Electronic Supplementary Material

New insights into water photooxidation on reductively pretreated hematite photoanodes

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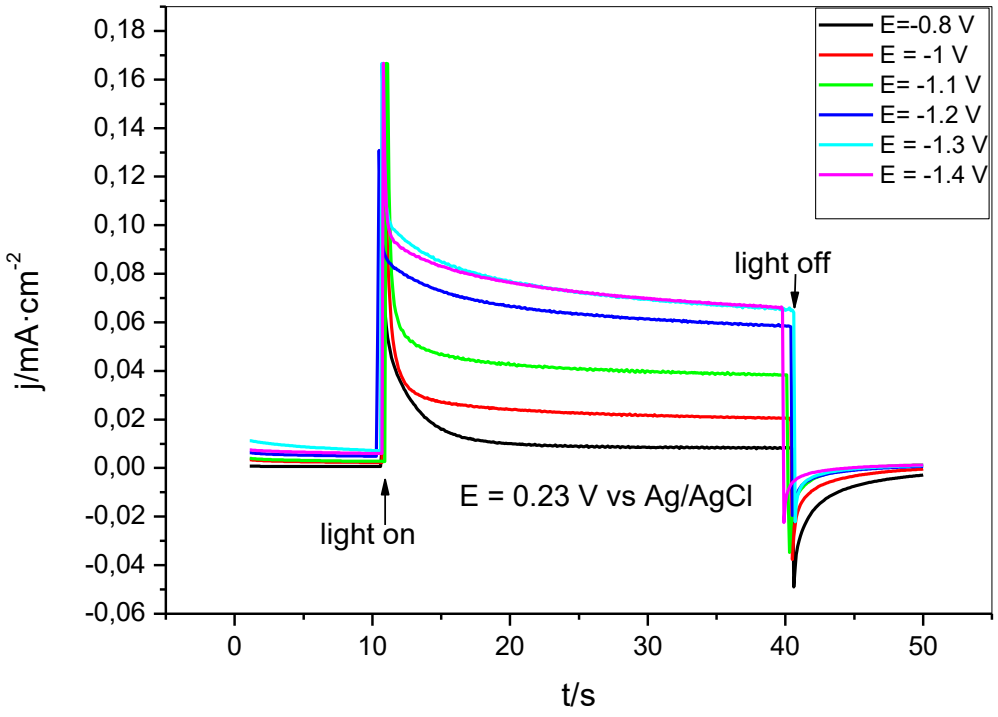

Figure S1. Potentiostatic photo-transients conducted at 0.23 V under 100 mW/cm^2 AM 1.5 EE illumination for nanorod hematite electrodes in 1 M NaOH.

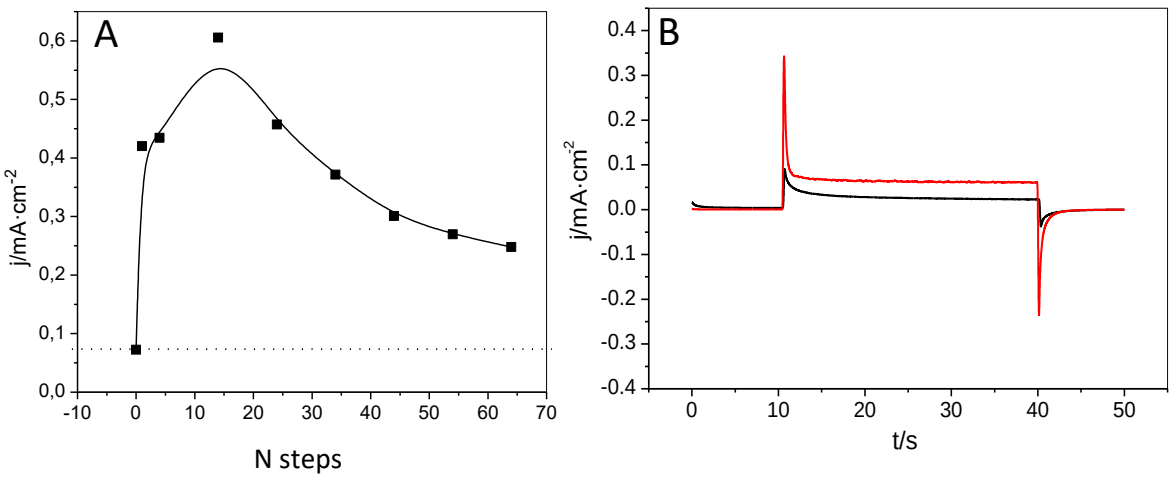

Figure S2. A) Photocurrent density for water oxidation as a function of the number of applied pretreatment steps for a hematite nanorod electrode in 1 M NaOH. Each square represents the stationary photocurrent value measured at 0.23 V (Light intensity: 550 mW·cm^{-2}) B) Photo-transient conducted at 0.23 V before (red curve) and after (black curve) a continuous reductive pretreatment at -1.3 V.

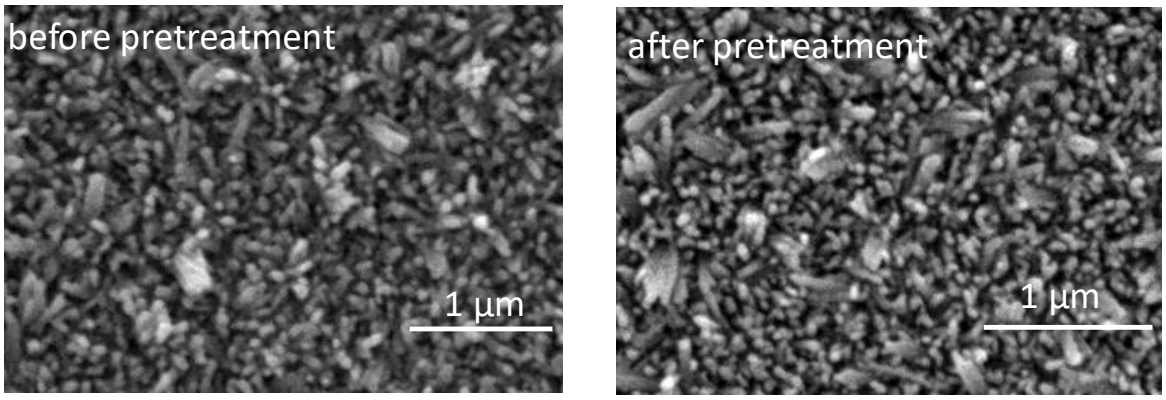

Figure S3. SEM images for a hematite nanorod electrode, before (left) and after (right) one pretreatment step at -1.3 V for 10 s.

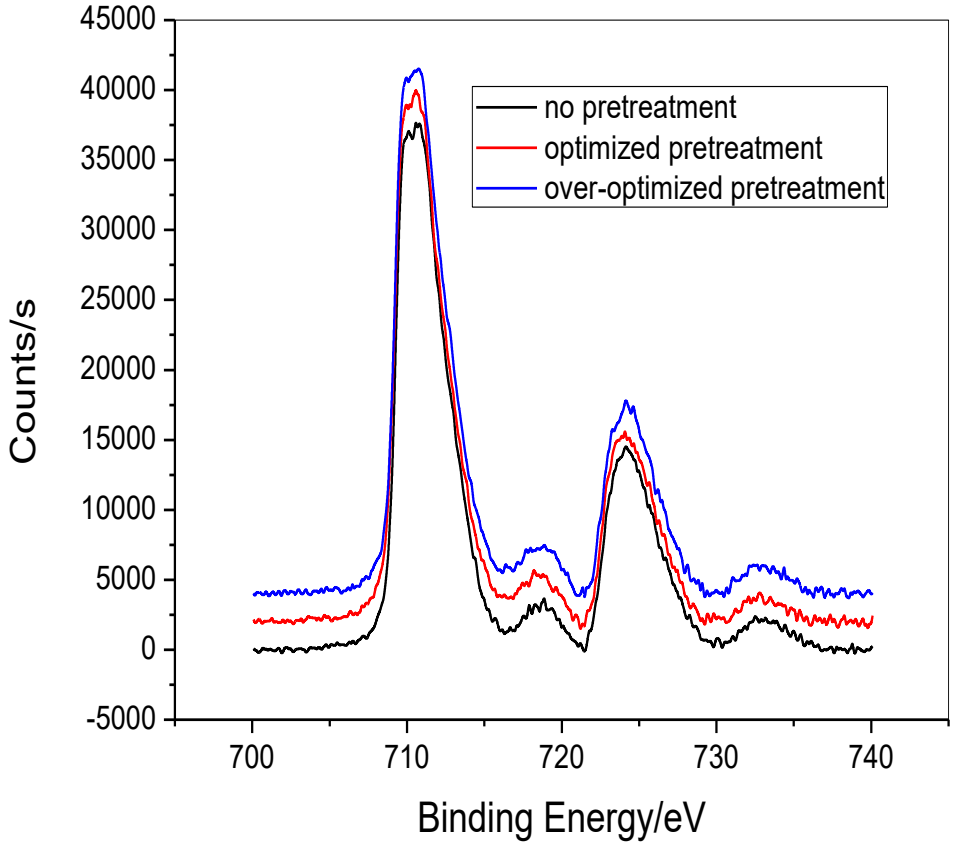

Figure S4. XPS spectra for Fe 2p for nanorod hematite films before and after one electrochemical pretreatment step (at -1.3 V for 10 s).

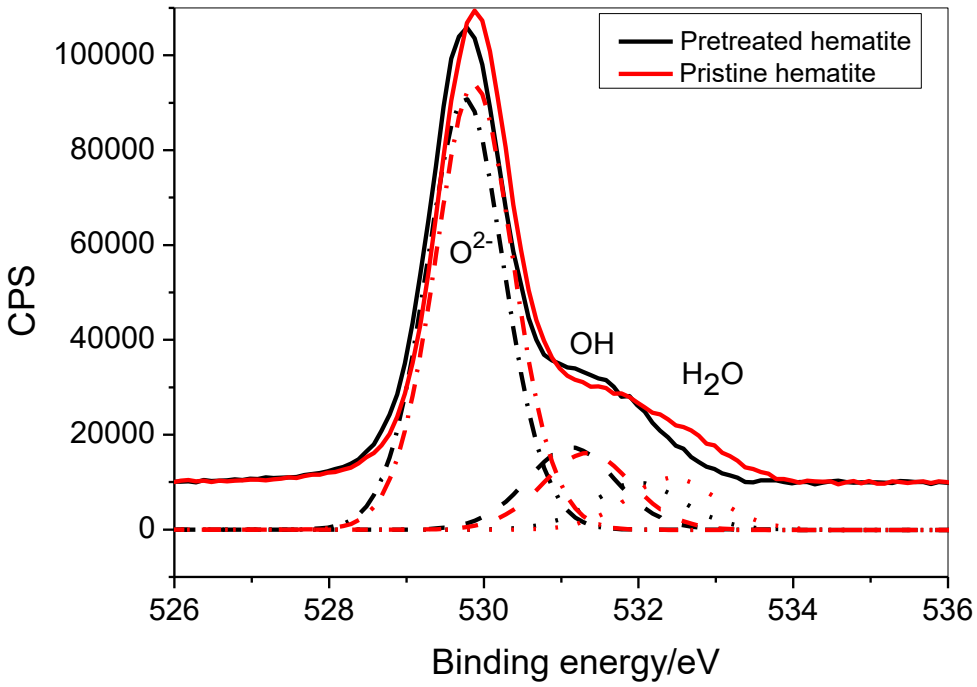

Figure S5. High resolution XPS spectra for O 1s for hematite nanorod films prior (red) and after (black) a reductive pretreatment consisting in one step at -1.3 V for 10 s. The contributions corresponding to adsorbed water and hydroxyl groups are indicated.

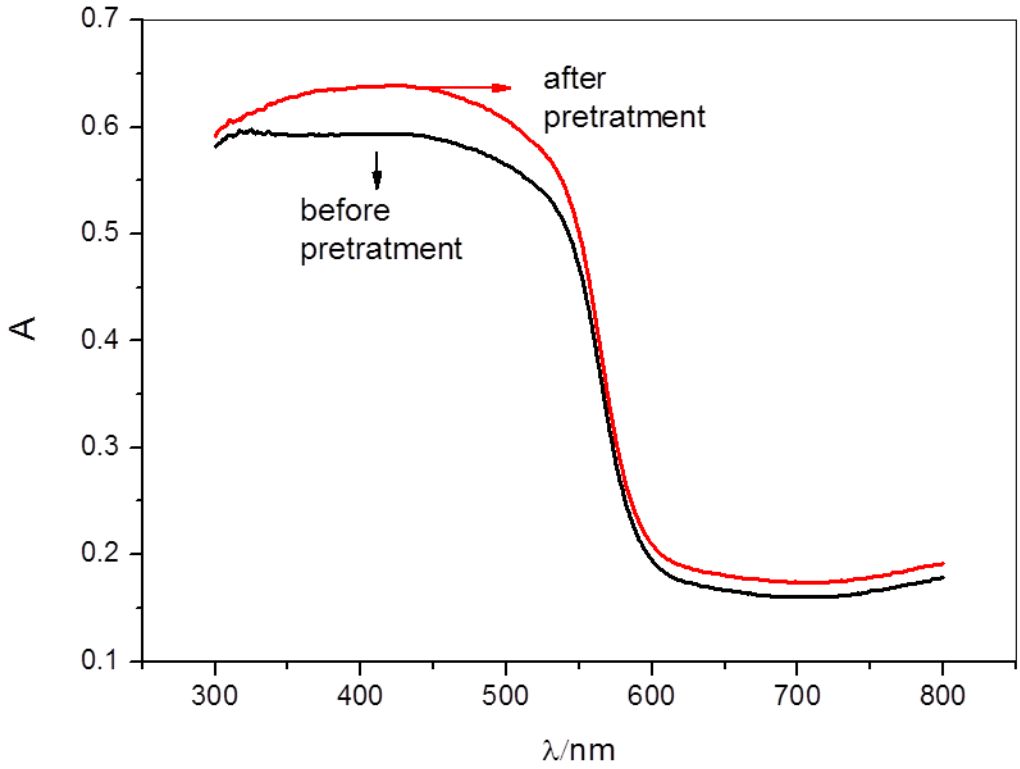

Figure S6. UV-vis absorption spectra for hematite films before (black curve) and after one reductive pretreatment step (at -1.3 V for 10 s, red curve).

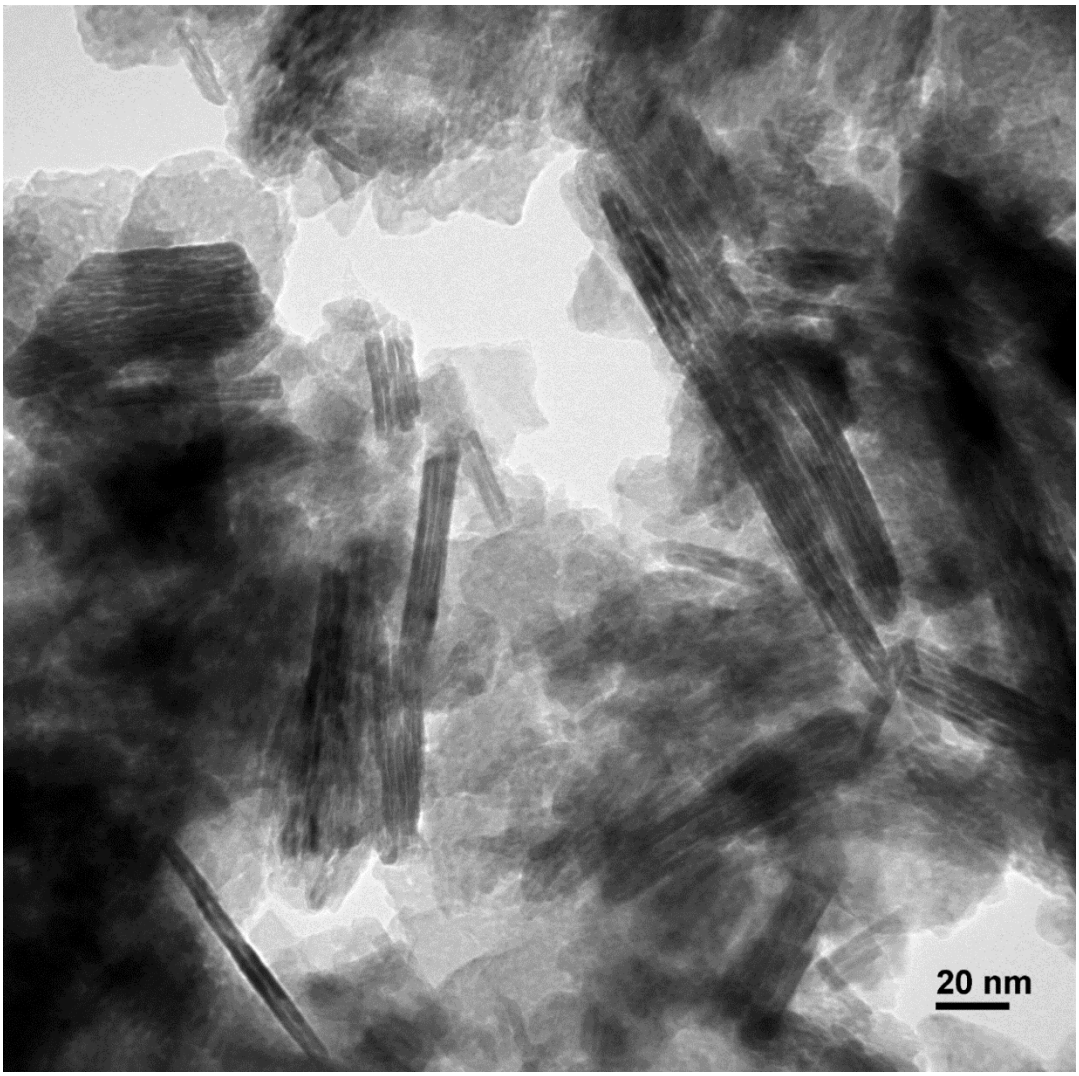

Figure S7. TEM image of the hematite nanorod films after a pretreatment consisting of 3 cycles down to -1.5 V in 1 M NaOH.