

Supplementary Materials:

Fe₂O₃ blocking layer produced by cyclic voltammetry leads to improved photoelectrochemical performance of hematite nanorods

Mahshid Poornajar ¹, Nhat Truong Nguyen ¹, Hyo-Jin Ahn ^{1,2}, Markus Büchler ³, Ning Liu ¹, Stepan Kment ², Radek Zboril ², Jeong Eun Yoo ¹ and Patrik Schmuki ^{1,2,4,*}

¹ Department of Materials Science and Engineering, University of Erlangen-Nuremberg, Martensstrasse 7, 91058 Erlangen, Germany; mahshid.poornajar@fau.de (M.P.); nhat.truong.nguyen@fau.de (N.T.N.); Hyo-Jin.ahn@fau.de (H.-J.A.); ning.liu@ww.uni-erlangen.de (N.L.); jeong.e.yoo@ww.uni-erlangen.de (J.E.Y.)

² Regional Center of Advanced Technologies and Materials, Šlechtitelů 27, 779 00 Olomouc, Czech Republic; stepan.kment@upol.cz (S.K.); radek.zboril@upol.cz (R.Z.)

³ Schweizerische Gesellschaft für Korrosionsschutz (SGK) Swiss Society for Corrosion Protection, Technoparkstrasse.1, CH-8005 Zürich, Switzerland; markus.buechler@sgk.ch

⁴ Department of Chemistry, King Abdulaziz University, 80203 Jeddah, Kingdom of Saudi Arabia

* Correspondence: schmuki@ww.uni-erlangen.de

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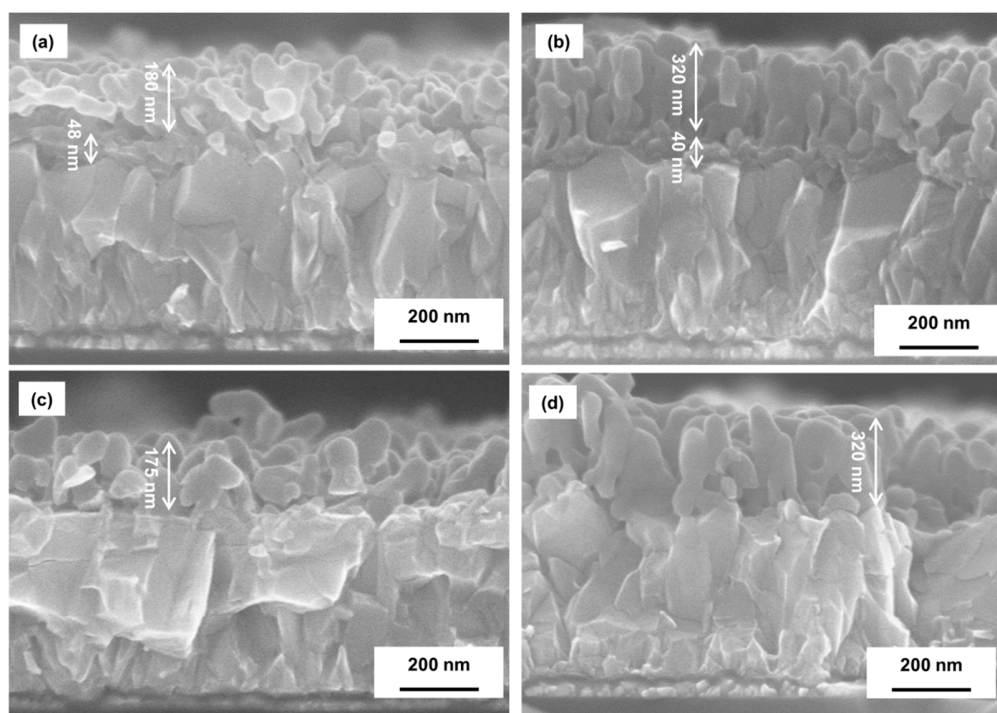


Figure S1. Cross sectional SEM images of 1 h (a) and 9 h (b) prepared hematite nanorods on blocking layer. Corresponding hematite nanorod layers grown on bare FTO for 1 h (c) and 3 h (d).

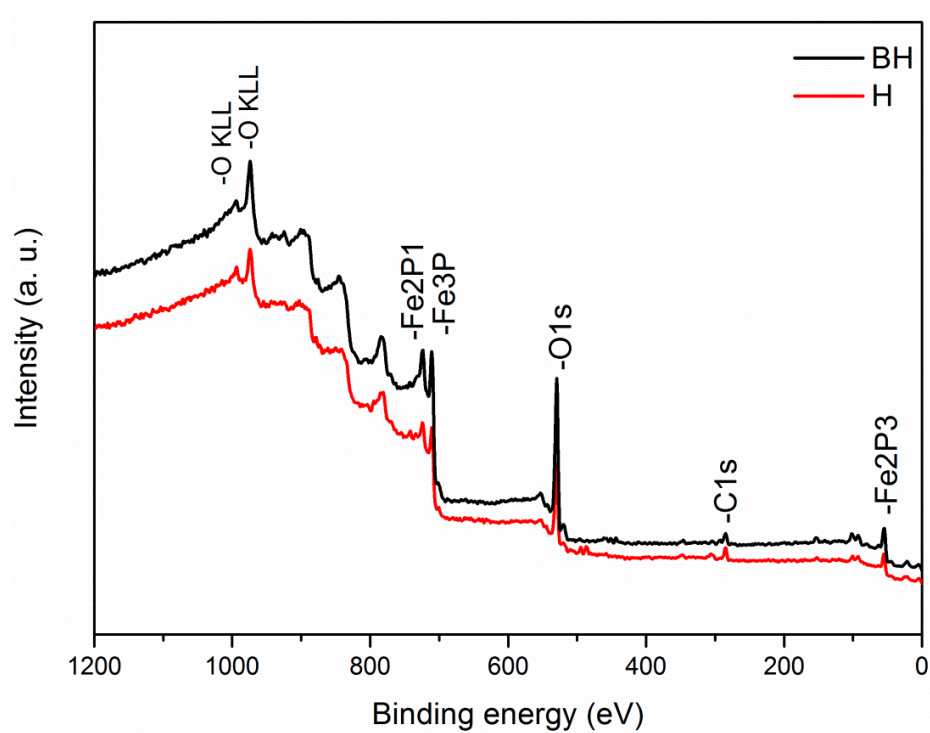


Figure S2. XPS survey spectra of hematite nanorods grown on bare FTO (red line, H) and hematite nanorods grown on the blocking layer covered FTO (black line, BH).

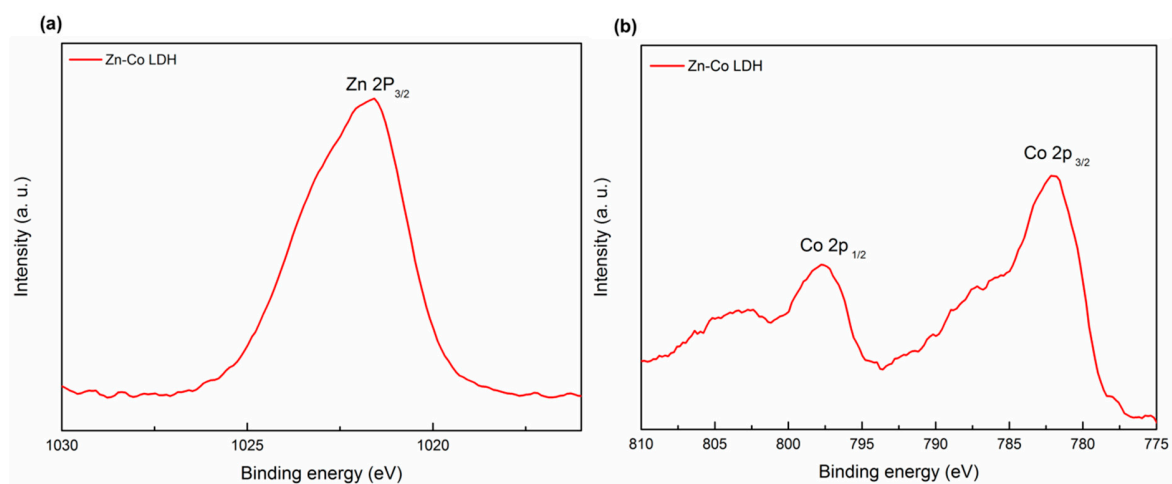


Figure S3. (a) XPS $\text{Zn } 2p_{3/2}$ spectrum and (b) Co 2p spectrum of ZnCo-LDH. XPS spectra show $\text{Zn } 2p_{3/2}$ peak at 1021.7 eV, $\text{Co } 2p_{1/2}$ peak at 797.7 eV and $\text{Co } 2p_{3/2}$ peak at 782.1 eV, respectively.

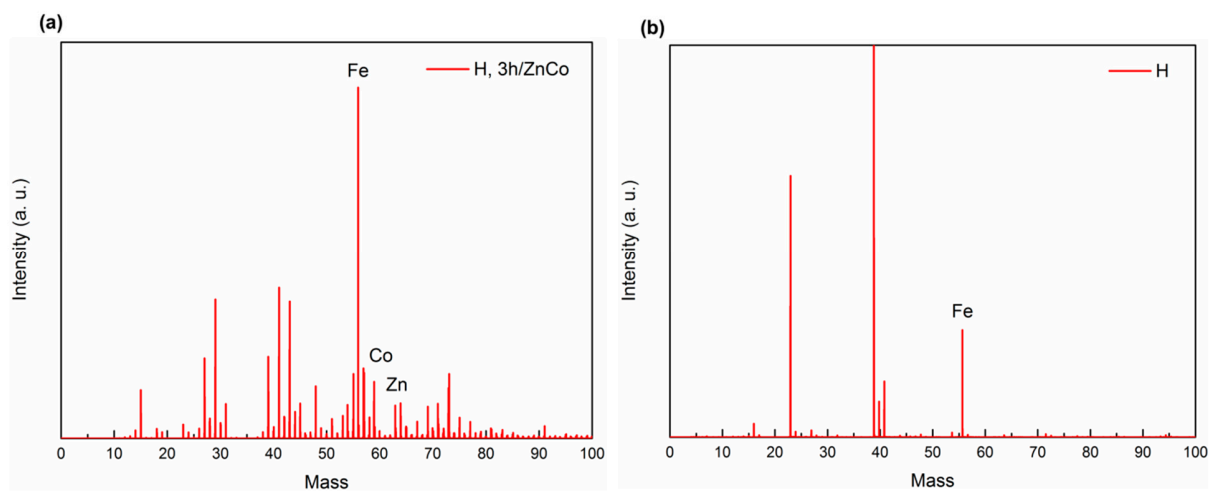


Figure S4. TOF-SIMS analysis of hematite nanorods (grown for 3 h) without blocking layer (a) with Zn-Co (H, Zn-Co), (b) without Zn-Co (H). The typical mass peaks of Fe, Co and Zn for positive spectra in the mass range of 0-100 can be detected for hematite with Zn-Co (H, 3h/ZnCo) (figure S5a) . Fe peak can be detected for hematite without Zn-Co (H) (figure S5 b). The un-known peaks are related to contamination.

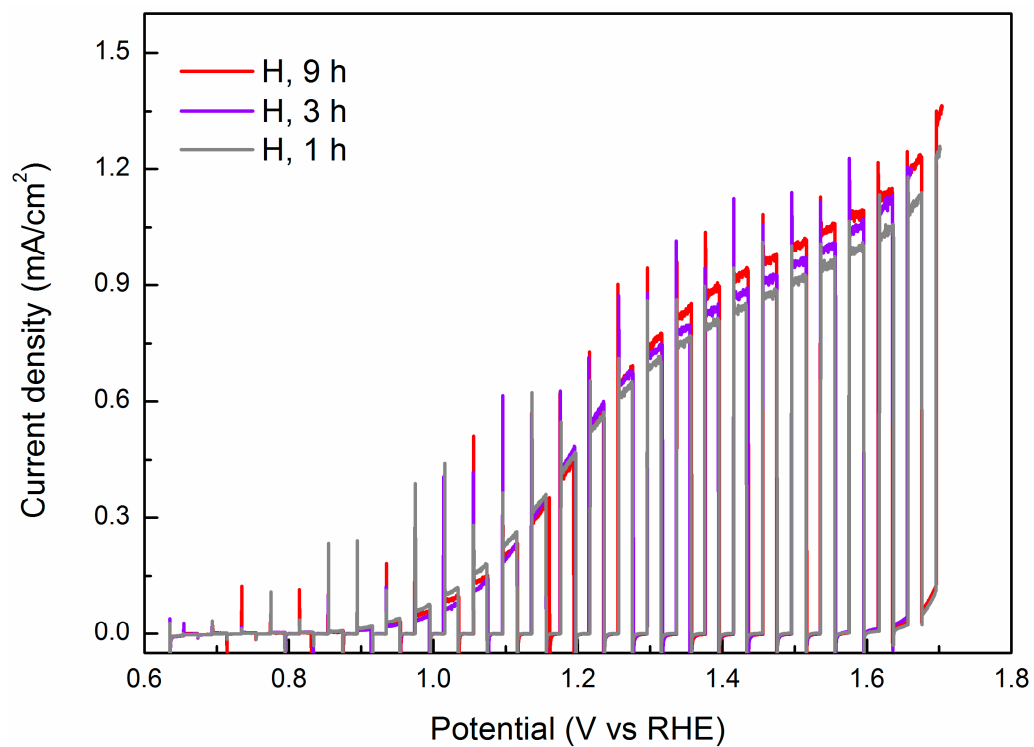


Figure S5. J-V curves with chopped light illumination for hematite nanorods grown for 1, 3 and 9 h on bare FTO measured at 0.6 to 1.7 V_{RHE}