

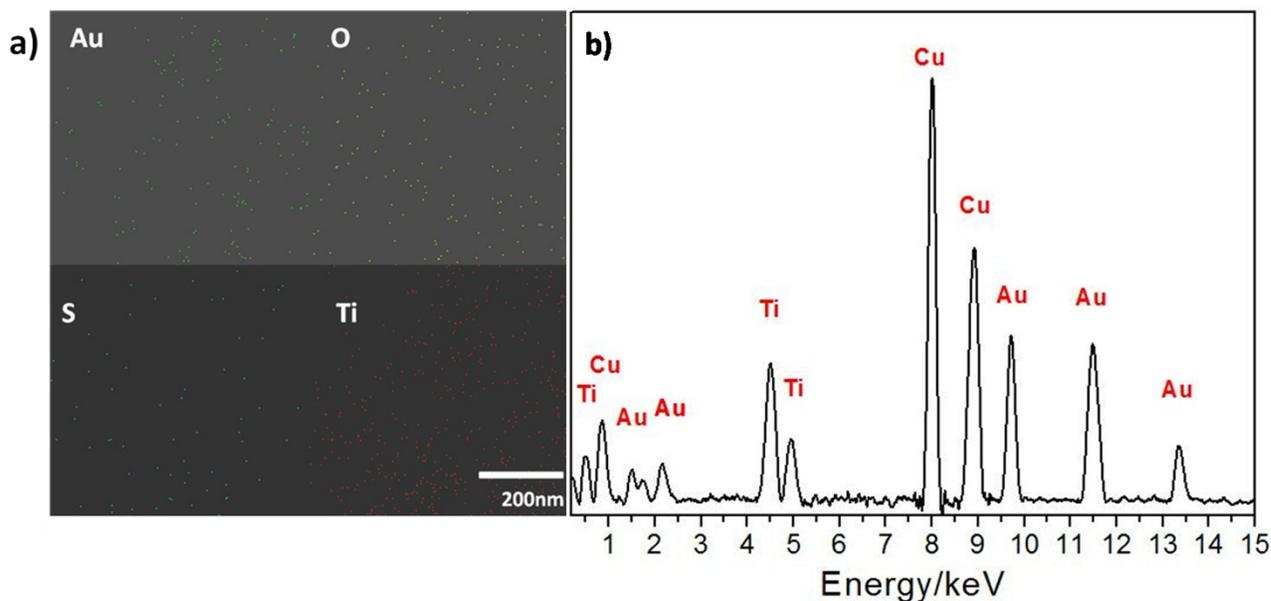
## Supporting Information

### Investigation of Charge Transfer at TiO<sub>2</sub>-MBA-Au Interface Based on Surface-Enhanced Raman Scattering: SPR Contribution

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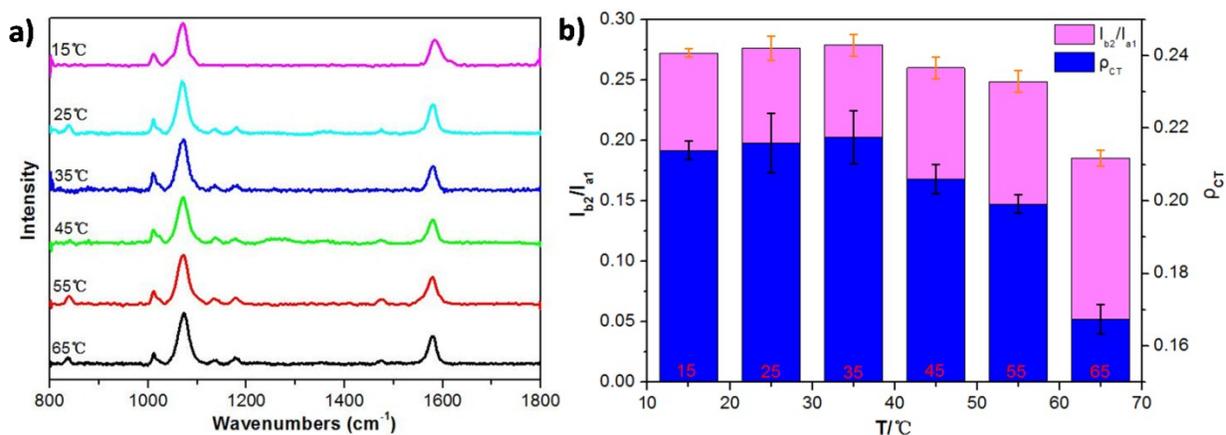
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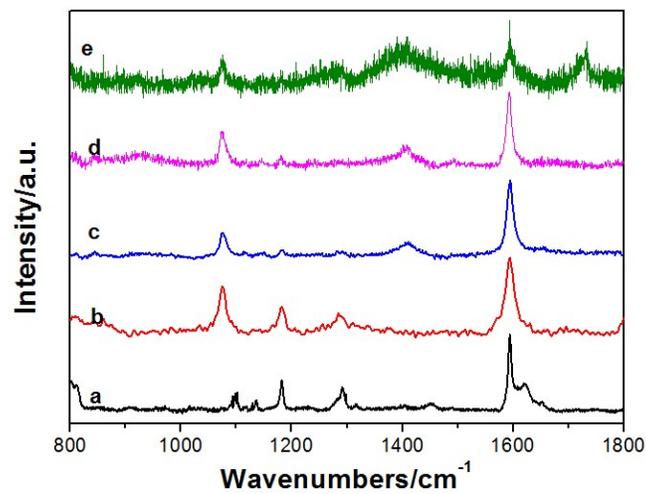


**Figure S1.** (a) Au, O, S and Ti element mapping of TiO<sub>2</sub>-MBA-Au NRs assemblies on a copper grid. (b) EDX spectrum of TiO<sub>2</sub>-MBA-Au nanorods assemblies (The SPR absorption peak of Au

NRs is located at 700nm) , and which indicated the successful assembling of TiO<sub>2</sub> on Au NRs and the high purity of the assemblies.



**Figure S2.** (a) SERS spectra of MBA in the TiO<sub>2</sub>-MBA-Au NR assemblies normalized using the band at 1075 cm<sup>-1</sup> measured at different temperatures with 785 nm excitation. (b) Integrated relative intensities of the 1010 cm<sup>-1</sup> (b<sub>2</sub>) and 1075 cm<sup>-1</sup> (a<sub>1</sub>) bands and the  $\rho_{CT}$  versus the temperature ranging from 15 °C to 65 °C. The error bars indicate the signal fluctuations for each temperature. When the temperature increased from 13 °C to 35 °C, the  $\rho_{CT}$  did not change significantly, and when the temperature increased from 35 °C to 65 °C, the  $\rho_{CT}$  had a downward trend. Which indicated the contribution of the thermal effect of SPR to the  $\rho_{CT}$  is negligible.



**Figure S3.** The normal Raman spectra of 4-MBA in the solid state (a), SERS spectrum of 4-MBA adsorbed on TiO<sub>2</sub> at different excitation wavelengths: 325nm (b), 532 nm (c), 633 nm (d), and 785 nm (e), respectively.