Supporting Information

Ti-doped α-Fe_2O_3 nanorods with controllable morphology by carbon layer coating for enhanced photoelectrochemical water oxidation

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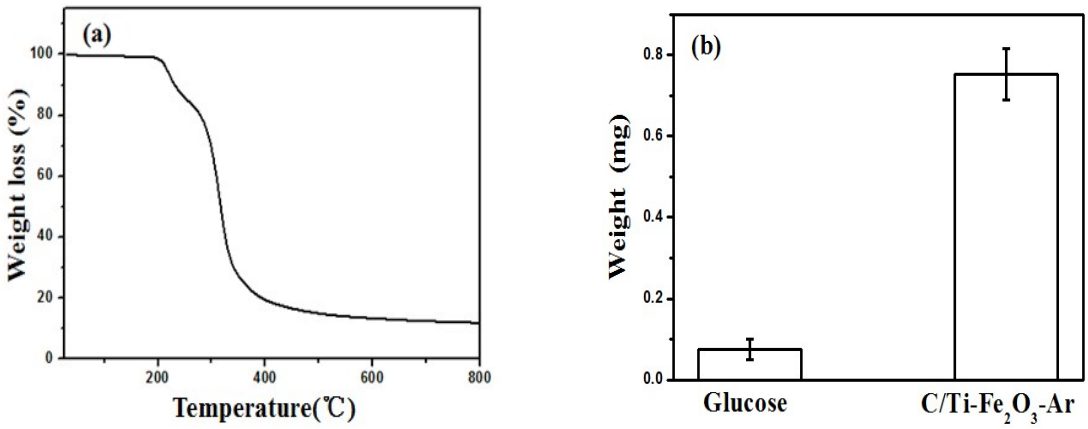

Fig. S1 (a) The TGA curves of glucose in N_2; (b) The weight of glucose and C/Ti-Fe_2O_3-Ar on per square centimeter of Ti foil substrate.

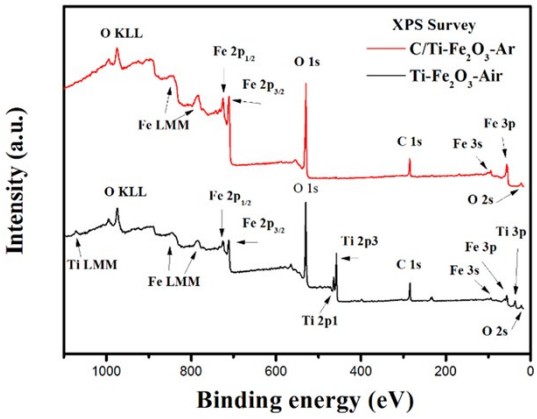

Fig. S2 The general survey XPS spectra of the C/Ti-Fe_2O_3-Ar and Ti-Fe_2O_3-Air.

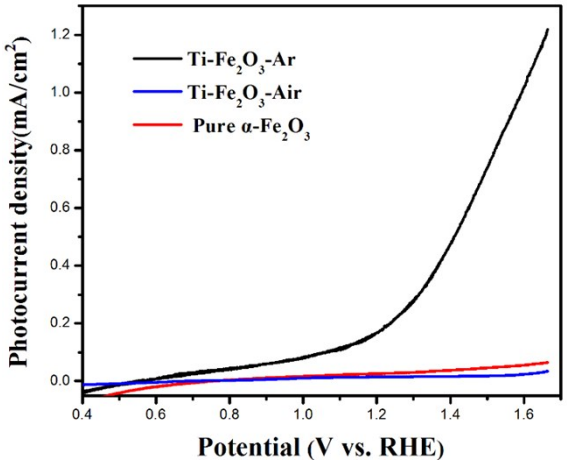

Fig. S3 LSV measurements for the Pure α-Fe_2O_3, Ti-Fe_2O_3-Air and Ti-Fe_2O_3-Ar photoanodes.

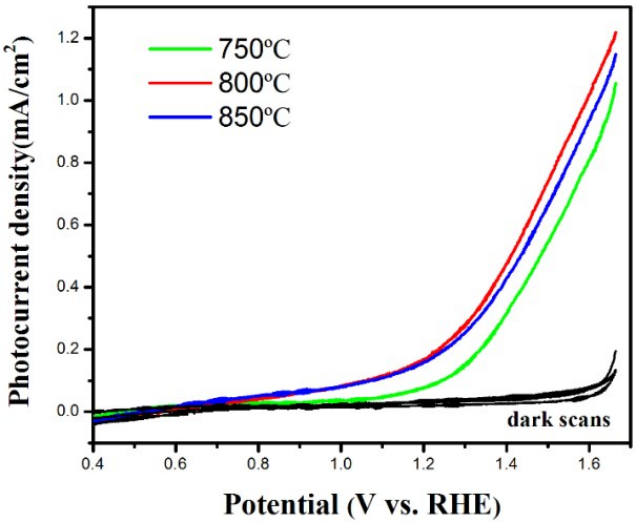

Fig. S4 LSV measurements for the Ti-Fe_2O_3-Ar synthesized with different annealing temperatures in argon

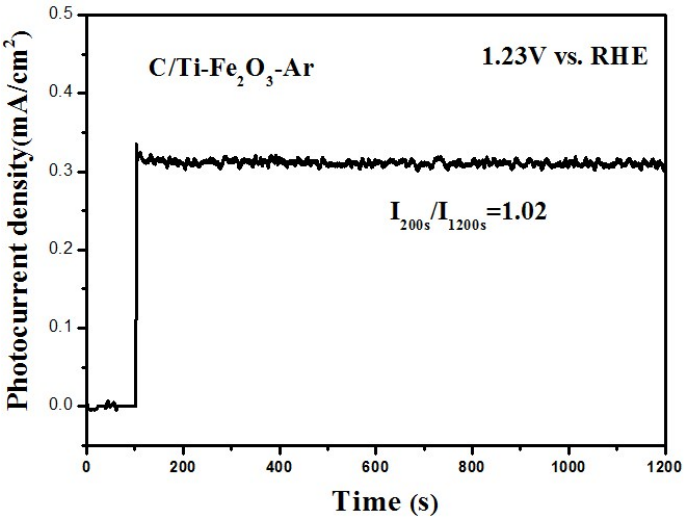

Fig. S5 Transient photocurrent responses of the C/Ti-Fe_2O_3-Ar under simulated sunlight irradiation at 1.23 V.

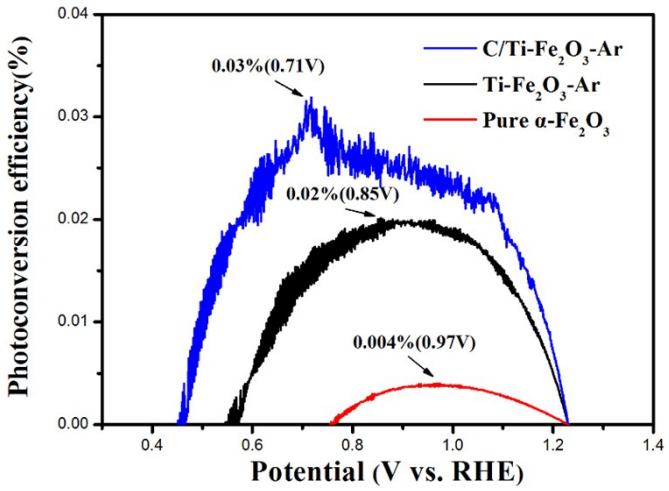

Fig. S6 The Photoconversion efficiency of the C/Ti-Fe_2O_3-Ar, Ti-Fe_2O_3-Ar and Pure α-Fe_2O_3.

Photoconversion efficiency, η, which is the light energy to chemical energy conversion efficiency, is calculated as:

$$\eta = j_p \times (1.23 - |V|) / I_0$$

where V is the bias potential vs. RHE, j_p is the photocurrent density at the measured potential, and I_0 is the power density of incident light.

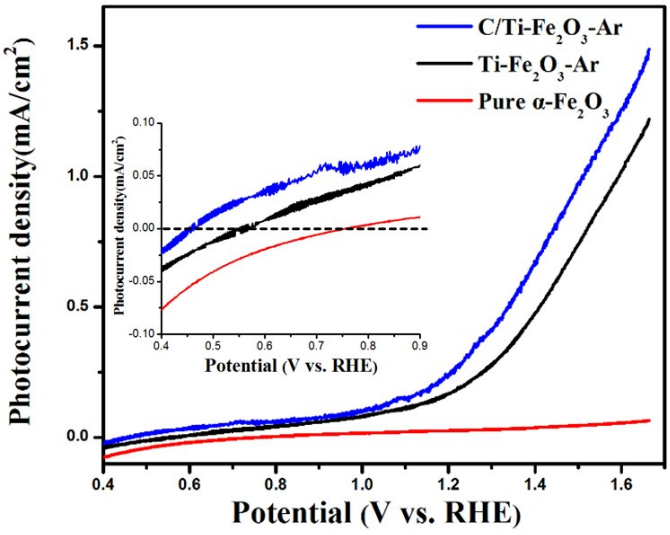

Fig. S7 LSV measurements for the C/Ti-Fe_2O_3-Ar (blue) , Ti-Fe_2O_3-Ar (black) and Pure α-Fe_2O_3 (red) irradiated with simulated sunlight. The inset are the highlighted onset potentials.