Supporting Information

Nano Anatase TiO_2 Quasi-Core−Shell Homophase Junction Induced by a Ti^{3+} Concentration Difference for Highly Efficient Hydrogen Evolution

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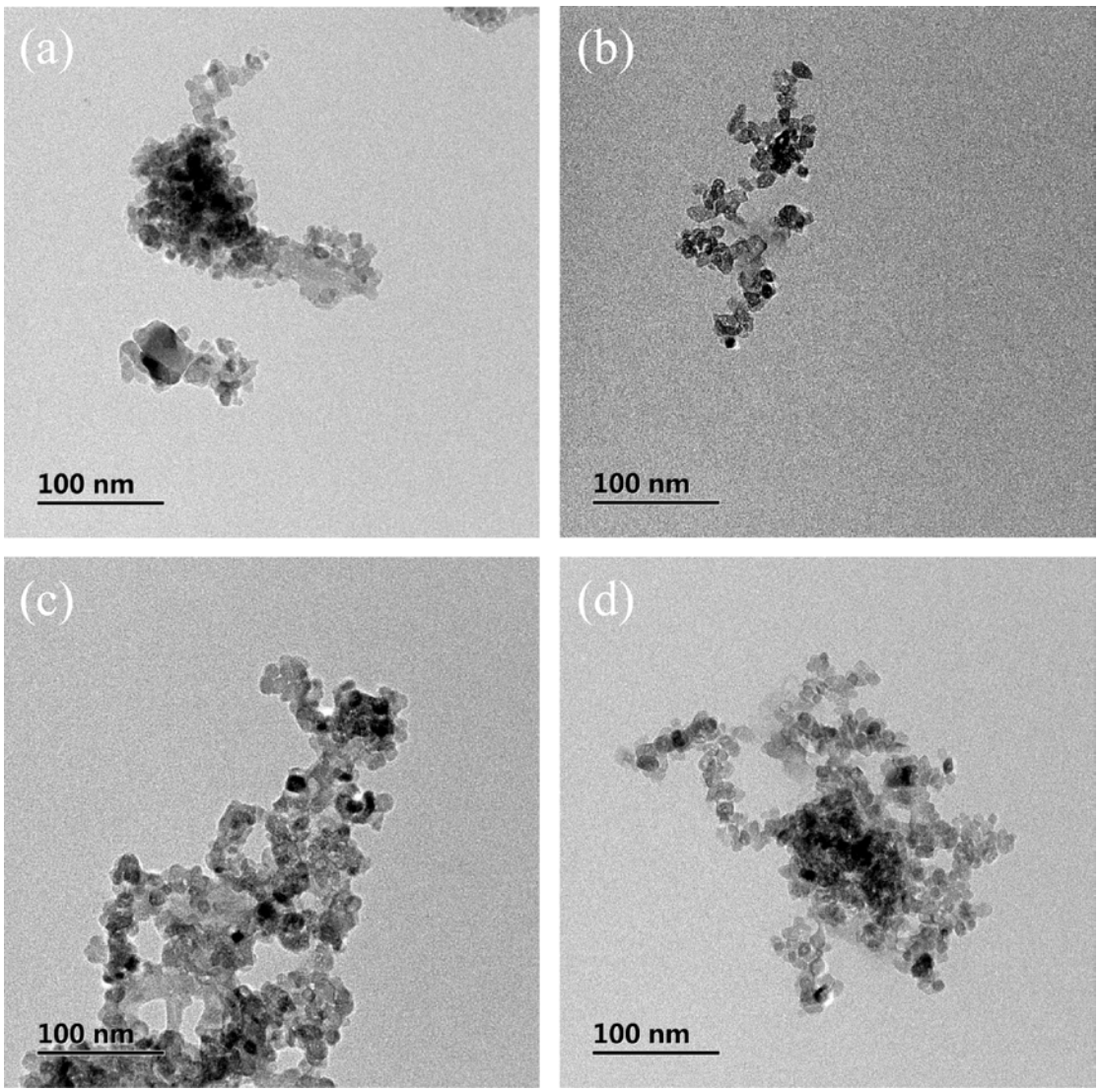

Figure S1 TEM images of (a) TiO_2-1:1, (b) TiO_2-1:2, (c) TiO_2-1:3, and (d) TiO_2-1:4.

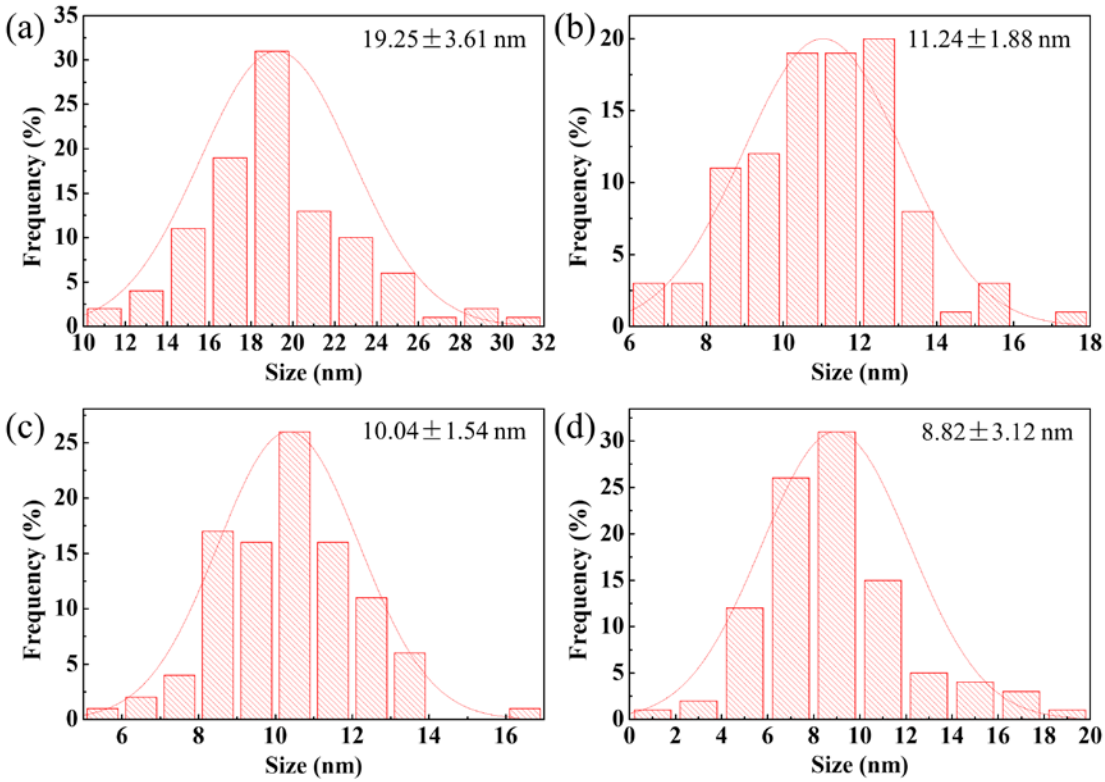

Figure S2 Size distributions of (a) TiO_2-1:1, (b) TiO_2-1:2, (c) TiO_2-1:3, and (d) TiO_2-1:4.

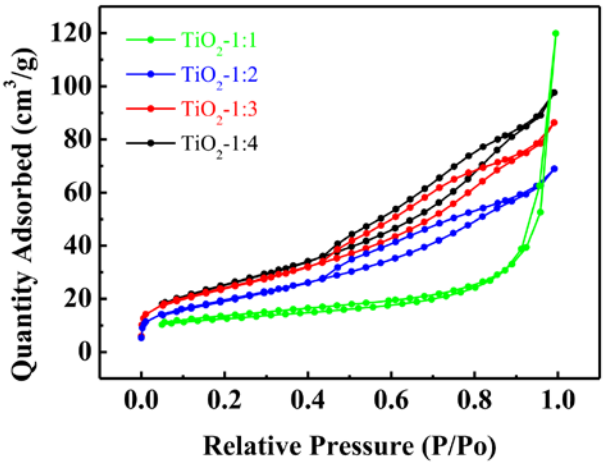

Figure S3 Nitrogen adsorption−desorption isotherms of as-prepared catalysts.

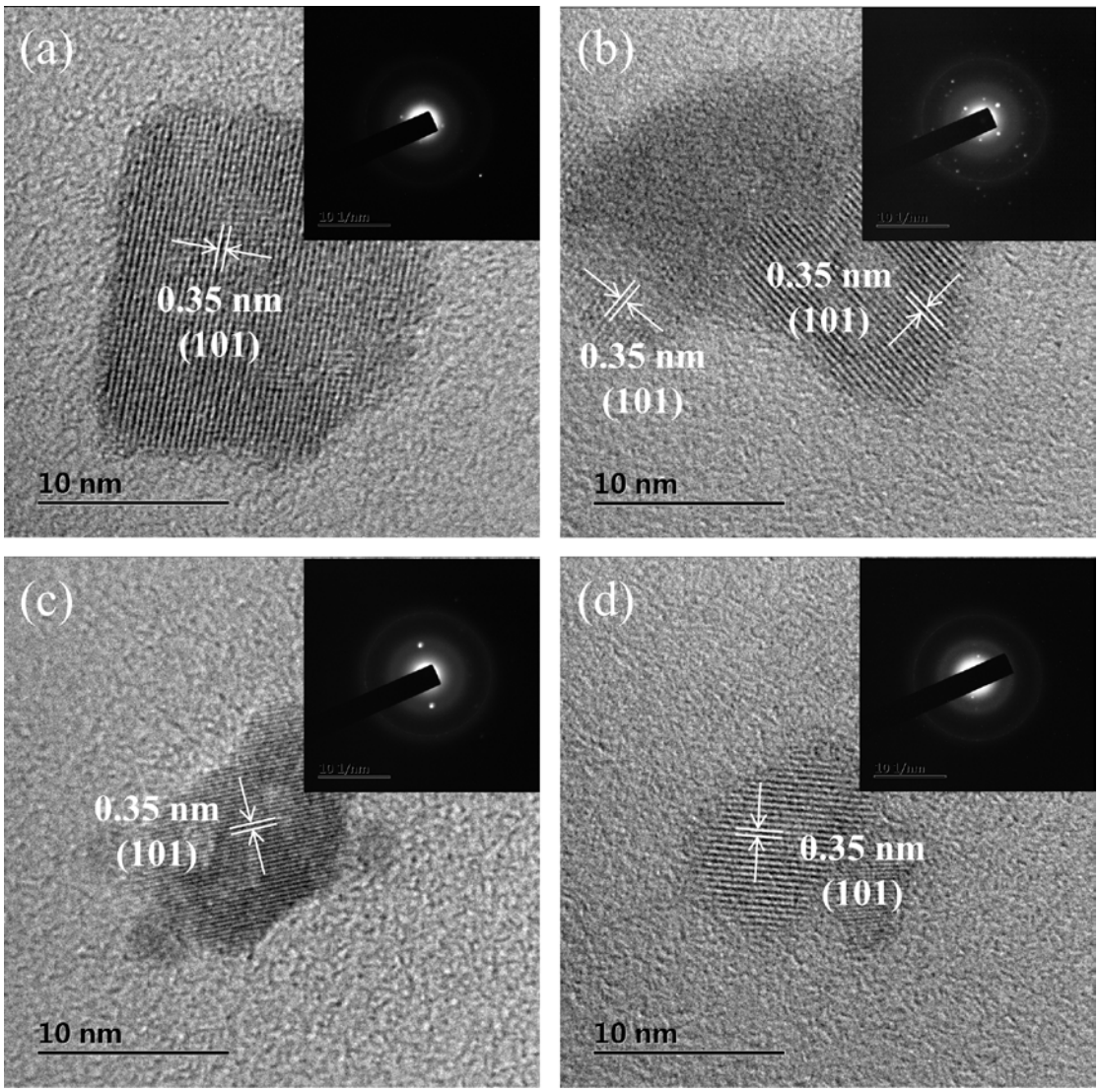

Figure S4 HRTEM images and the corresponding SAED patterns over a single nanocrystal of (a) TiO_2-1:1, (b) TiO_2-1:2, (c) TiO_2-1:3, and (d) TiO_2-1:4.

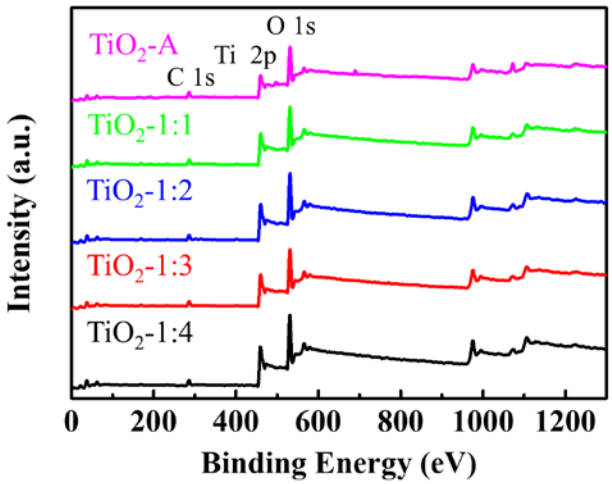

Figure S5 XPS survey of as-prepared catalysts and TiO_2-A.

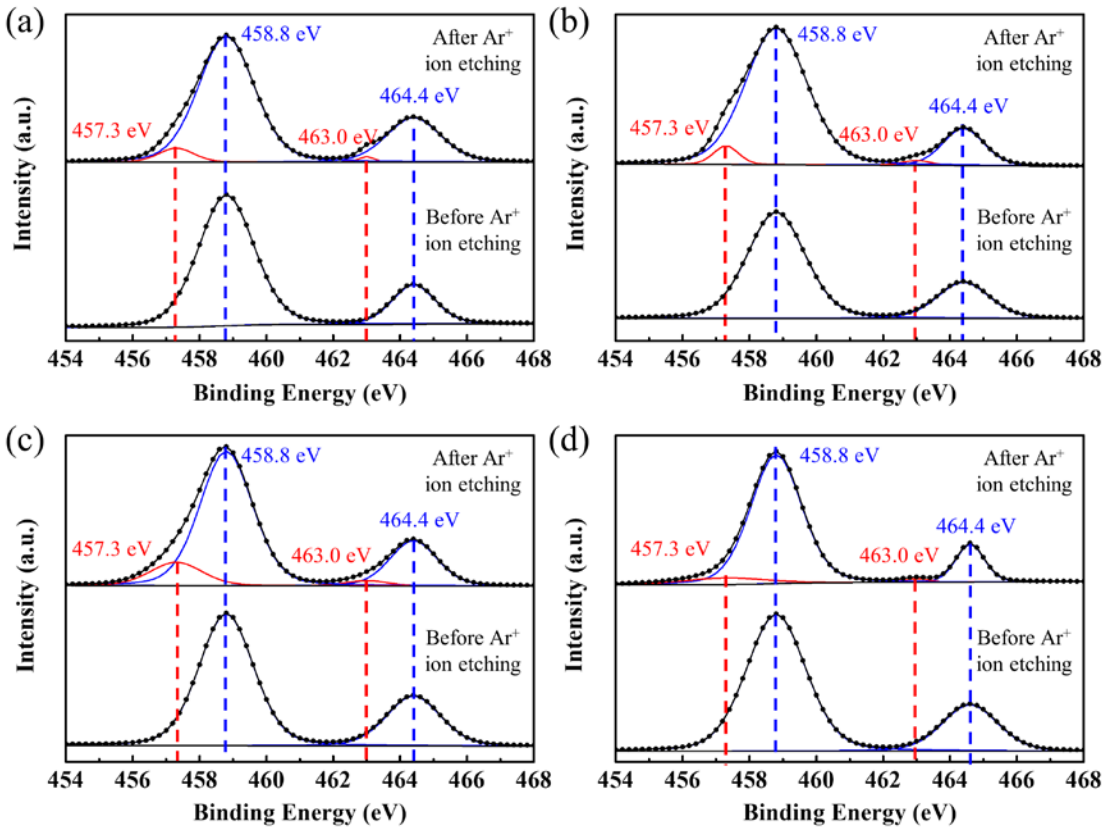

Figure S6 Ti 2p XPS spectra of (a) TiO_2-1:1, (b) TiO_2-1:2, (c) TiO_2-1:3, and (d) TiO_2-1:4 before and after 60 s Ar^+ ion etching. The red and blue dash lines are corresponded to the Ti^{3+} and Ti^{4+} 2p peaks, respectively.

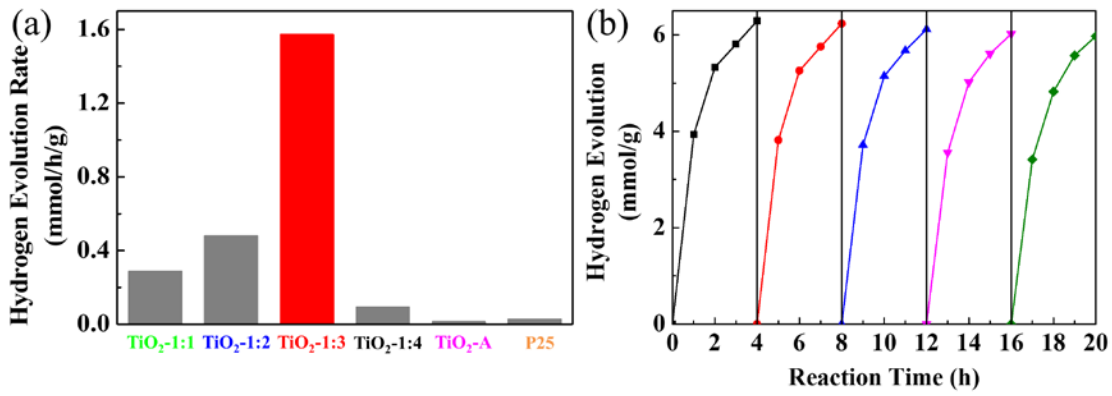

Figure S7 (a) Solar-light-driven photocatalytic water splitting for H_2 generation over as-prepared catalysts, TiO_2-A and P25 without Pt. (b) Cycling measurement of hydrogen generation over TiO_2-1:3 without Pt under solar illumination.

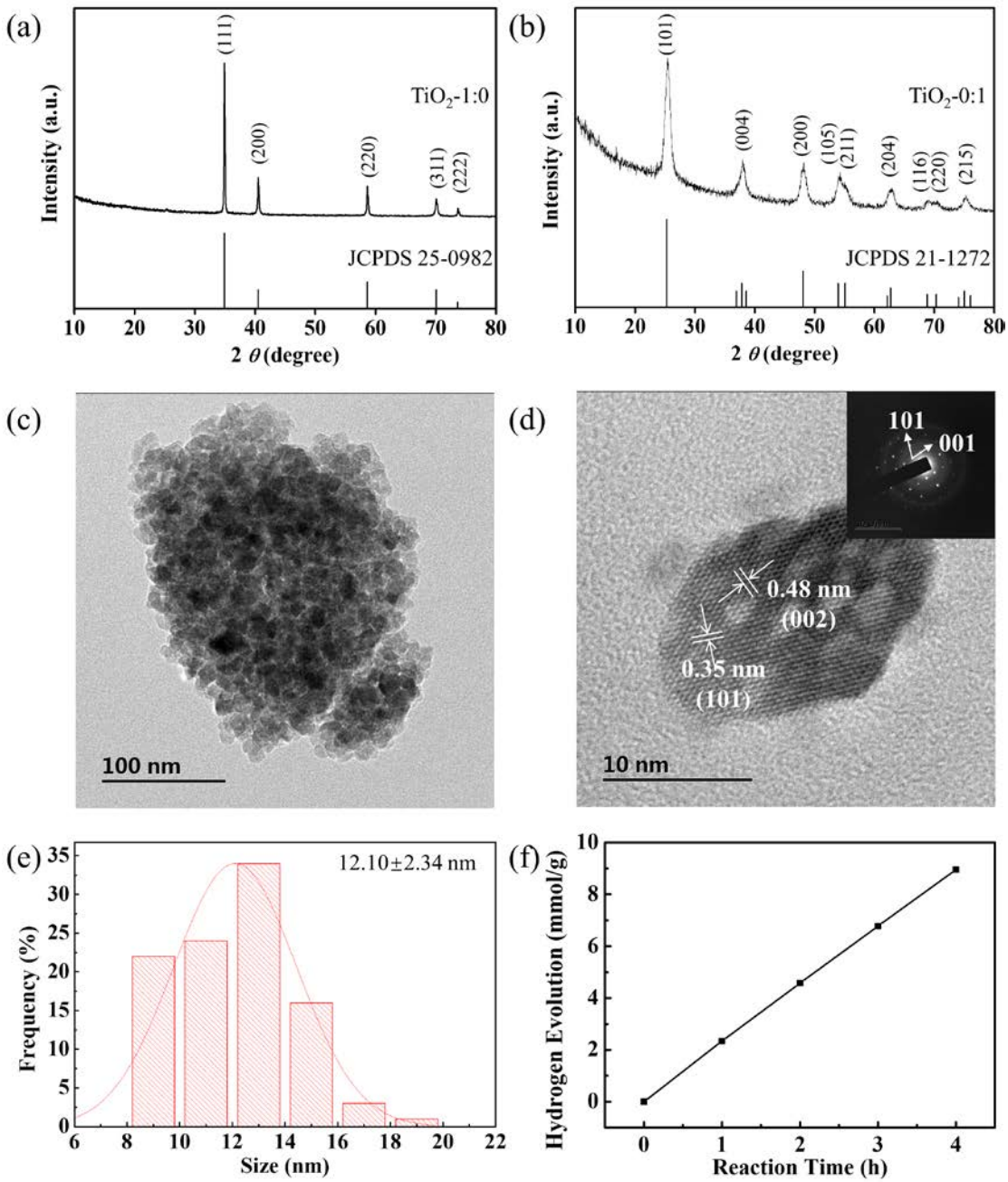

Figure S8 (a) XRD pattern of TiO_2-1:0 and the characteristic diffraction peaks of standard TiH_2 (JCPDS no. 25-0982). (b) XRD pattern of TiO_2-0:1 and the characteristic diffraction peaks of standard anatase titania (JCPDS no. 21-1272). (c) TEM image, (d) HRTEM image and the corresponding SAED pattern, (e) size distribution of TiO_2-0:1. (f) Solar-light-driven photocatalytic H_2 evolution performance over Pt loaded TiO_2-0:1.

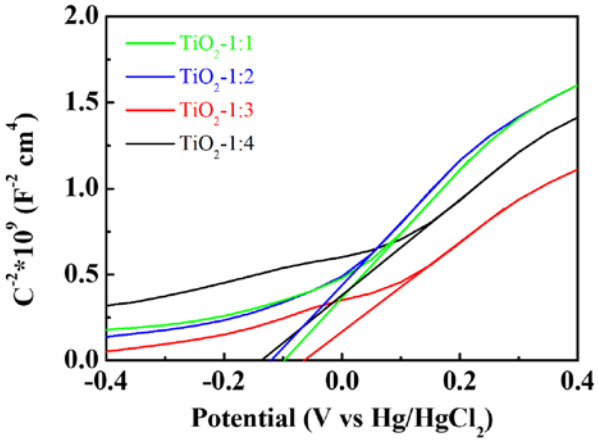

Figure S9 Mott−Schottky plots of the catalysts collected at a frequency of 1 kHz in the dark.