Supporting Information

Boron-Passivated Surface Fe(IV) Defects in Hematite for Highly Efficient Water Oxidation

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Figure S1: Experimental illustration of B-modified hematite (B-Fe$_2$O$_3$).
Figure S2: XRD spectra of Fe$_2$O$_3$ and B-Fe$_2$O$_3$. 
Figure S3: (a) $J-V$ scans of the pristine and B-treated Fe$_2$O$_3$ photoanodes at different concentrations of H$_3$BO$_3$. (b) $J-V$ scans of the pristine and B-treated (1 M H$_3$BO$_3$) Fe$_2$O$_3$ photoanodes with different treating times.
Figure S4: $J$-$V$ scans of the pristine sample and the samples treated with various acids.
**Figure S5:** Experimental illustration of B and Ti modified hematite (B-Ti$_2$O$_3$).
Figure S6: SEM images of (a) Fe$_2$O$_3$ and (b) B-Ti-Fe$_2$O$_3$, respectively. SEM cross section images of (c) Fe$_2$O$_3$ and (d) B-Ti-Fe$_2$O$_3$, respectively.
Figure S7: Ti L-edge XAS spectra of Fe$_2$TiO$_5$ and B-Ti-Fe$_2$O$_3$. 
Figure S8: Mott-Schottky plots of Fe$_2$O$_3$, B-Fe$_2$O$_3$ and B-Ti-Fe$_2$O$_3$. 
Figure S9: (a) XPS survey spectra of Fe$_2$O$_3$, B-Fe$_2$O$_3$ and B-Ti-Fe$_2$O$_3$. (b)-(d): High-resolution XPS spectra at the Fe 2p, Ti 2p and B 1s edges, respectively.
Figure S10: Fe L-edge XAS spectra of Fe$_2$O$_3$ and B-Fe$_2$O$_3$. 