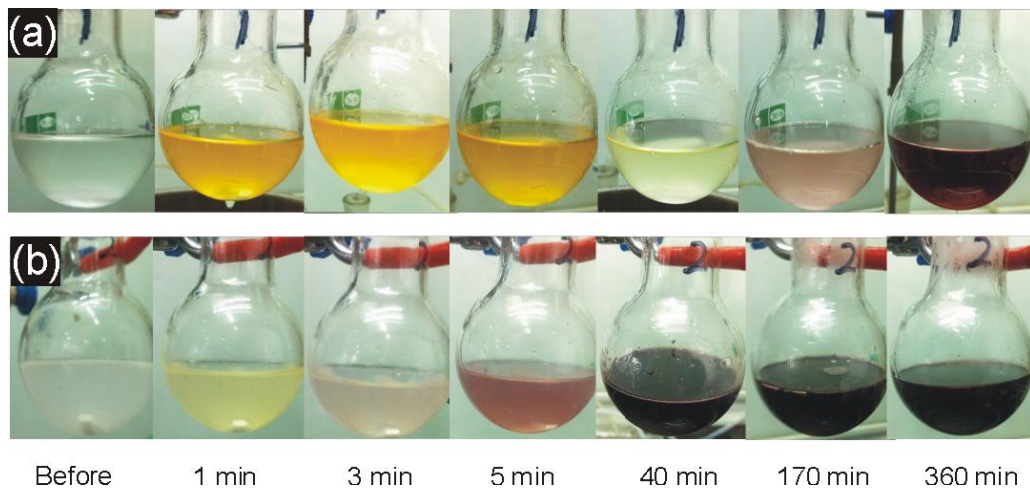
# In Situ Formation of Gold Nanoparticles in Alkylamine-Polyol Assemblies

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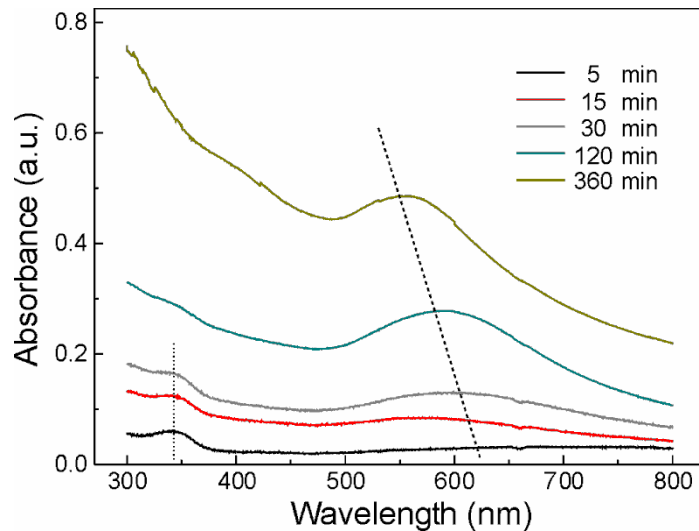
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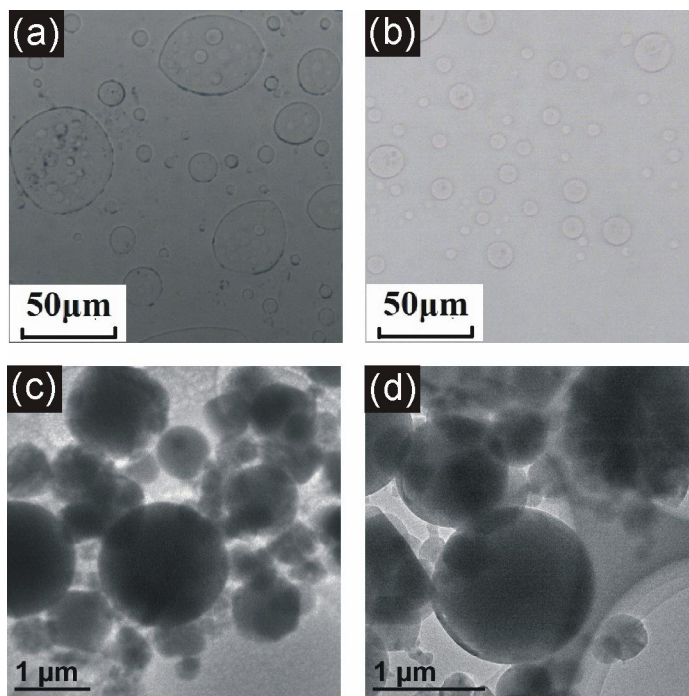
## Supporting Information



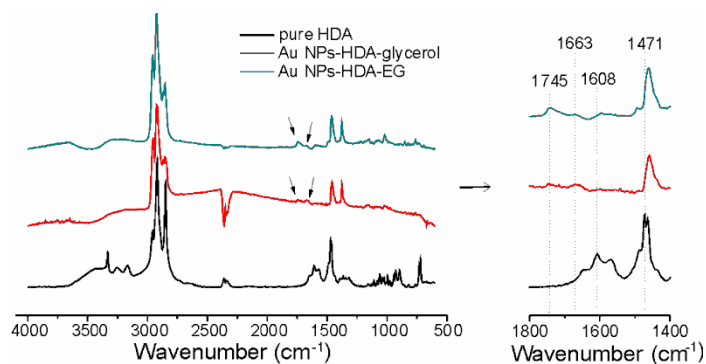
**Figure S1.** Color changes of reaction process of (a) HDA- EG and (b) HDA- glycerol solution before and after the addition of  $\text{HAuCl}_4$  aqueous solution.



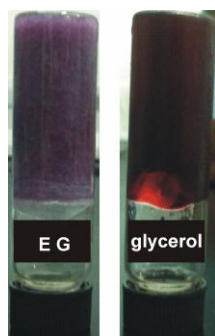
**Figure S2.** UV-vis absorption spectra of gold-containing HDA-glycerol sol in ethanol with reaction time. Specifically, the same amount of samples were taken at 5, 15, 30, 120 and 360 min of reaction time and dissolved into ethanol for the subsequent absorption tests. When time went on, the characteristic absorption peaks of gold surface plasmon band emerged and blue-shifted from about 620 to 550 nm, and accordingly, the peaks at 343 nm ascribed to Au (+3) disappeared. Such results can show the formation process of Au NPs with reaction time.



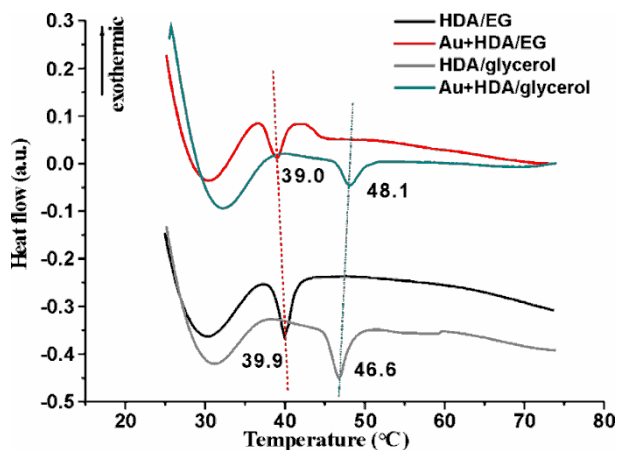
**Figure S3.** Optical microscopic (a, b) and cryo-TEM (c, d) images for the vesicle phase of (a, c) HDA-EG and (b, d) HDA-glycerol with the presence of Au NPs.



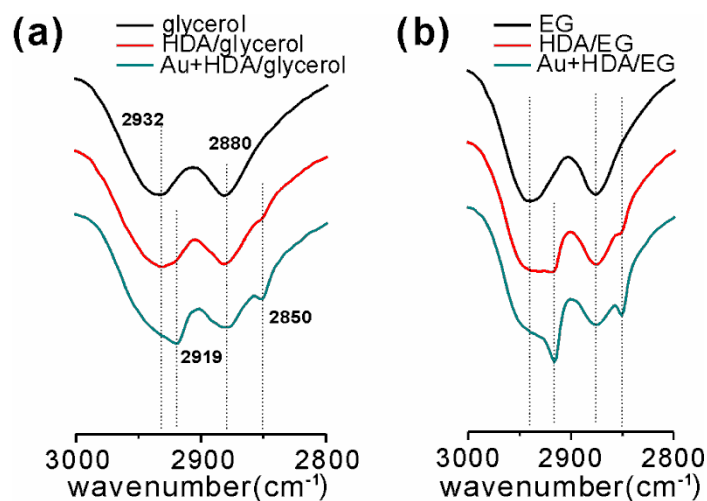
**Figure S4.** FT-IR spectra analysis of Au NPs synthesized in glycerol and EG systems and pure HDA. The peak of 1745 cm<sup>-1</sup> is ascribed to C=O stretching due to the oxidation of terminal OH group.



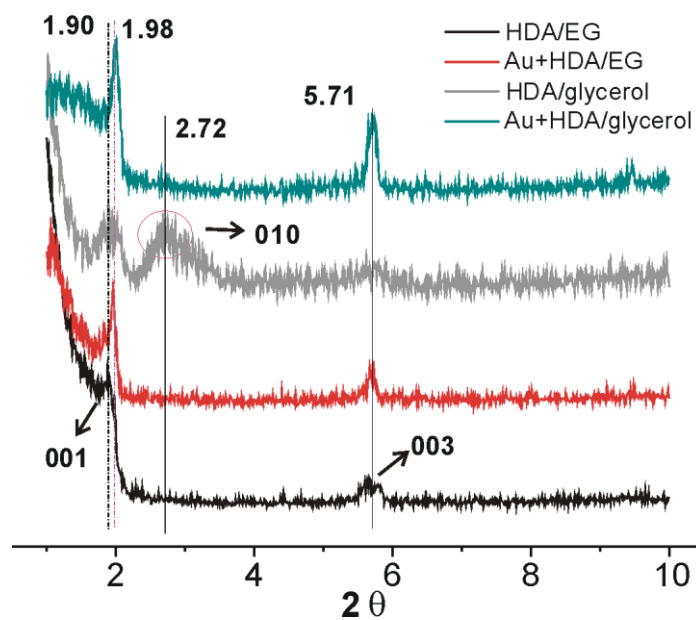
**Figure S5.** Optical appearance of the HDA-EG and HDA-glycerol organogels.



**Figure S6.** DSC patterns of HDA-polyol gels before and after the doping of Au NPs.



**Figure S7.** IR spectrum of the HDA-polyol organogels before and after the doping of Au NPs.



**Figure S8.** SAXRD patterns of the HDA-polyol gels before and after the doping of Au NPs.