

Supporting Information: Pt Deposites on TiO₂ for Photocatalytic H₂ Evolution: Pt is not only the Cocatalyst, but also the Defect Repair Agent

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Table S1. Content, surface area, XPS information of samples. .

Catalysts	Surface area (m ² /g)	Pt content (%)	O/Ti atomic concentration ratio (a.u.)	O _c +O _v /O _L (%)
TiO ₂	100.9	0	2.84	6.4
TiO ₂ -A	100.6	0	2.54	23.4
TiO ₂ -Pt ⁰ -A	93.8	0.59	2.31	18.4
TiO ₂ -PtCl ₆ ²⁻ -A	100.9	0.66	2.63	10.6
TiO ₂ -Pt ⁴⁺ -A	100.3	0.62	2.64	15.0

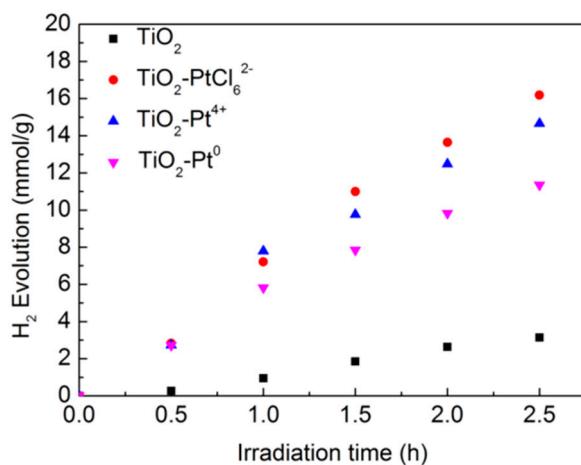


Figure S1. Hydrogen evolution of TiO_2 , $\text{TiO}_2\text{-Pt}^0$, $\text{TiO}_2\text{-PtCl}_6^{2-}$ and $\text{TiO}_2\text{-Pt}^{4+}$.

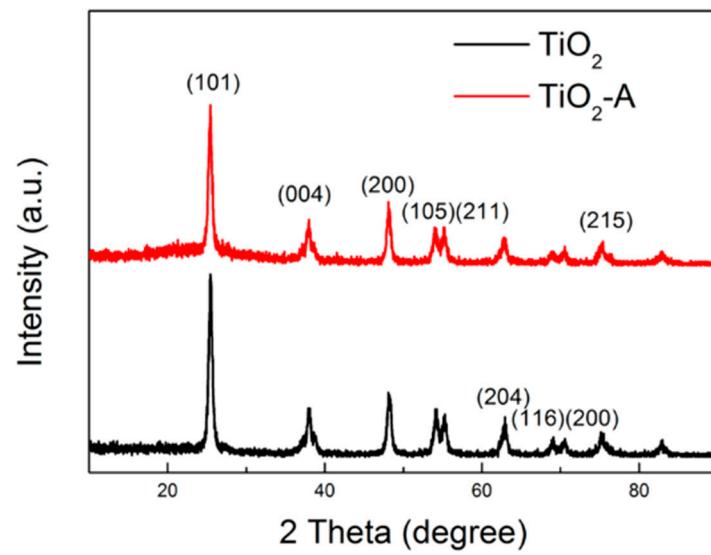


Figure S2. XRD patterns of TiO_2 and $\text{TiO}_2\text{-A}$.

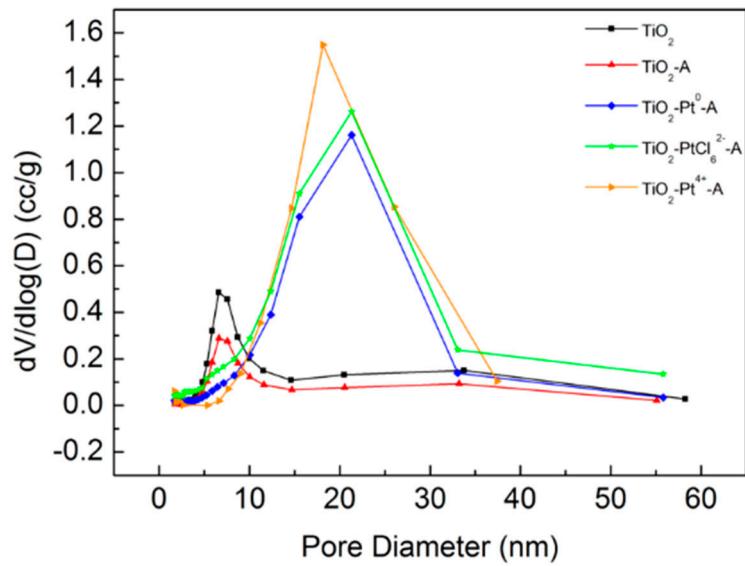


Figure S3. BJH pore size distribution of catalysts.

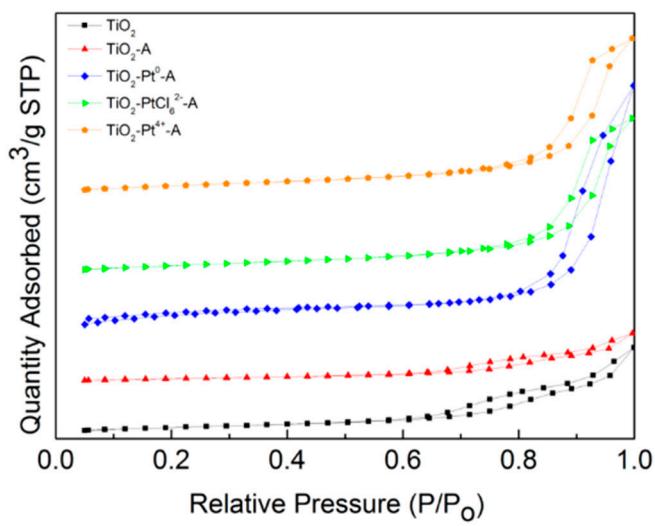


Figure S4. N₂-sorption isotherm linear plot of the used Pt/TiO₂ samples via three different Pt sources.

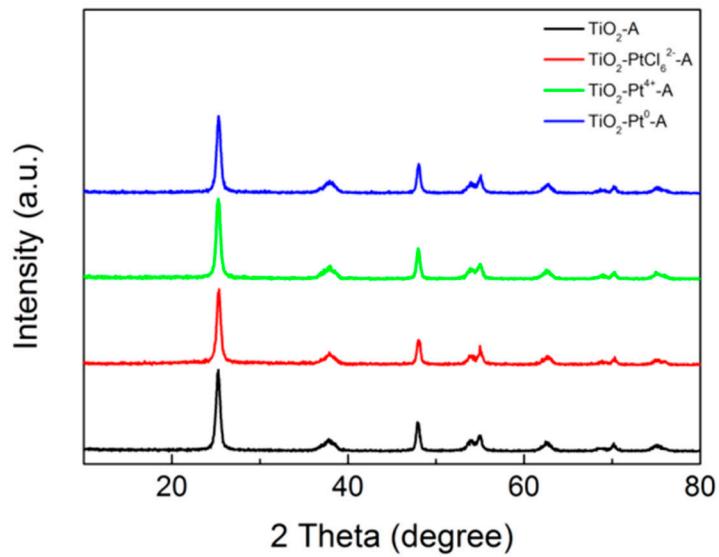


Figure S5. XRD patterns of the used Pt/TiO₂ samples via three different Pt sources.

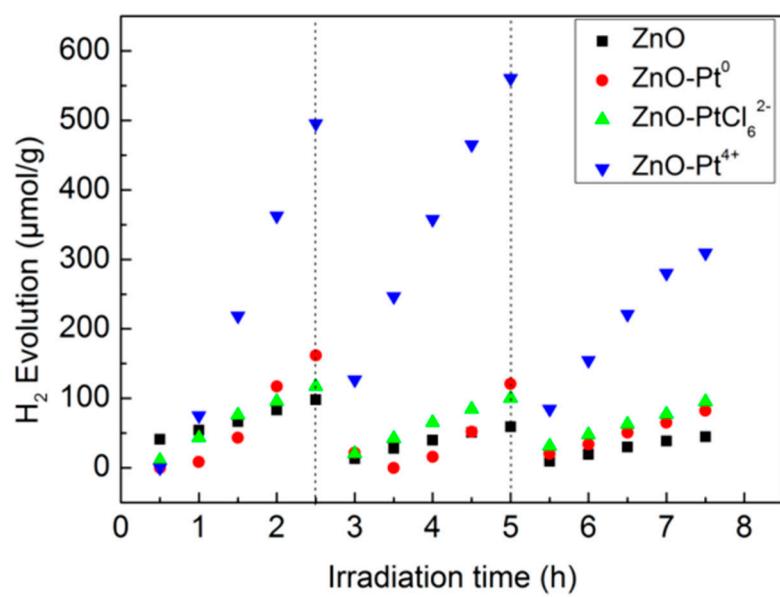


Figure S6. Recycle experiments on H₂ evolution of ZnO, ZnO-Pt⁰, ZnO-PtCl₆²⁻ and ZnO-Pt⁴⁺.



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