Supporting Information

Constructing inverse opal structured hematite photoanodes via electrochemical process and their application to photoelectrochemical water splitting

Xinjian Shi†, Kan Zhang†, Kahee Shin†, Jun Hyuk Moon†, Tae-Woo Lee§, Jong Hyeok Park†

†School of Chemical Engineering, Sungkyunkwan University, Suwon 440-746, Republic of Korea
lutts@skku.edu

‡Department of Chemical and Biomolecular Engineering, Sogang University, 1 Shinsu-dong, Mapo-gu, Seoul 121-742, Korea

§Department of Materials Science and Engineering, Pohang University of Science and Technology, San 31, Hyoja-dong, Nam-gu, Pohang, Gyeongbuk 790-784, Korea

Email Address: lutts@skku.edu
**Figure S1.** FE-SEM image of different sized PS colloid templates: (a) 250 nm, (b) 500 nm and (c) 900 nm; (d) the section image for a general PS template.
Figure S2. The optical band gap (Eg) of the IOS α-Fe₂O₃ electrodes made by 250nm beads under 400 °C annealing with different electrodeposition time.
Figure S3. TGA data of PS beads as template.
**Figure S4** (a) the morphology of a general planar $\alpha$-Fe$_2$O$_3$, (b) the I-V curve of the planar $\alpha$-Fe$_2$O$_3$ vs. potential in 1M NaOH electrolyte under AM 1.5G light.