

Supporting Information

Optimizing plasmonic metal structure for improving the hydrogen production efficiency of metal-organic frameworks

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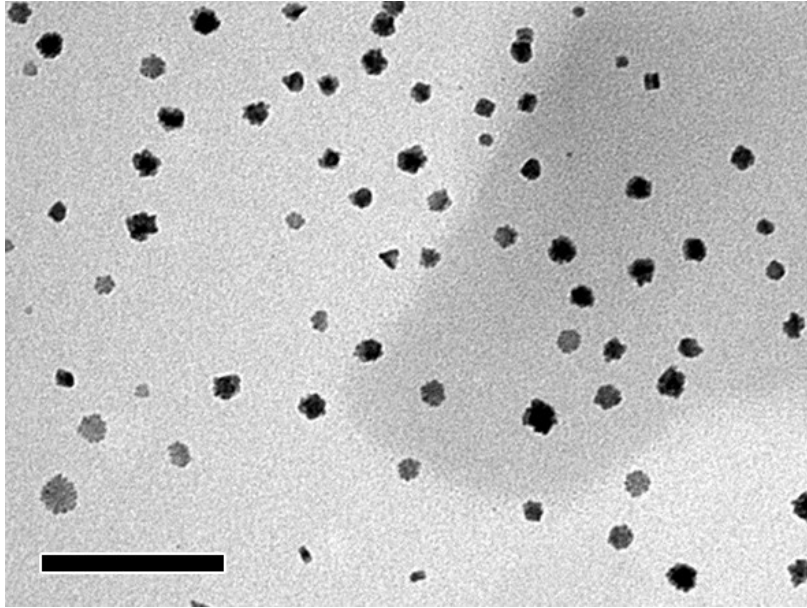


Figure S1. TEM images of Au nanoparticles prepared by reducing the length of Au NR₆₇ with 10 mM HAuCl₄ (3.7 mL). Scale bars: 200 nm.

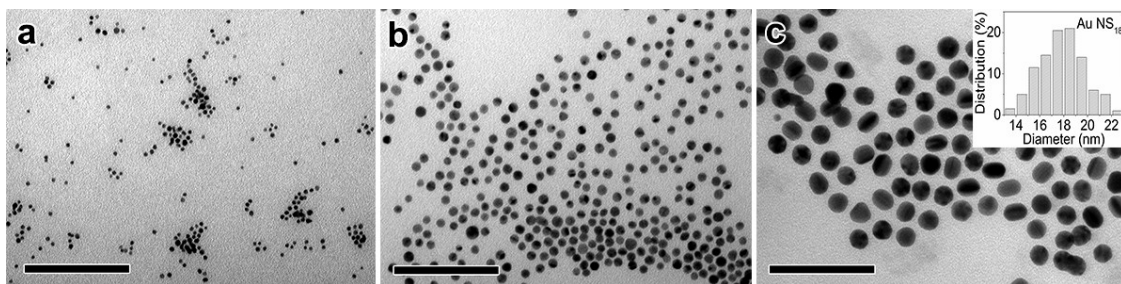


Figure S2. TEM images of (a) seeds A, (b) seeds B and (c) Au NS₁₈ (inset c is size distribution of Au NS₁₈). Scale bars: 100 nm.

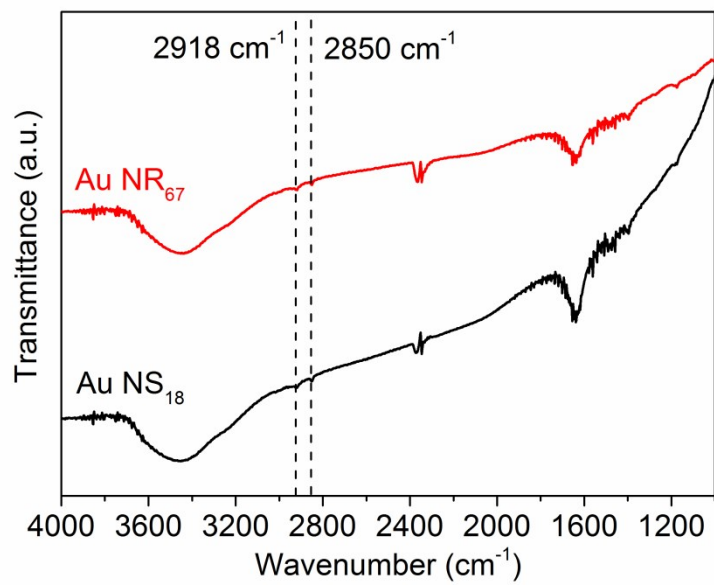


Figure S3. FT-IR spectra of Au NR_{67} and Au NS_{18} .

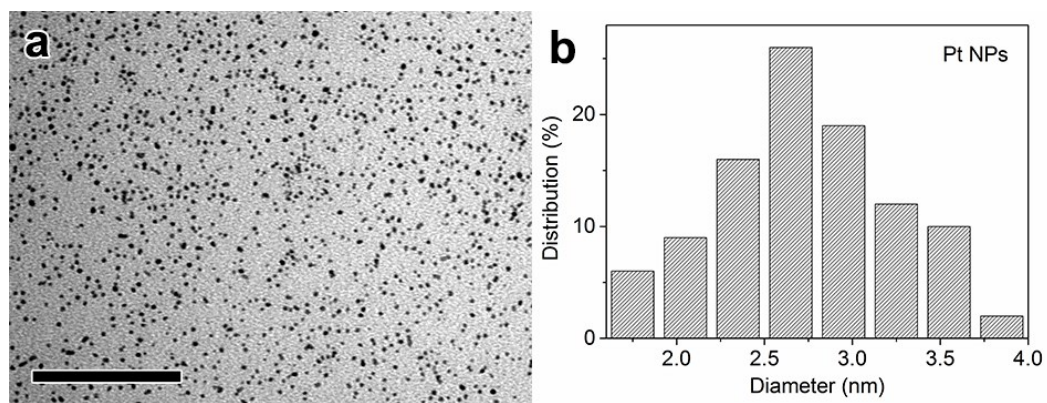


Figure S4. (a) TEM images of Pt NPs and (b) size distribution of Pt NPs. Scale bars: 100 nm.

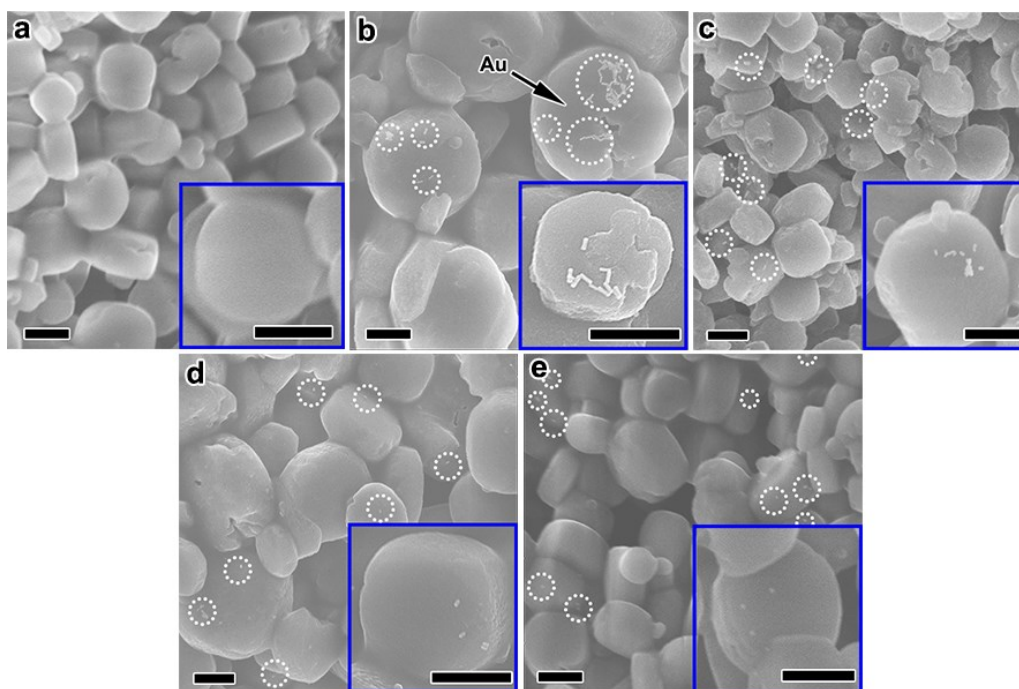


Figure S5. SEM images of as-prepared samples. (a) Pt@MIL-125, (b) Pt@MIL-125/Au NR₆₇, (c) Pt@MIL-125/Au NR₅₂, (d) Pt@MIL-125/Au NR₃₈ and (e) Pt@MIL-125/Au NS₁₈. Scale bars: 500 nm. Insets are the corresponding single particle of each sample.

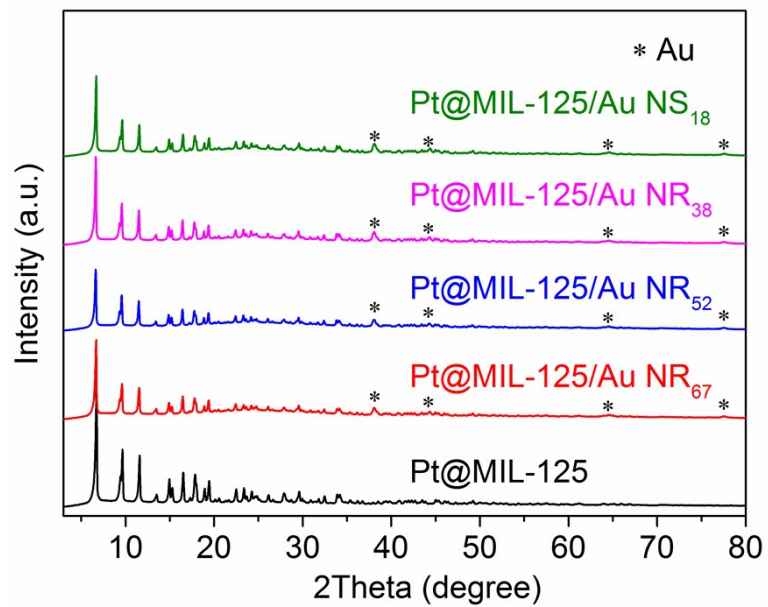


Figure S6. Powder XRD patterns of Pt@MIL-125, Pt@MIL-125/Au NR₆₇, Pt@MIL-125/Au NR₅₂, Pt@MIL-125/Au NR₃₈ and Pt@MIL-125/Au NS₁₈.

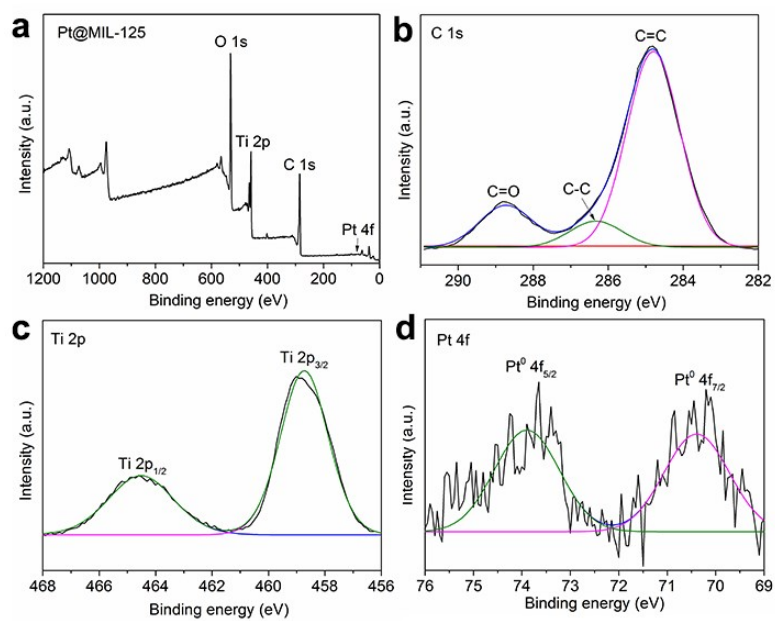


Figure S7. The XPS spectra for (a) wide scan, (b) C 1s, (c) Ti 2p and (d) Pt 4f of Pt@MIL-

125, no Au element can be detected.

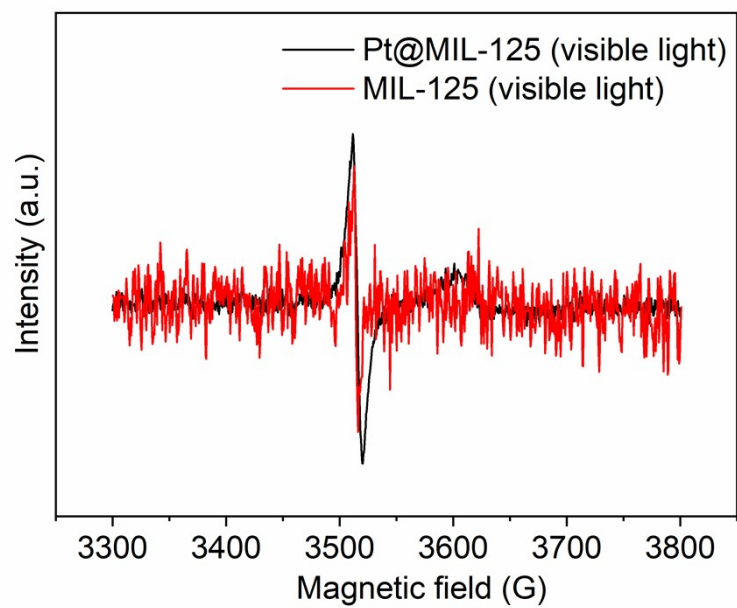


Figure S8. ESR spectra of Pt@MIL-125 and MIL-125 observed under visible light irradiation (> 420 nm) for 600 s.

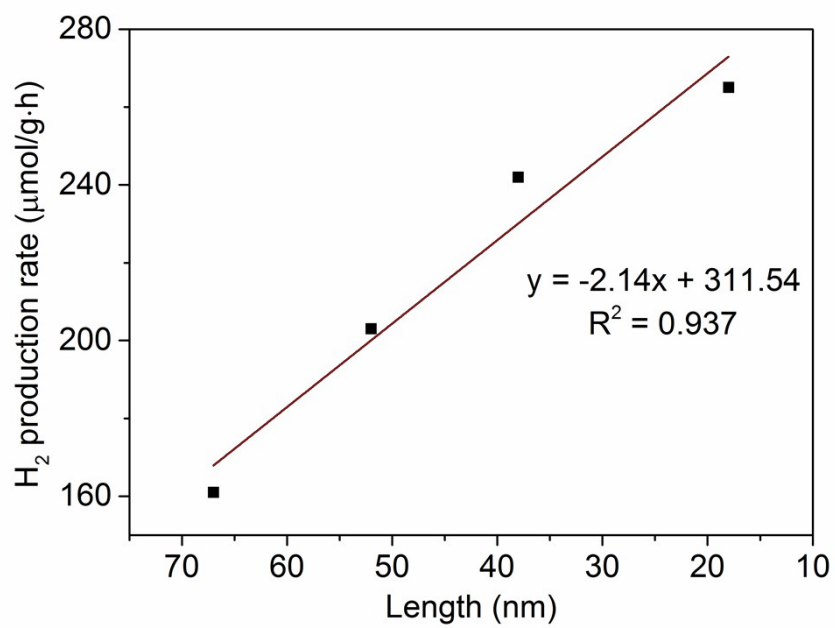


Figure S9. The relationship between the length of rod and H₂ generation performance of

Pt@MIL-125/Au samples.

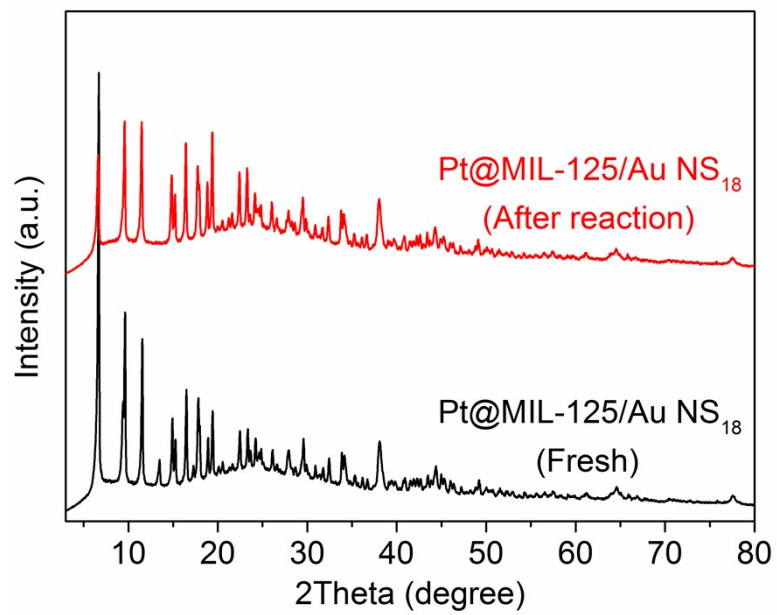


Figure S10. Powder XRD patterns of Pt@MIL-125/Au NS₁₈ before and after 4 cycles.