Electronic Supplementary Information

Physical and Photoelectrochemical Characterization of Ti-doped Hematite Photoanodes Prepared by Solution Growth

Shaohua Shen,a,b,* Coleman X. Kronawitter,b Damon A. Wheeler,c Penghui Guo,a Sarah Lindley,c Jiangang Jiang,a Jin Z. Zhang,c Liejin Guo,a Samuel S. Maob,*

d International Research Center for Renewable Energy, State Key Laboratory of Multiphase Flow in Power Engineering, Xi’an Jiaotong University, Shaanxi 710049, China. Email: shshen_xjtu@mail.xjtu.edu.cn

b Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory, Department of Mechanical Engineering, University of California, Berkeley, Berkeley, CA 94720, United States. Email: ssmao@me.berkeley.edu

c Department of Chemistry and Biochemistry, University of California, Santa Cruz, Santa Cruz, CA 95064, United States
Figure S1 XRD patterns of $\alpha$-Fe$_2$O$_3$ and Ti-doped $\alpha$-Fe$_2$O$_3$. 
Figure S2 Raman spectra of α-Fe$_2$O$_3$ and Ti-doped α-Fe$_2$O$_3$. 
Figure S3 XPS spectra of the 20TiFe sample depending on etching time. (A) Ti 2p spectra, (B) Sn 3d spectra, (C) Fe 2p spectra.
Figure S4 Schematic of element distribution within Ti-doped α-Fe$_2$O$_3$ film.
Figure S5 (A) Transmittance and (B) absorptance spectra, and (C) the calculated function $(\alpha h\nu)^{1/2}$ vs. photon energy plot for $\alpha$-Fe$_2$O$_3$ and Ti-doped $\alpha$-Fe$_2$O$_3$. 