

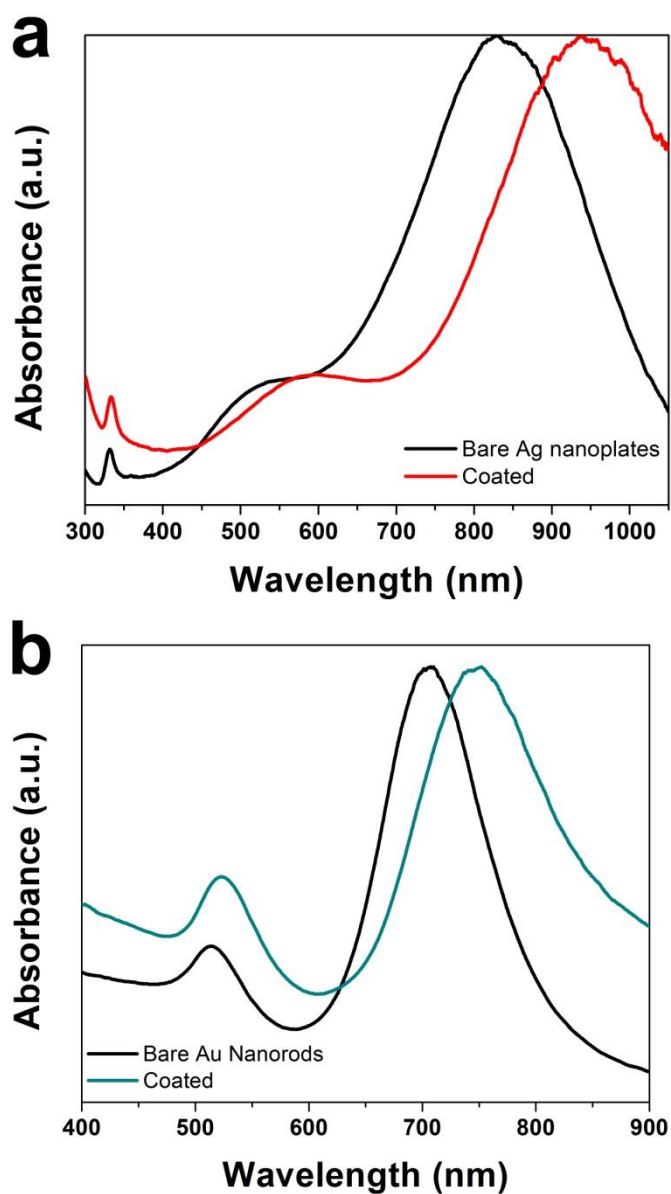
### Supporting Information

#### Ethylene Glycol-Assisted Coating of Titania on Nanoparticles

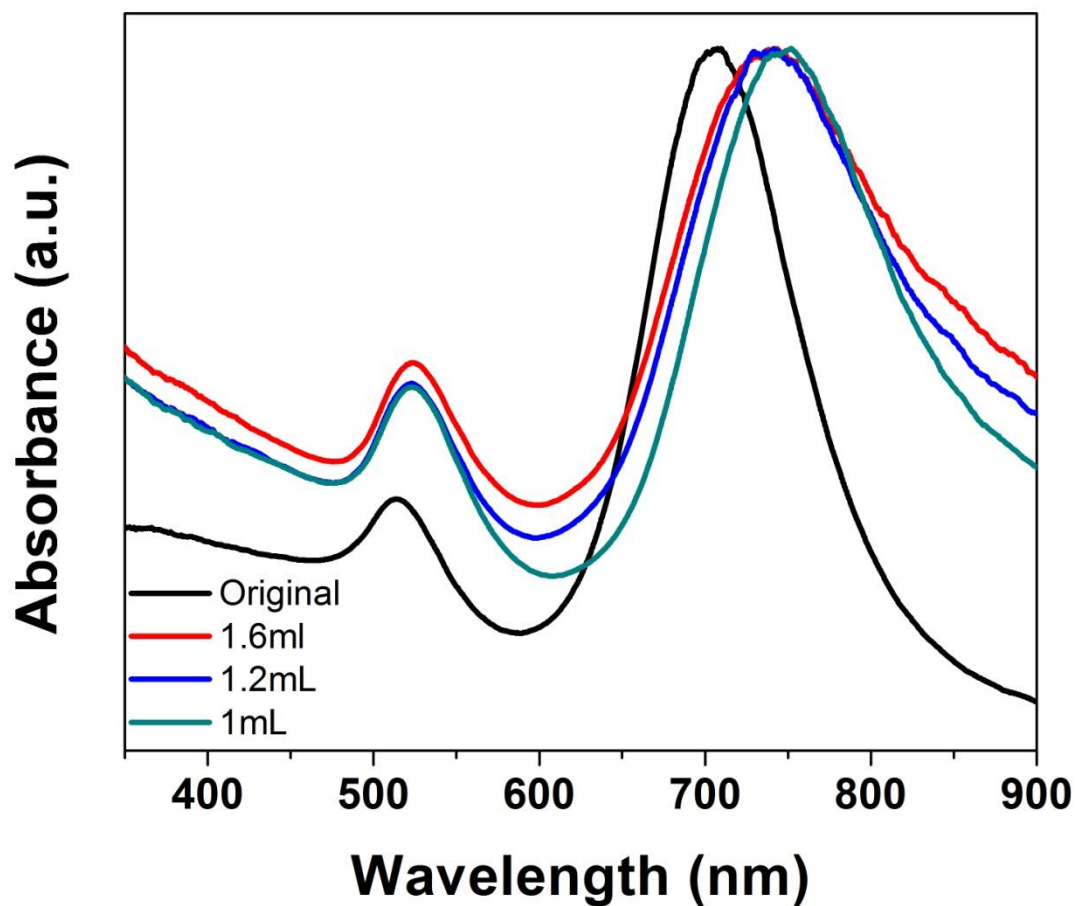
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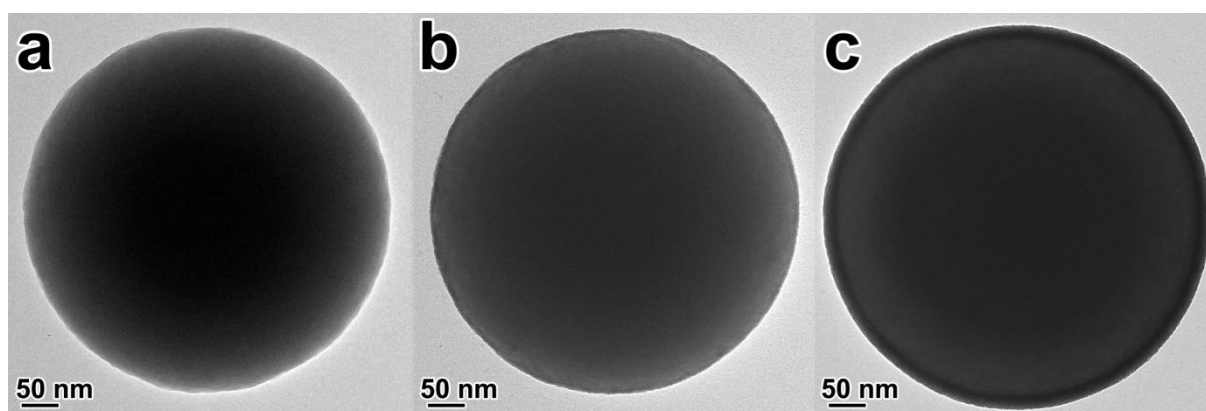
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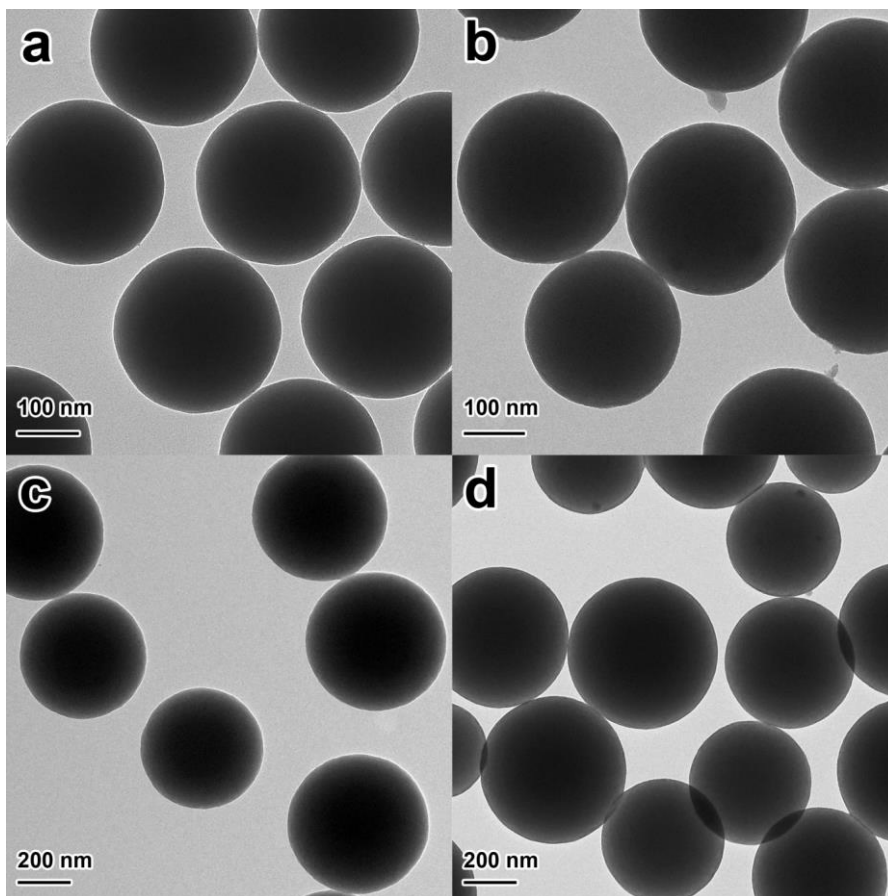
**Figure S1.** UV-Vis absorption spectra of (a) silver nanoplates and (b) gold nanorods before and after coating with titanium glycolate.



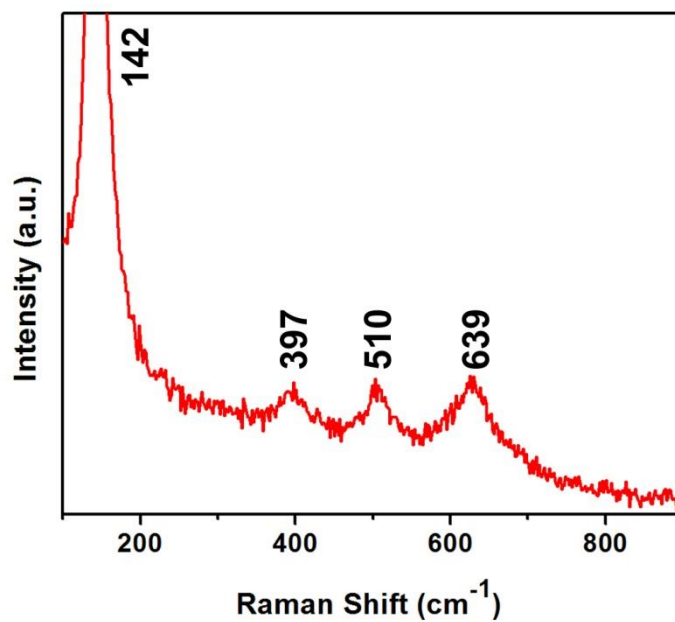
**Figure S2.** UV-Vis absorption spectra of gold nanorods indicating peak position changes after coating with different thicknesses of titanium glycolate.



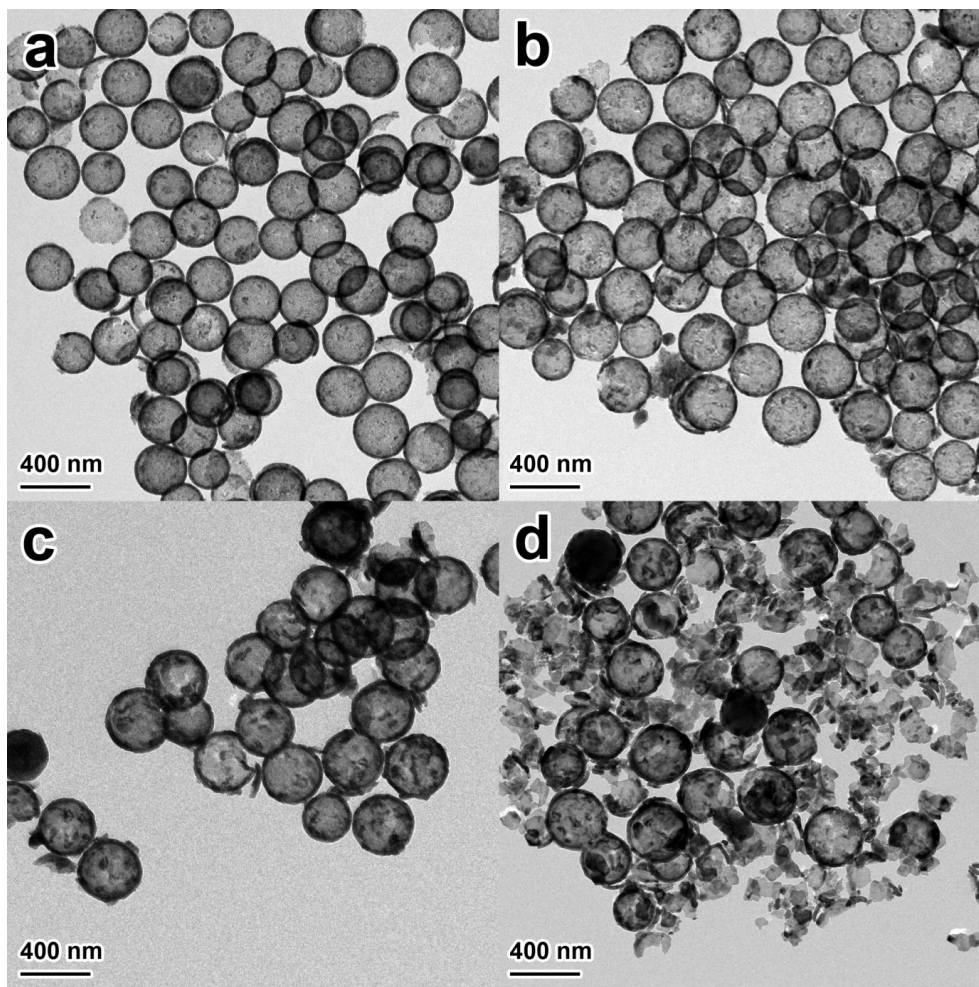
**Figure S3.** TEM images of resorcinol-formaldehyde polymer sphere (a) before coating (b) after a single coating and (c) after four coatings with titanium glycolate precursor.



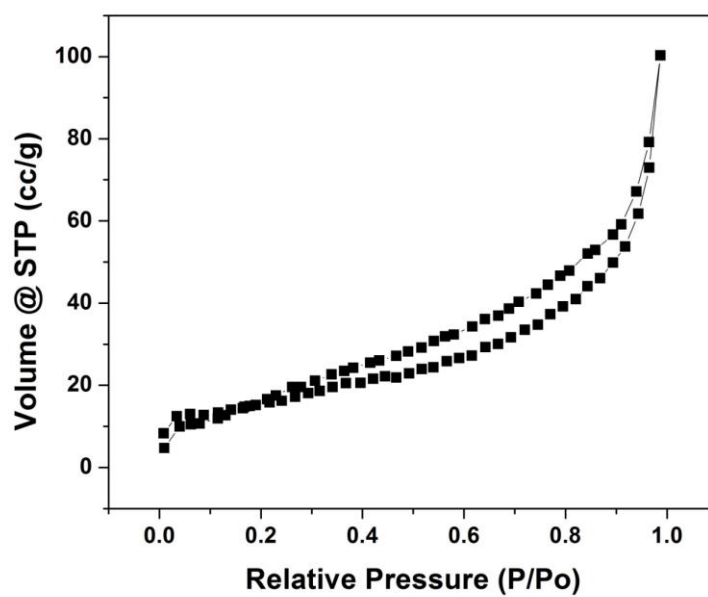
**Figure S4.** TEM images of SiO<sub>2</sub> and RF polymer microspheres before (a,c) and after (b,d) coating with titanium glycolate.



**Figure S5.** Enlarged Raman spectra of titanium glycolate coatings on gold nanorods after refluxing, indicating anatase crystal phase.  $\lambda_{\text{ex}} = 532 \text{ nm}$ .



**Figure S6.** Low magnification TEM images of hollow  $\text{TiO}_2$  shells obtained by calcination of  $\text{SiO}_2$ @titanium glycolate, followed by etching. Samples shown were calcined at (a) 400, (b) 600, (c) 800. and (d) 900  $^\circ\text{C}$ .



**Figure S7.**  $\text{N}_2$  physisorption isotherm for hollow  $\text{TiO}_2$  sample calcined at 700  $^\circ\text{C}$ .