Supporting information

A Ga_2O_3 underlayer as an isomorphic template for ultrathin hematite films toward efficient photoelectrochemical water splitting

List of the author

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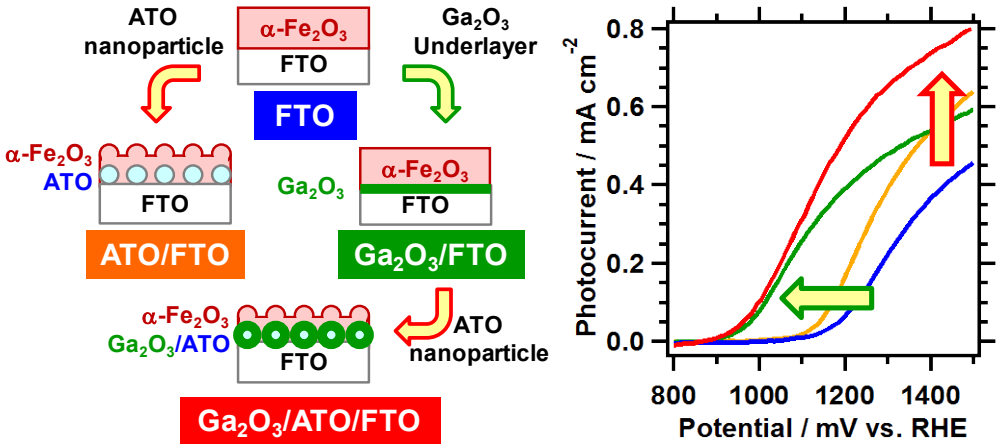
Graphic Abstract



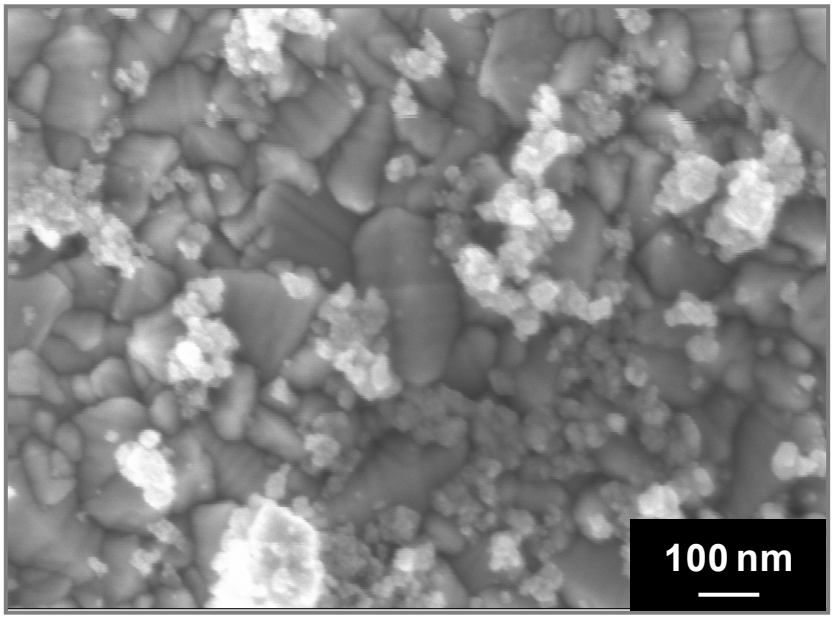


Figure S1. A SEM image of a FTO substrate covered with ATO nanoparticles.

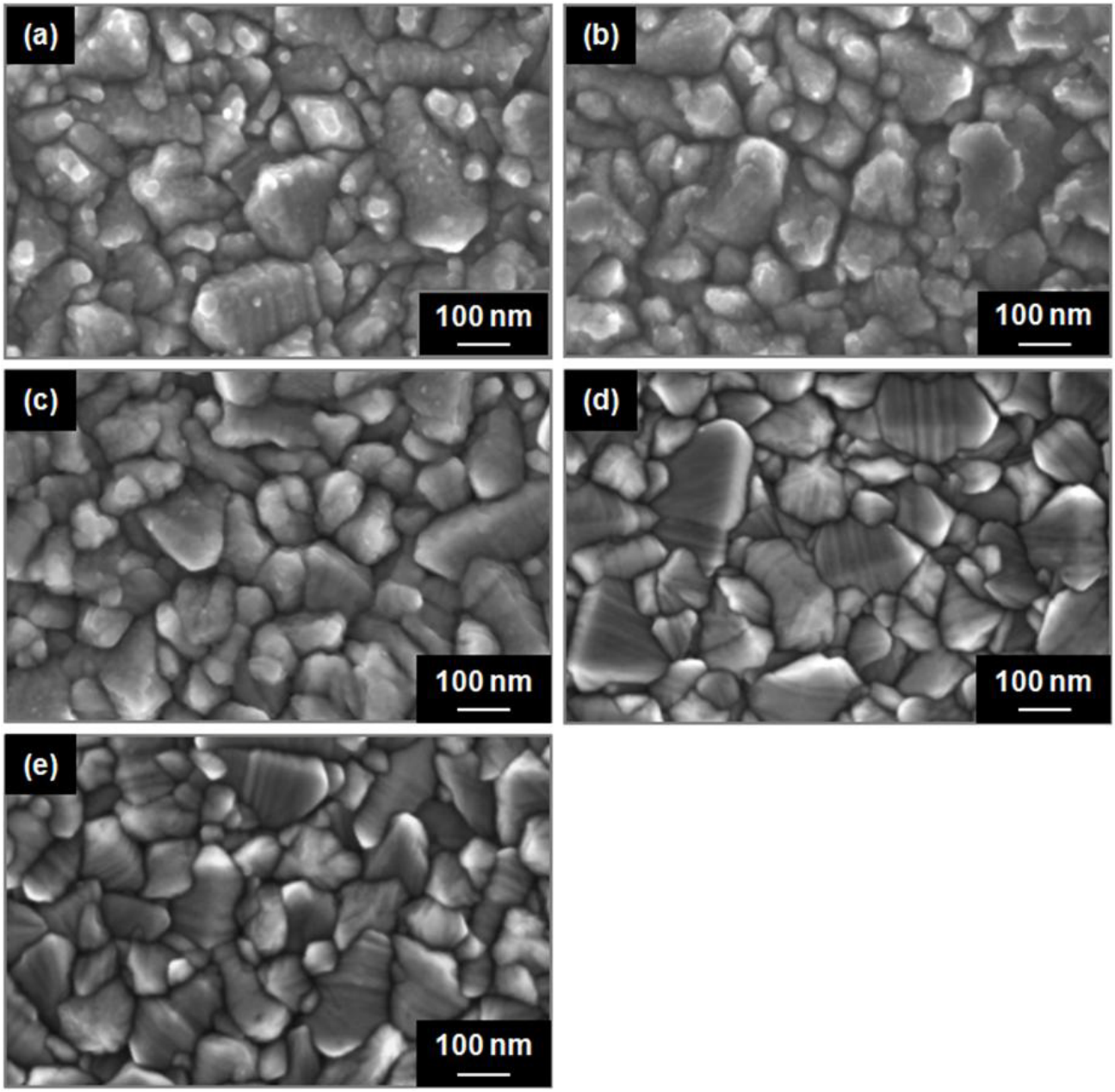


Figure S2. SEM images of hematite photoanodes 27 nm in thickness deposited on (a) bare, (b) SiO_x-modified, and (c) Ga_2O_3-modified FTO. (d) Bare FTO and (e) Ga_2O_3-modified FTO before the deposition of hematite layers are shown for comparison.

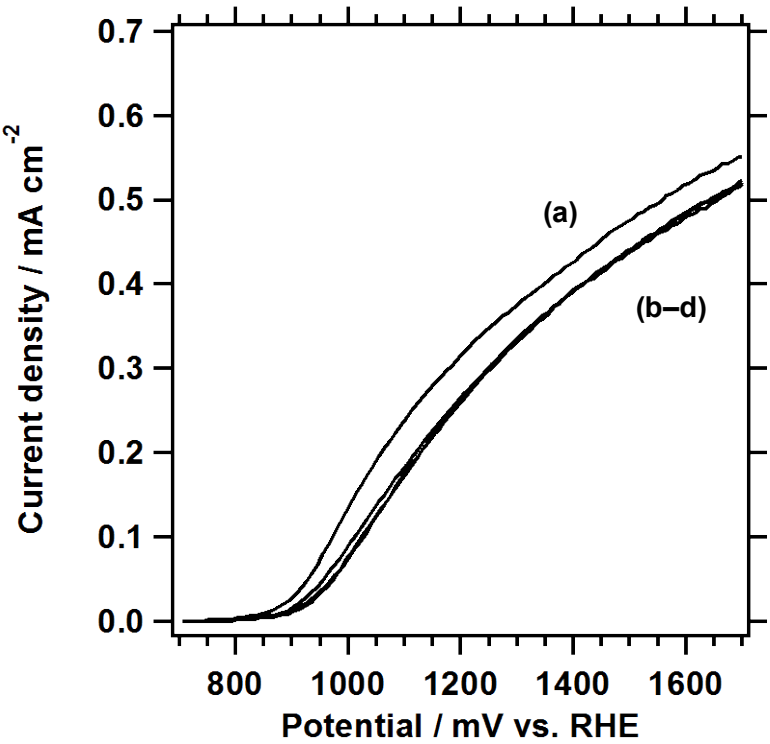


Figure S3. Photocurrent-potential curves of a hematite photoanode (27 nm in thickness) deposited on a Ga_2O_3-modified FTO and annealed at 773 K for (a), 0, (b) 2, (c) 4, and (d) 6h.

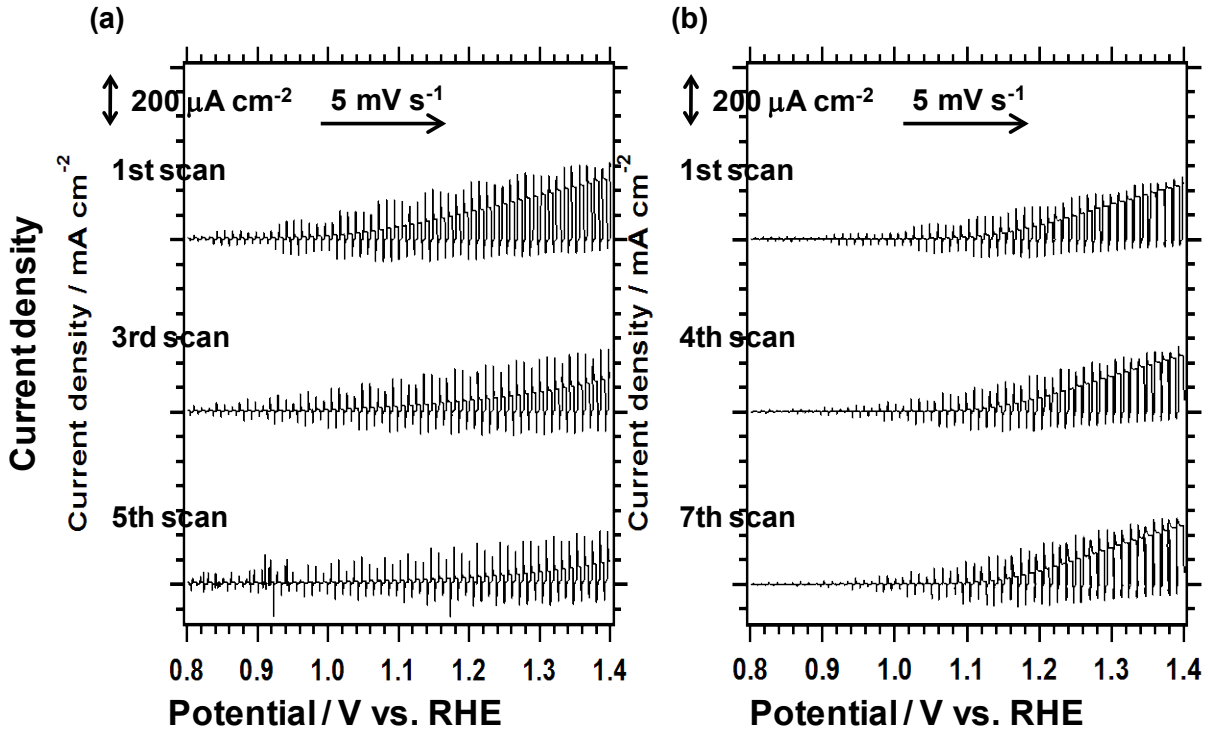


Figure S4. Transient photo-responses of hematite photoanodes (11 nm in thickness) deposited on a Ga_2O_3-modified FTO. Electrolyte solution: (a) 1 M NaOH (pH 13.6) and (b) 0.1 M borate buffer (pH 9). The measurements were performed approximately every 4 min.

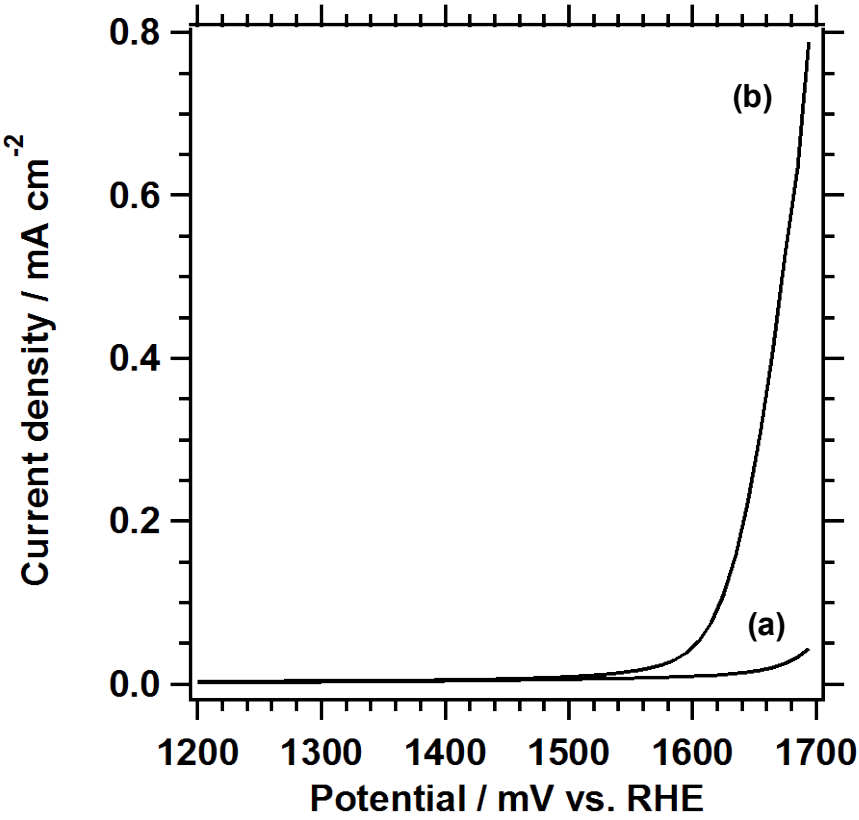


Figure S5. Current-voltage curves of hematite prepared on FTO (a) unmodified and (b) modified with ATO nanoparticles recorded in the darkness.