Supplementary Information

Photocatalytic H₂ production on trititanate nanotubes coupled with CdS and platinum nanoparticles under visible light: Revisiting H₂ production and material durability

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Fig. S1. Lattice spacings and TEM image of TNTs.
Fig. S2. (a) Electron image and (b and c) EDS analysis of Pt/CdS/TNTs sample. O and S were shown in b and c, respectively.
Fig. S3. XPS analyses of O1s for (a) Pt-2/CdS/TNTs and (b) Pt-0.5/CdS/TiO$_2$ before and after photocatalytic H$_2$ productions for 6 and 12 h.

Two major contributors to the O1s spectra were found: a major fraction of crystal lattice oxygen at 530 eV and a small fraction of surface-adsorbed hydroxyl groups (>Ti-OH) at 532 eV.\textsuperscript{2,3} The surface hydroxyl groups are known to be a source of reactive oxygen species.\textsuperscript{3,4} Obviously the fraction of >Ti-OH on Pt/CdS/TiO$_2$ increased with reaction time, whereas its fraction on Pt/CdS/TNTs decreased with time.