

Functionalized Silicate Sol-Gel Supported TiO₂-Au Core-Shell Nanomaterials and Their Photoelectrocatalytic Activity

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FIGURE S1.

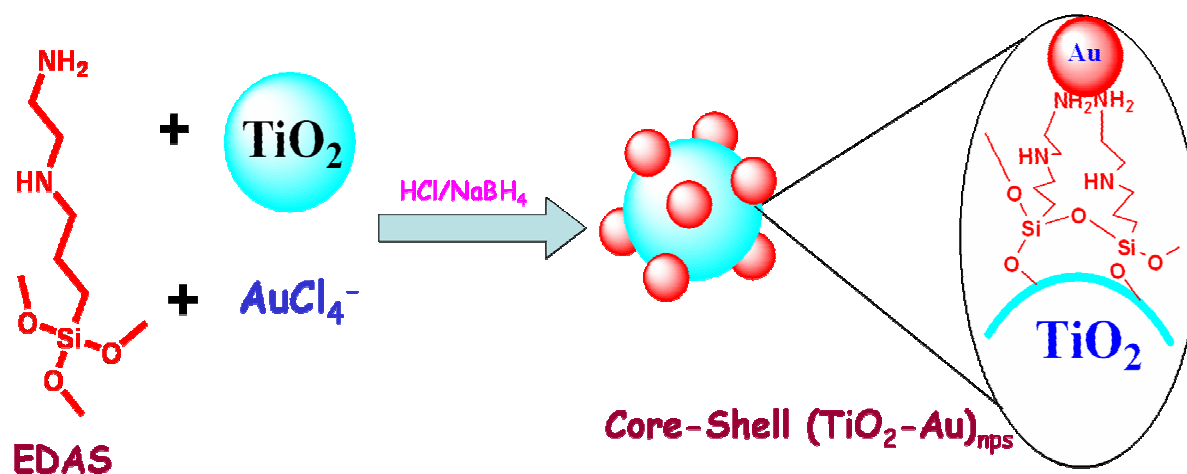
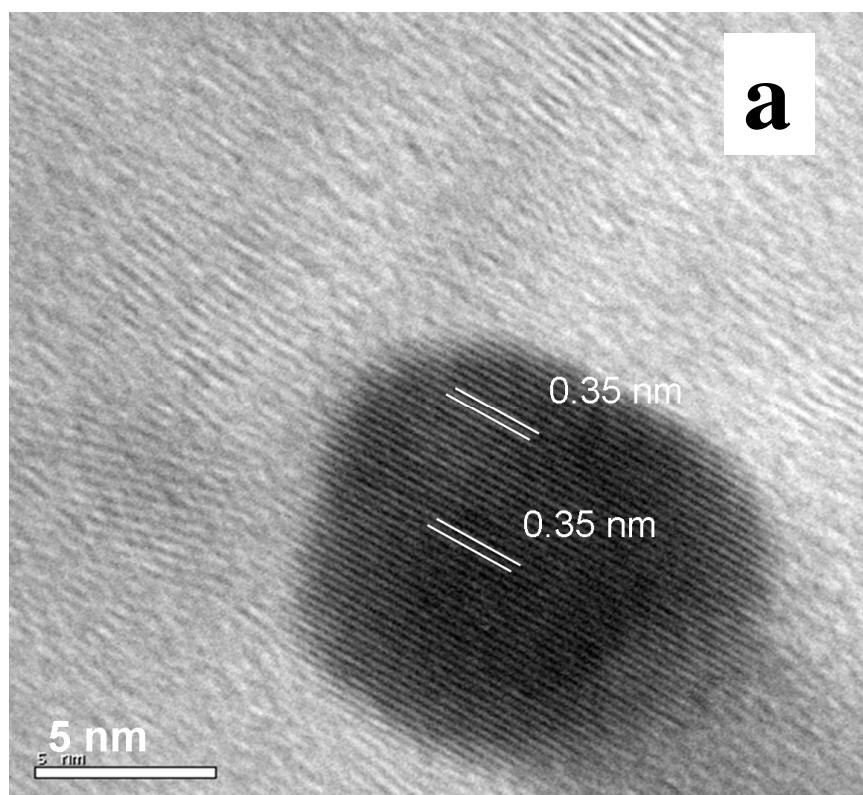


FIGURE S1. Schematic representation of synthesis of aminosilicate supported (TiO₂-Au)_{nps} core-shell nanomaterials.

FIGURE S2.



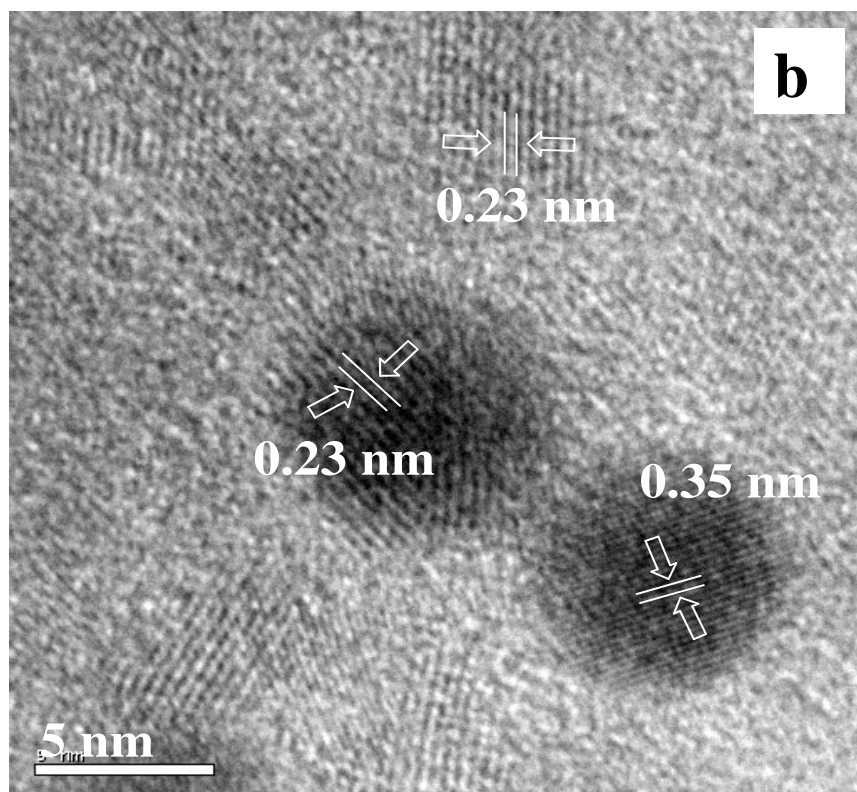


FIGURE S2. HRTEM and lattice resolved images of TiO_2 (a) and $\text{EDAS}/(\text{TiO}_2\text{-Au})_{\text{nps}}$ (b) ($\text{TiO}_2\text{:Au} = 100\text{:1}$ molar ratio). The high resolution transmission electron microscopic (HRTEM) images of TiO_2 and $\text{EDAS}/(\text{TiO}_2\text{-Au})_{\text{nps}}$ were recorded using a JEOL 3010 High resolution transmission electron microscope operating at an accelerating voltage of 300 kV. One drop of the sample was blotted on a carbon-coated copper grid for imaging and blotted to remove excess liquid.

FIGURE S3.

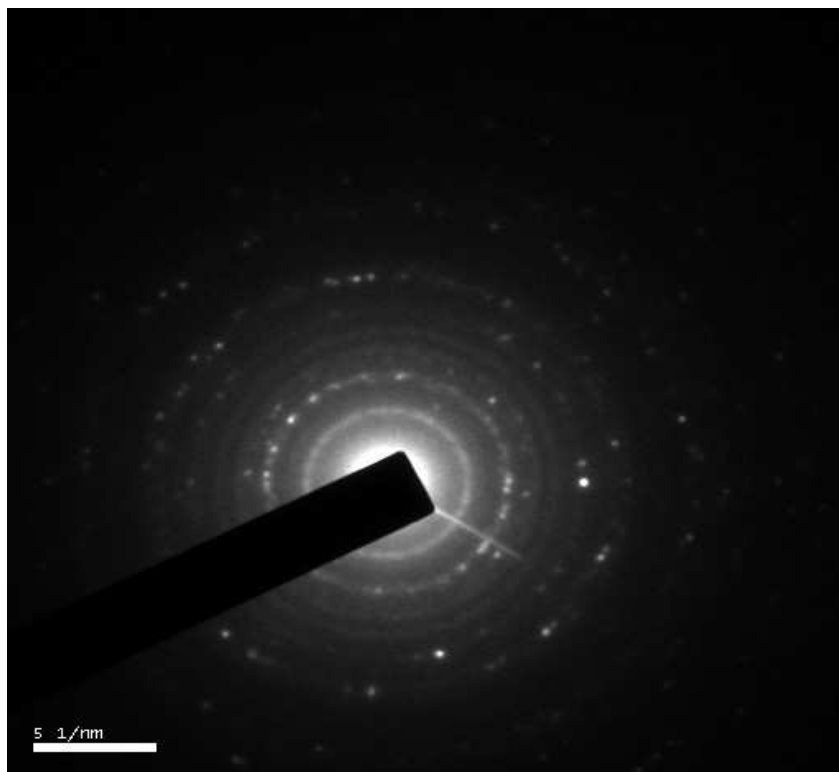


FIGURE S3. Selected area electron diffraction (SAED) analysis of EDAS/(TiO₂-Au)_{nps} core-shell particles (TiO₂:Au = 100:1 molar ratio).

FIGURE S4.

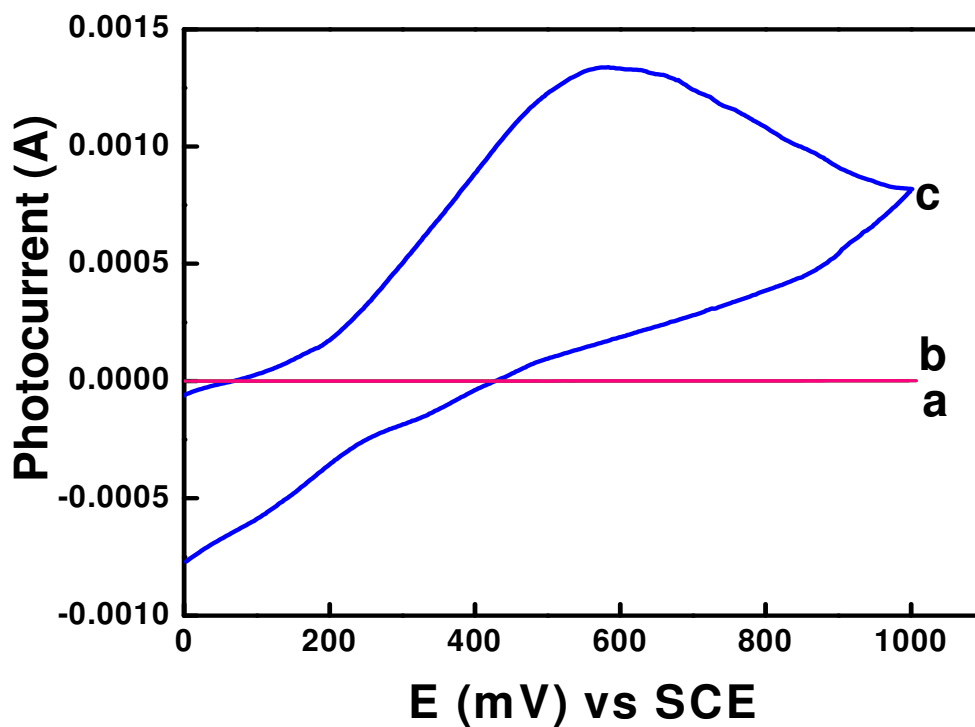


FIGURE S4. Cyclic voltammograms obtained for the EDAS/TiO₂ modified electrode in the presence of (a) 0.5 M Na₂SO₄ and (b) a mixture of 0.5 M Na₂SO₄ and 0.1 M CH₃OH in dark and (c) a mixture of 0.5 M Na₂SO₄ and 0.1 M CH₃OH under illumination using 700 mW cm⁻² light intensity. A 450 W Xenon lamp was used as a light source with water filter to study the photoelectrochemical properties. Light intensity was measured using Oriel-70260 power intensity meter, Newport, USA.

FIGURE S5.

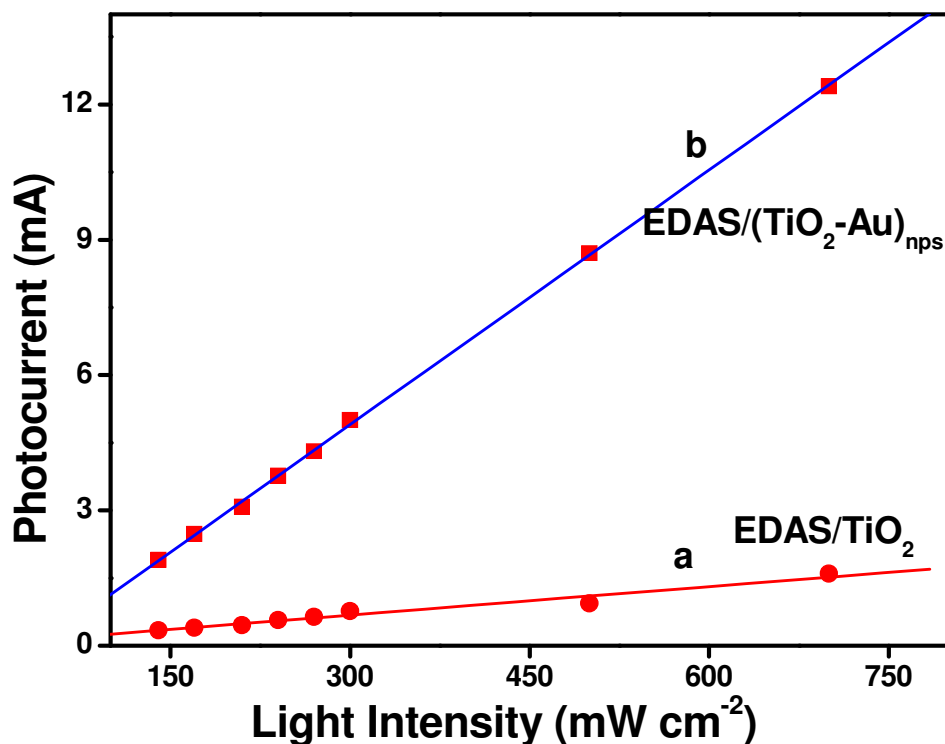


FIGURE S5. Dependence of photocurrent on the light intensity observed at (a) EDAS/TiO₂ and (b) EDAS/(TiO₂-Au)_{nps} (TiO₂:Au = 100:1) modified electrodes dipped in a mixture of 0.5 M Na₂SO₄ and 0.1 M methanol under irradiation. The E_{app} was 0.65 V. A 450 W Xenon lamp was used as a light source with water filter to study the photoelectrochemical properties. Light intensity was measured using Oriel-70260 power intensity meter, Newport, USA.