

# Gold Nanoparticles Functionalized Artificial Nacre: Facile *In Situ* Growth of Nanoparticles on Montmorillonite Nanosheets, Self-Assembly, and Their Multiple Properties

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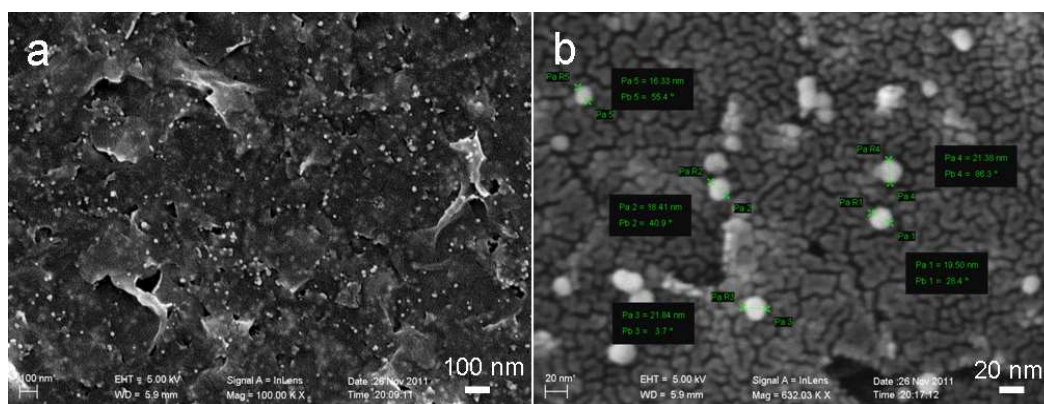


Figure S1. SEM images of Au NPs decorated chitosan-MTM hybrid nanosheets. (a) low magnification. (b) high magnification.

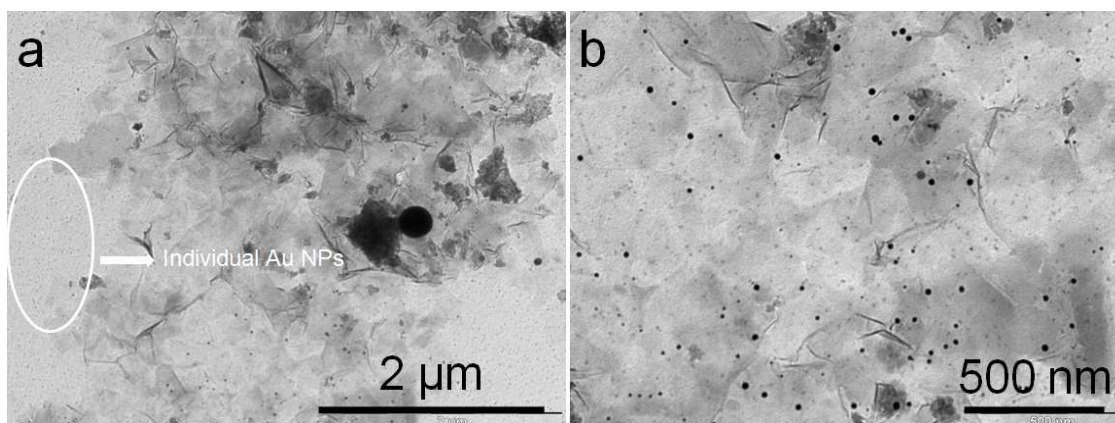


Figure S2. TEM images of the product obtained by control experiment without adding the sodium citrate. (a) low magnification. (b) high magnification.

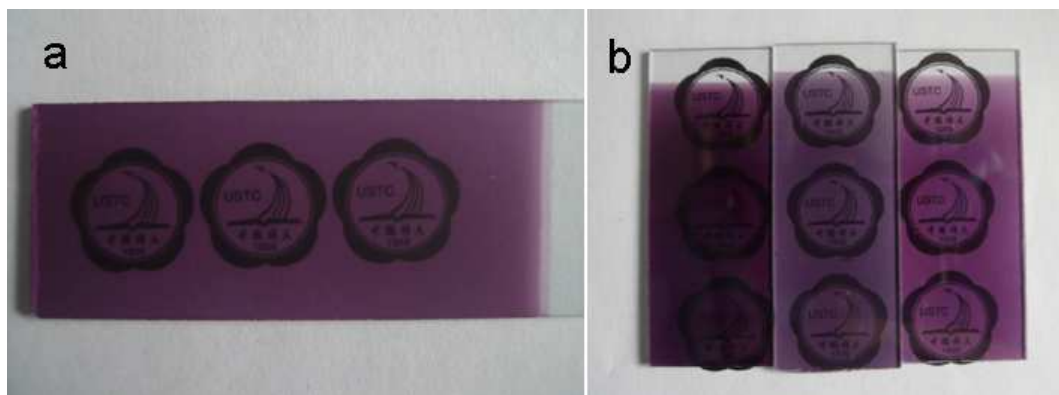


Figure S3. (a) Photograph of typical Au NPs-chitosan-MTM hybrid nanosheets coated glass substrate. (b) Photograph of Au NPs-chitosan-MTM hybrid coatings on glass substrates with different concentrations of Au NPs decorated on MTM nanosheets. From right to left, the concentration of Au NPs increased.

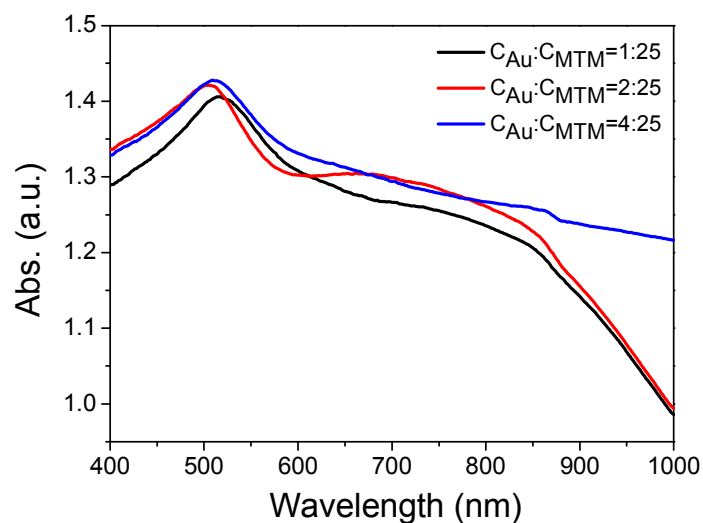


Figure S4. UV-vis spectra of Au NPs-chitosan-MTM hybrid films with different densities of Au NPs on the MTM nanosheets.

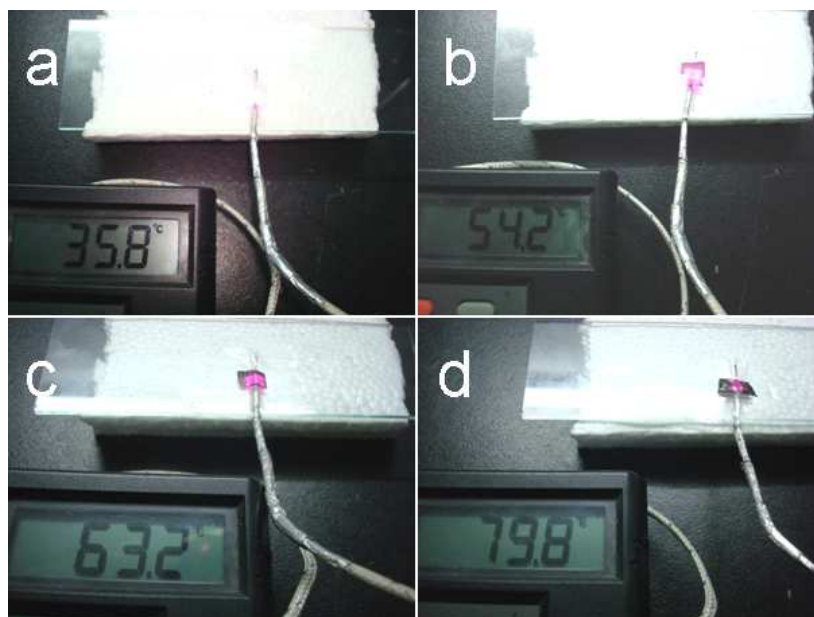


Figure S5. Photos illustrate the measured ultimate temperatures of thermal probes heated by different hybrid films under the irradiation of 808 nm infrared diode laser with power density of  $8 \text{ W} \cdot \text{cm}^{-2}$ . (a) chitosan-MTM hybrid film. (b) Au NPs-chitosan-MTM hybrid film made by  $C_{\text{Au}} : C_{\text{MTM}} = 1:25$ . (c) Au NPs-chitosan-MTM hybrid film made by  $C_{\text{Au}} : C_{\text{MTM}} = 2:25$ . (d) Au NPs-chitosan-MTM hybrid film made by  $C_{\text{Au}} : C_{\text{MTM}} = 4:25$ .