Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Ti_2O_3/TiO_2 heterophase junction with enhanced charge separation and spatially separated active sites for photocatalytic CO_2 reduction

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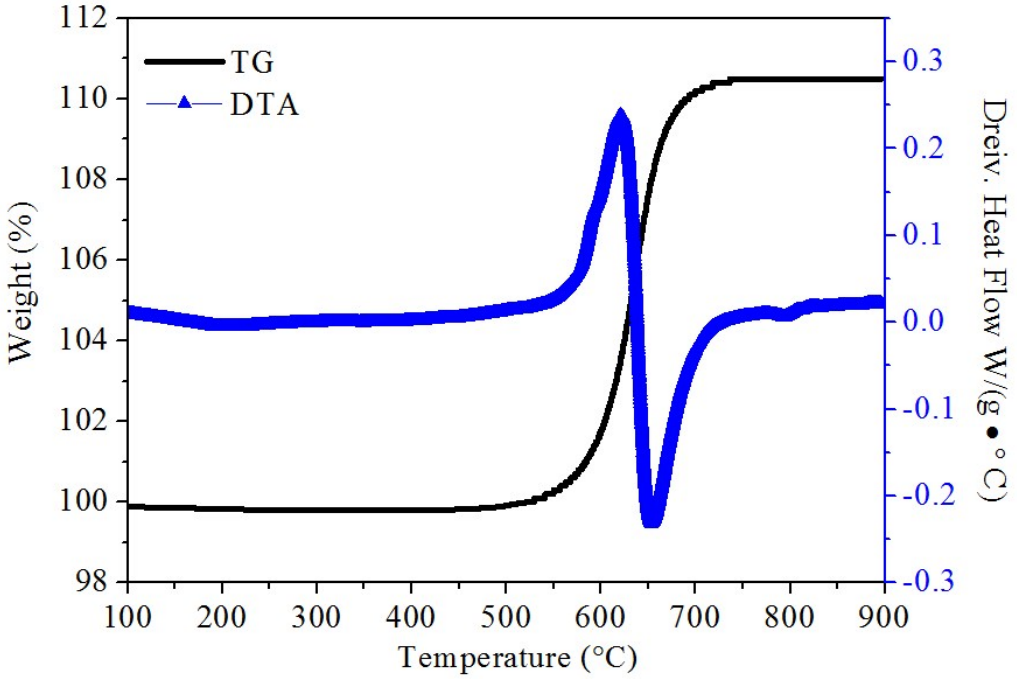

Figure S1 TG curve of Ti_2O_3.

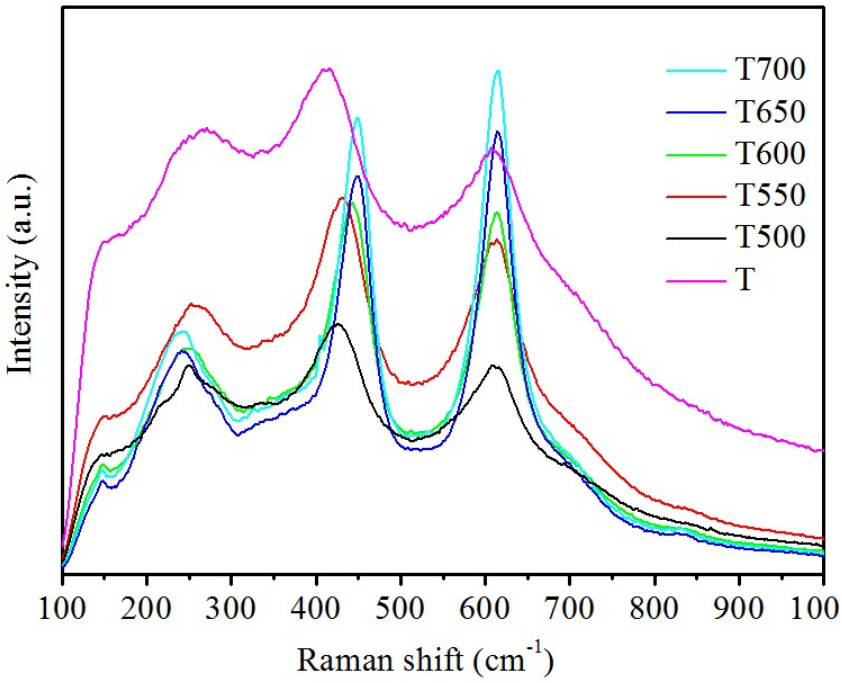

Figure S2 Raman curve of Ti_2O_3 (T) and Ti_2O_3/TiO_2 nanocomposites.

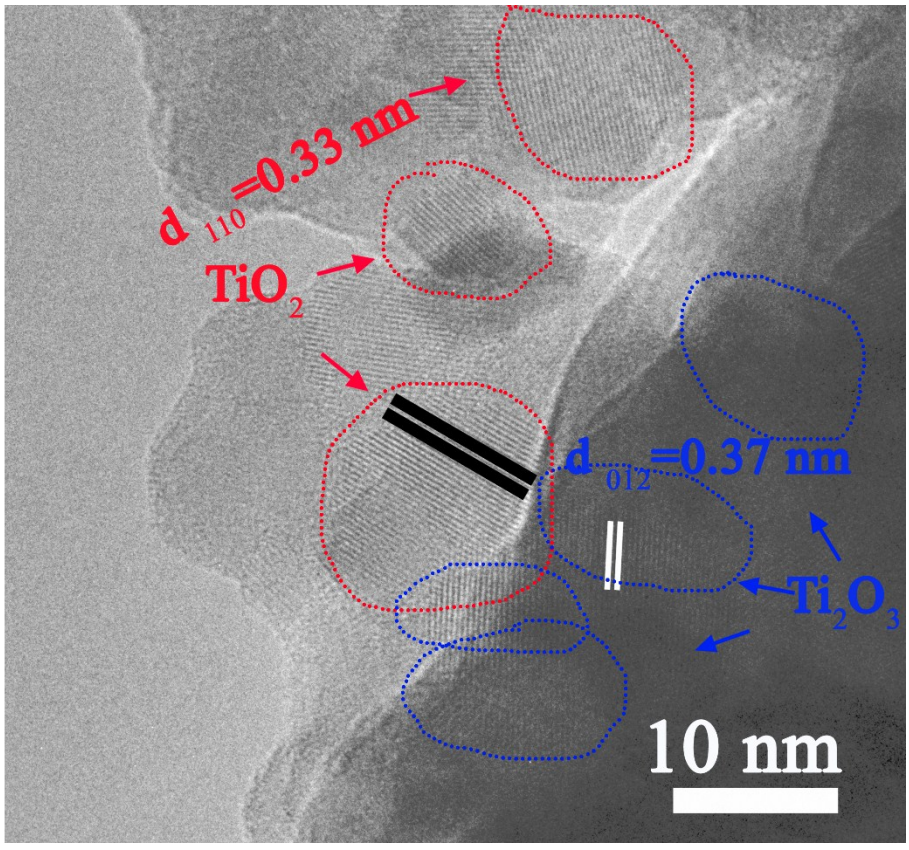

Figure S3 HRTEM image of T550.

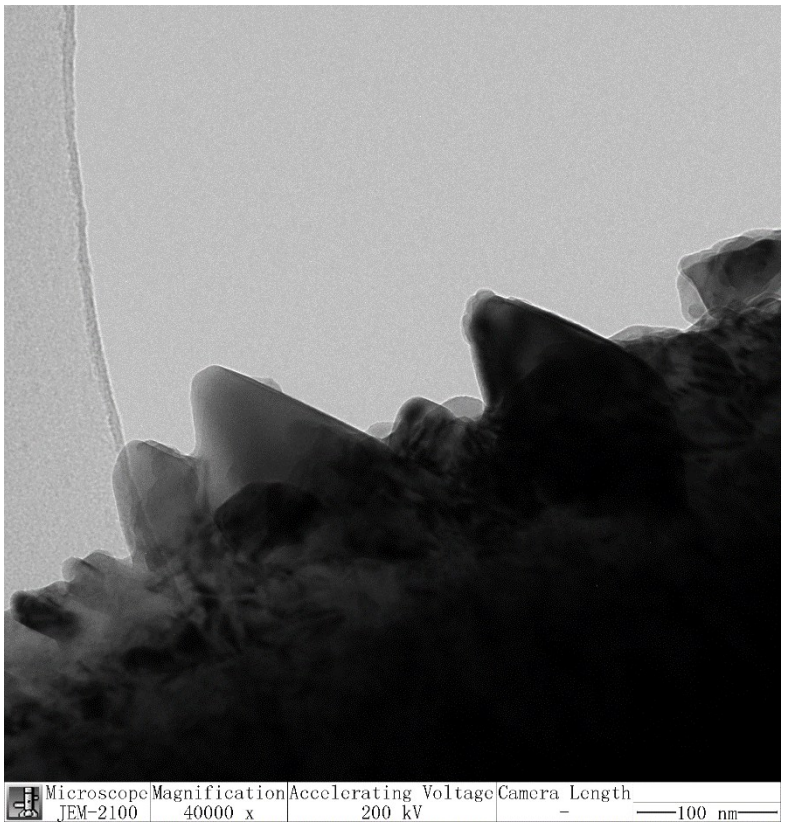

Figure S4 TEM of T700.

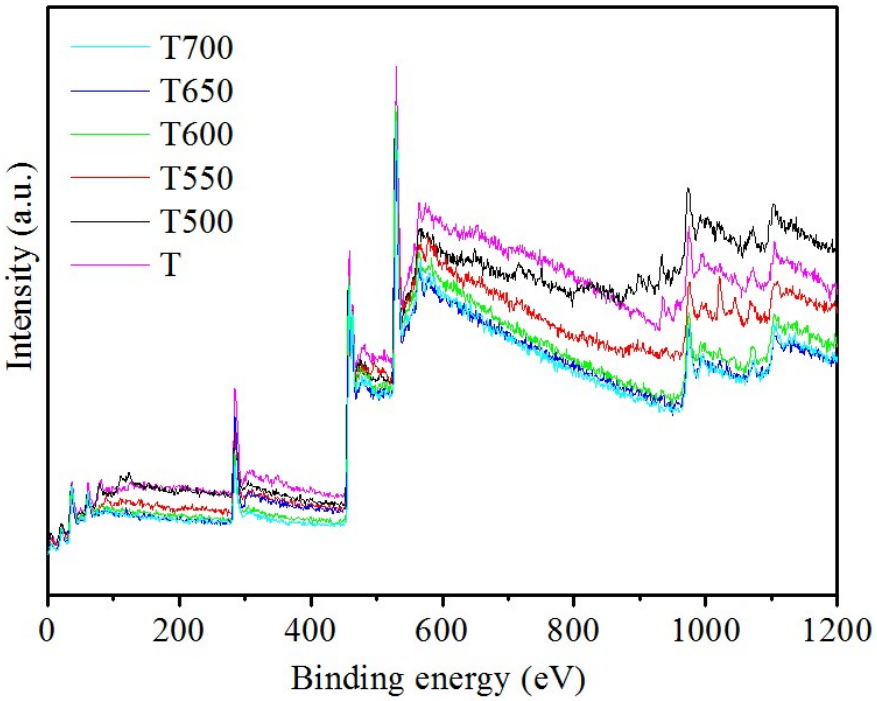

Figure S5 Wide XPS of Ti_2O_3 (T) and Ti_2O_3/TiO_2 nanocomposites.

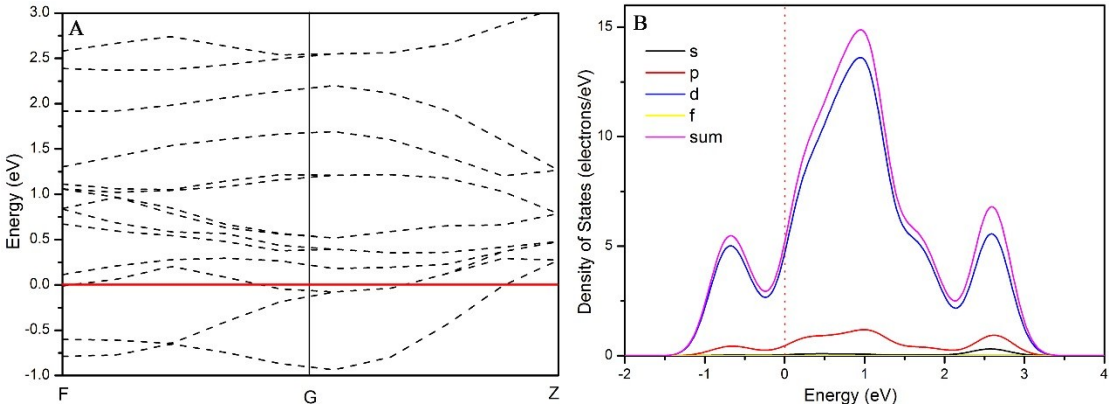

Figure S6 Band gap and partial density of states of Ti_2O_3. The calculations were performed within the framework of density functional theory (DFT) framework embedded in the CASTEP code. The exchange-correlation energy is treated with generalized gradient approximation (GGA), using spin-polarized Perdew-Burke-Ernzerhof (PBE) functional.

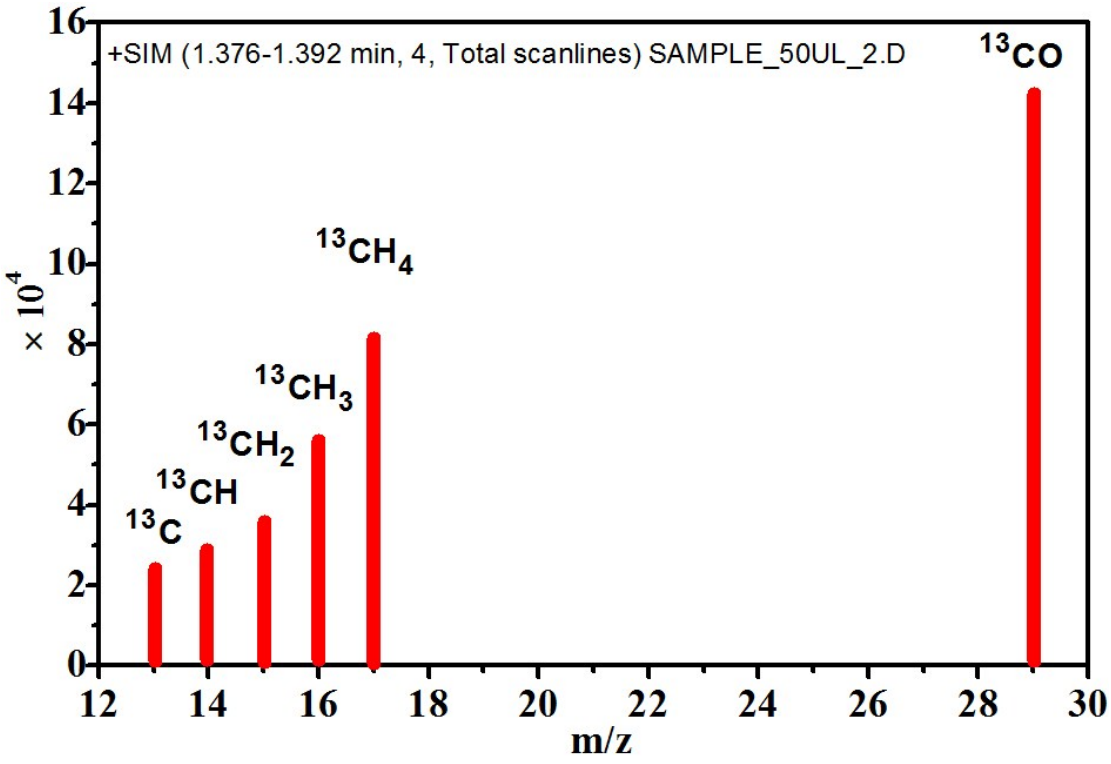

Figure S7 Mass spectra analyses of the carbon source of the evolved CH_4 and CO in the photocatalytic reduction of $^{13}CO_2$.

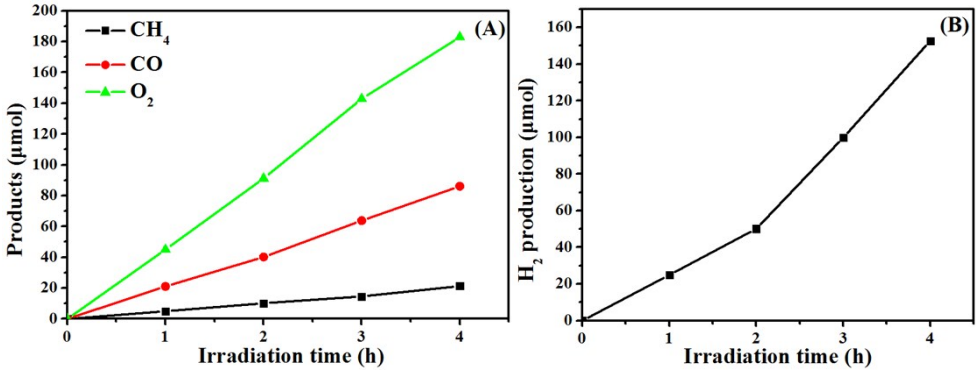

Figure S8 Amount of products versus irradiation time of T550 for photocatalytic CO_2 reduction and H_2 production.

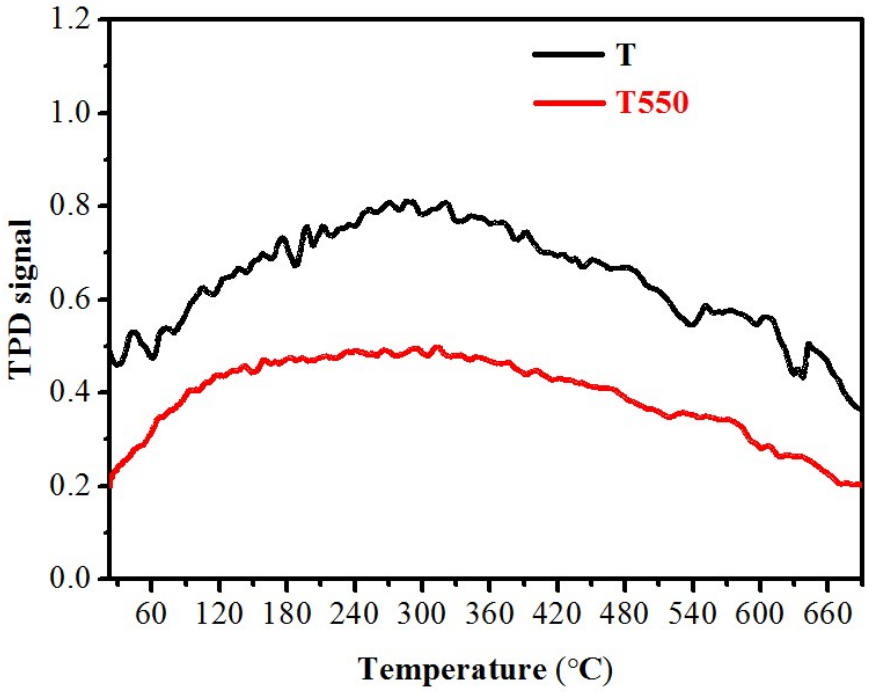

Figure S9 CO_2-TPD of T and T550.