

Electronic supplementary information for

Influence of Semiconductor Morphology on Photocatalytic Activity of Plasmonic Photocatalysts: Titanate Nanowires and Octahedral Anatase Nanoparticles

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Table S1. Structural properties of photocatalysts

Name	Main crystalline form ^a	Crystallite size ^a /nm	BET ^b /m ² g ⁻¹	Morphology (%)
OAP	TiO ₂ (anatase)	17	124	octahedral
TNW	K ₂ Ti ₈ O ₁₇	1.1	360	wire-like
FP-6	TiO ₂ (anatase)	15	97	particle
ST01	TiO ₂ (anatase)	8	298	particle
TIO10	TiO ₂ (anatase)	15	100	particle

^aDetermined by XRD for anatase (OAP, FP-6, ST01 and TIO10) and K₂Ti₈O₁₇ (TNW) forms. ^bSpecific surface area estimated by Brunauer, Emmett and Teller method.

Table S2. Properties of NMs' deposits and photoabsorption properties of NM-modified OAP samples

Titania	NM	Sample color	λ_{\max} ^a (nm)	Predominant crystalline form ^b	Crystal size of zero-valent metal ^b /nm	Crystal size of metal oxide ^b /nm
OAP	Au	violet	544	Au	5.7	-
OAP	Ag	brown-violet	415	Ag ₂ O	7.5	14.6 (Ag ₂ O)
OAP	Pt	grey	405	Pt	5.4	-

^amaximum extinction from DRS. ^bestimated from XRD.

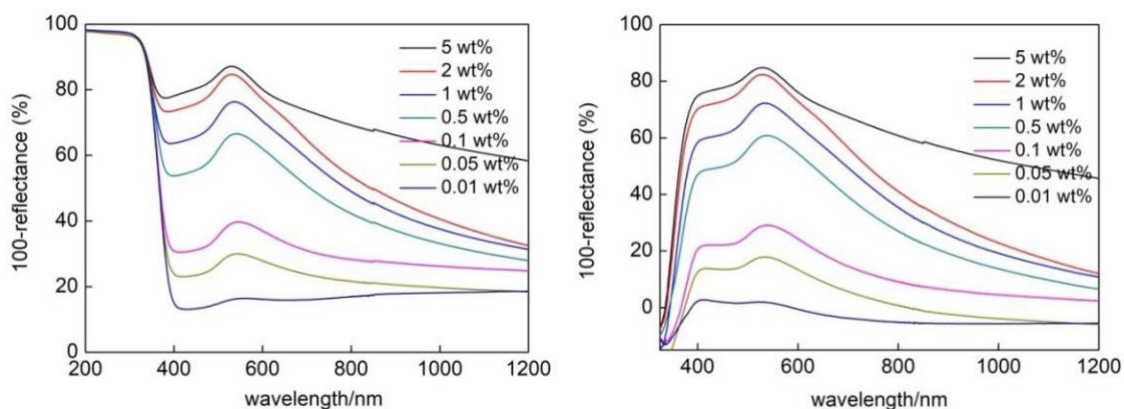


Figure S1. Diffuse reflectance spectra of Au/TNW for different gold content (0.01 to 5 wt%) with BaSO₄ (left) and bare TNW (right) as reference, respectively.

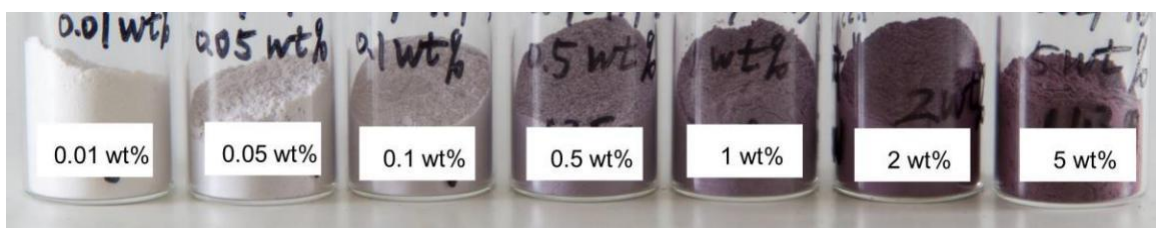


Figure S2. The photographs of the gold-modified TNW samples with different gold contents (from 0.01 wt% to 5 wt%; from the left).

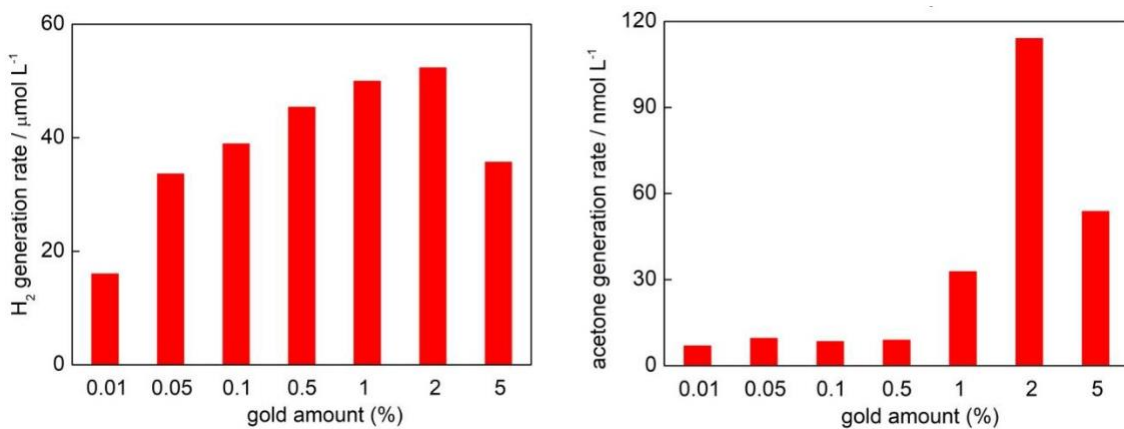


Figure S3. Influence of gold amount (0.01 to 5 wt%) on the TNW photocatalytic activity of H₂ generation under UV/vis irradiation (left) and acetone generation under vis irradiation (right).

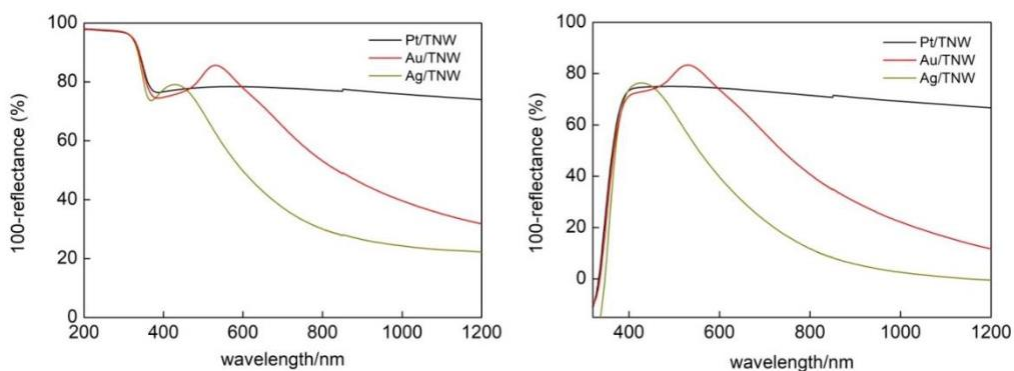


Figure S4. Diffuse reflectance spectra of TNW modified with different metals (Au, Ag and Pt). Spectra taken with BaSO₄ (left) and bare TNW (right) as baseline.

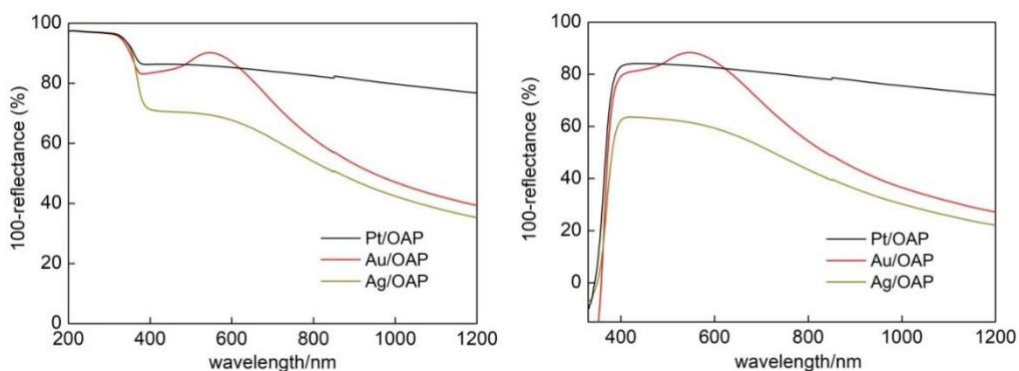


Figure S5. Diffuse reflectance spectra of OAP modified with different metals (Au, Ag and Pt). Spectra taken with BaSO₄ (left) and bare TNW (right) as baseline.

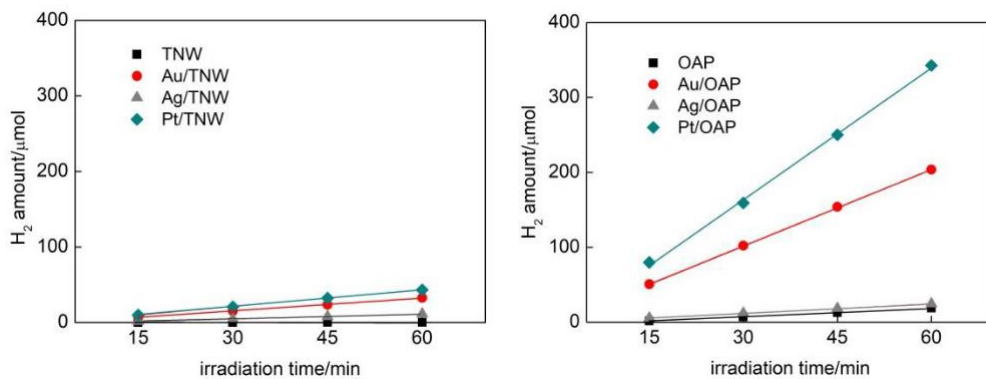


Figure S6. Photocatalytic activity for methanol dehydrogenation on bare and metal-modified TNW (left) and OAP (right).

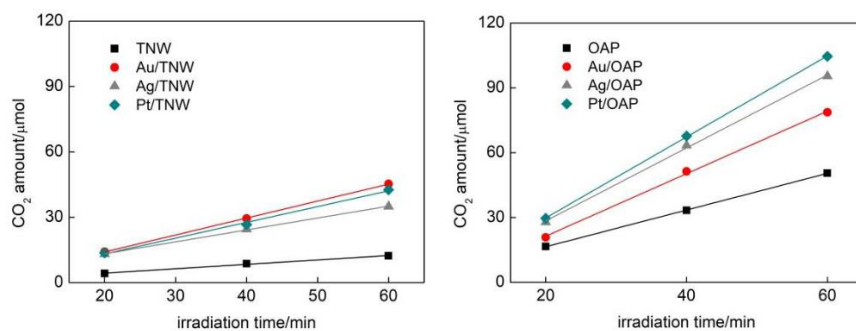


Figure S7. Photocatalytic activity for decomposition of acetic acid on bare and NM-modified TNW (left) and OAP (right).

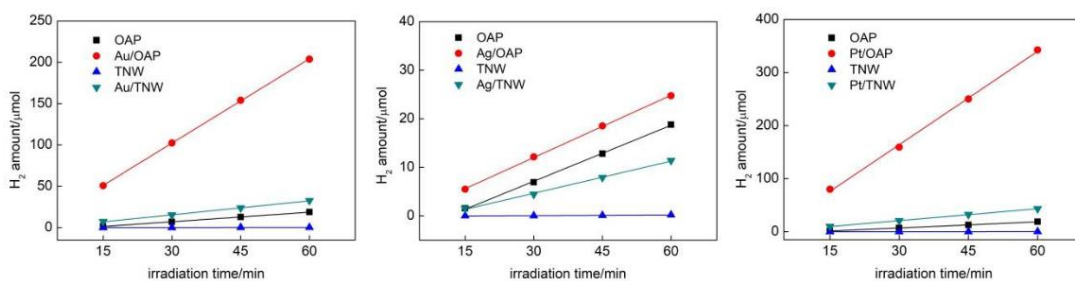


Figure S8. Comparison of photocatalytic activity for methanol dehydrogenation on bare and NM-modified TNW and OAP: (left) Au, (center) Ag, (right) Pt.

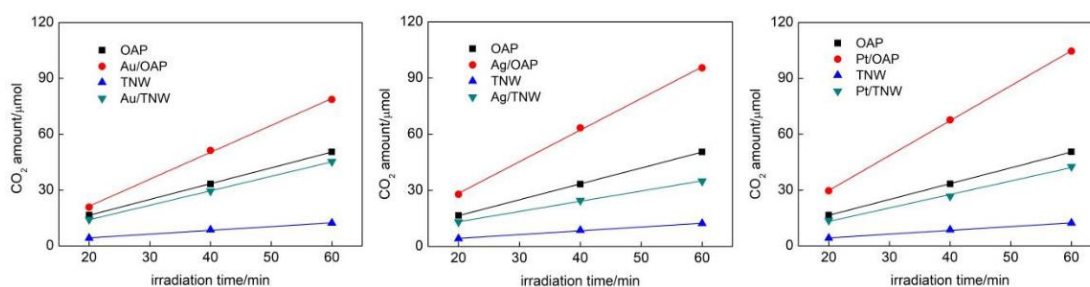


Figure S9. Comparison of photocatalytic activity for decomposition of acetic acid on bare and NM-modified TNW and OAP: (left) Au, (center) Ag, (right) Pt.

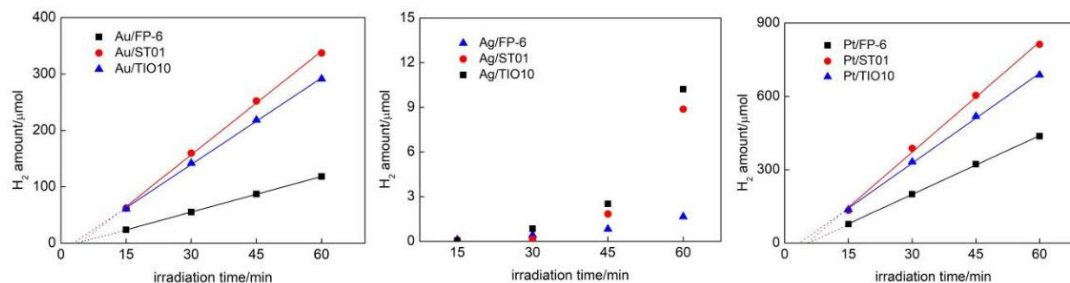


Figure S10. Hydrogen evolution during NM photodeposition on: (left) Au on FP-6, ST01 and TIO10, (center) Ag on FP-6, ST01 and TIO10, (right) Pt on FP-6, ST01 and TIO10.