Supplementary Information of

Hydrogenated Blue Titania with High Solar Absorption and Greatly Improved Photocatalysis

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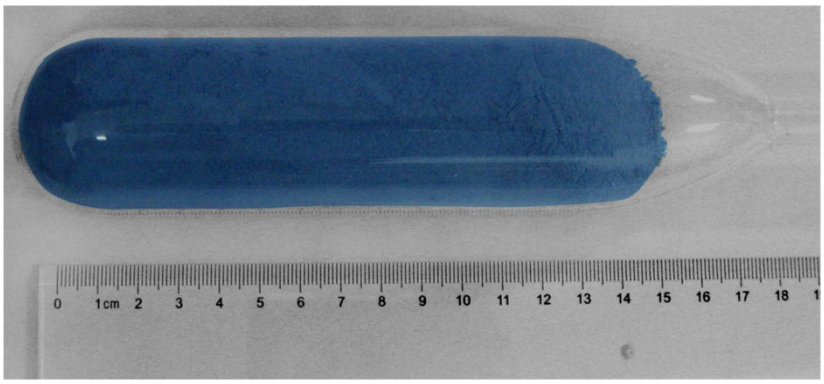

Fig. S1 Large scale preparation of hydrogenated blue titania (TiO_{2-x}:H) using our TiH_2-reduction method.

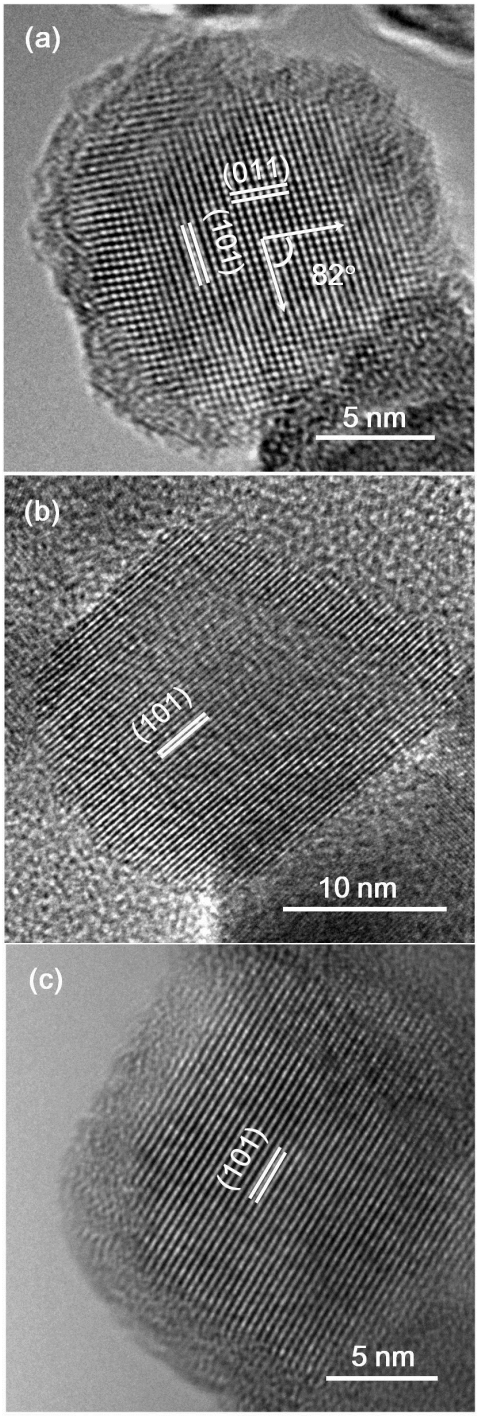

Fig. S2 HRTEM image of (a) freshly unwashed TiO_{2-x}:H, (b) washed TiO_{2-x}:H and (c) annealed TiO_{2-x}:H.

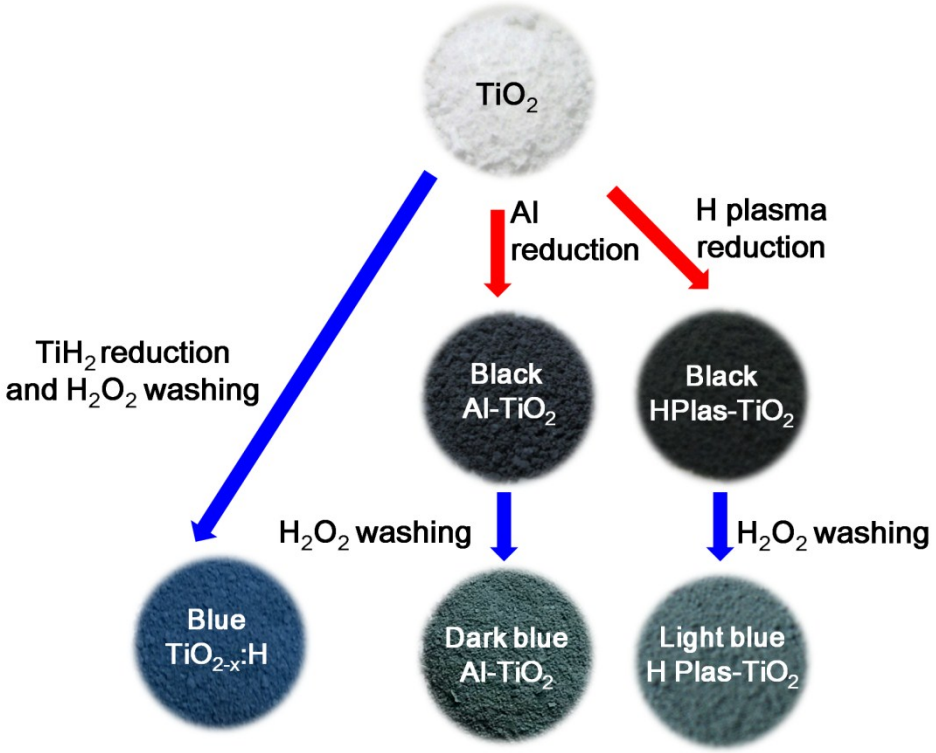

Fig. S3 The photographs of pristine P25 TiO_2, oxygen deficient TiO_2 by aluminium reduction (black Al-TiO_2 and dark blue Al-TiO2 by H_2O_2 washing), hydrogenated TiO_2 by H plasma method (black H Plas-TiO_2 and dark blue H Plas-TiO_2 by H_2O_2 washing), and hydrogenated blue TiO_2 by TiH_2 reduction (TiO_{2-x}:H).

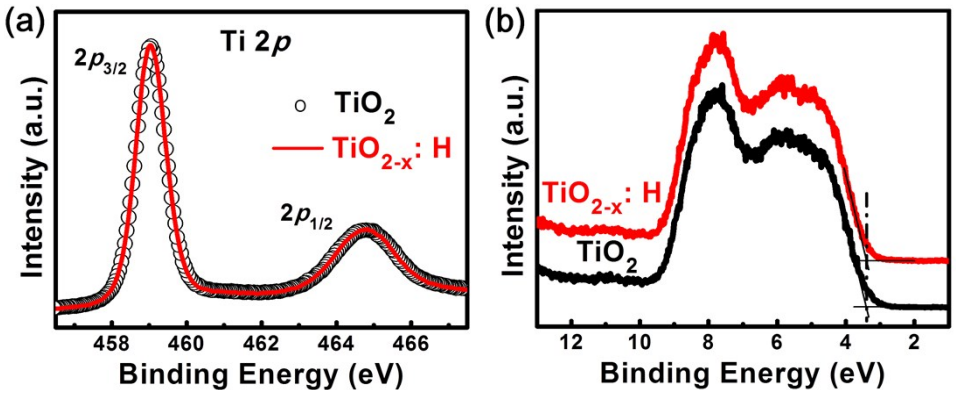

Fig. S4 (a) Ti 2p XPS spectra and (b) XPS valence band spectra of pristine TiO_2 and TiO_{2-x}:H.

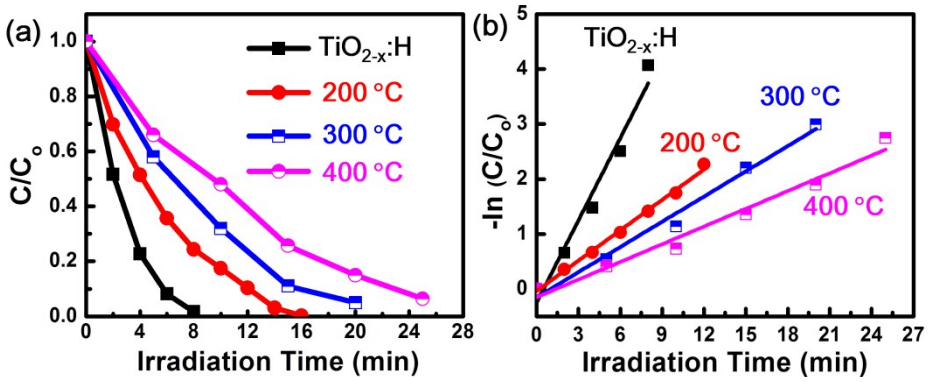

Fig. S5 (a) Solar-light driven photocatalytic decomposition of methyl orange, (b) $\ln(C/C_0)$ of the MO concentration as a function of UV light irradiation time of TiO_{2-x}:H and annealed TiO_{2-x}:H at 200 °C, 300 °C and 400 °C, respectively.