

Supporting Information

Continuous Shape- and Spectroscopy-Tuning of Hematite Nanocrystals

Liqiao Chen, Xianfeng Yang, Jian Chen, Jia Liu, Hao Wu, Hongquan Zhan, Chaolun Liang, Mingmei

*Wu**

State Key Laboratory of Optoelectronic Materials and Technologies/MOE Key Laboratory of

Bioinorganic and Synthetic Chemistry, School of Chemistry and Chemical Engineering and

Instrumental Analysis and Research Center, Sun Yat-Sen University, Guangzhou 510275, P. R. China.

E-mail: ceswmm@mail.sysu.edu.cn

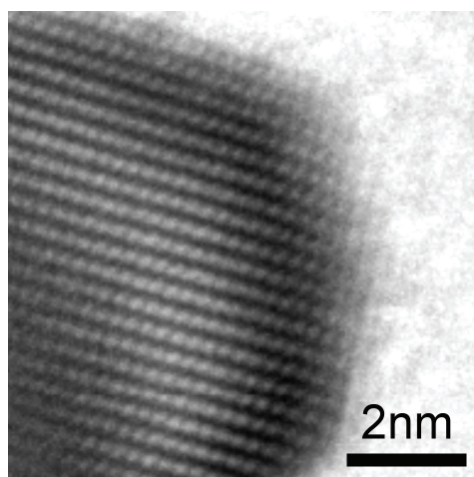


Figure S1. Enlarged HRTEM image of edge part of Figure 2e.

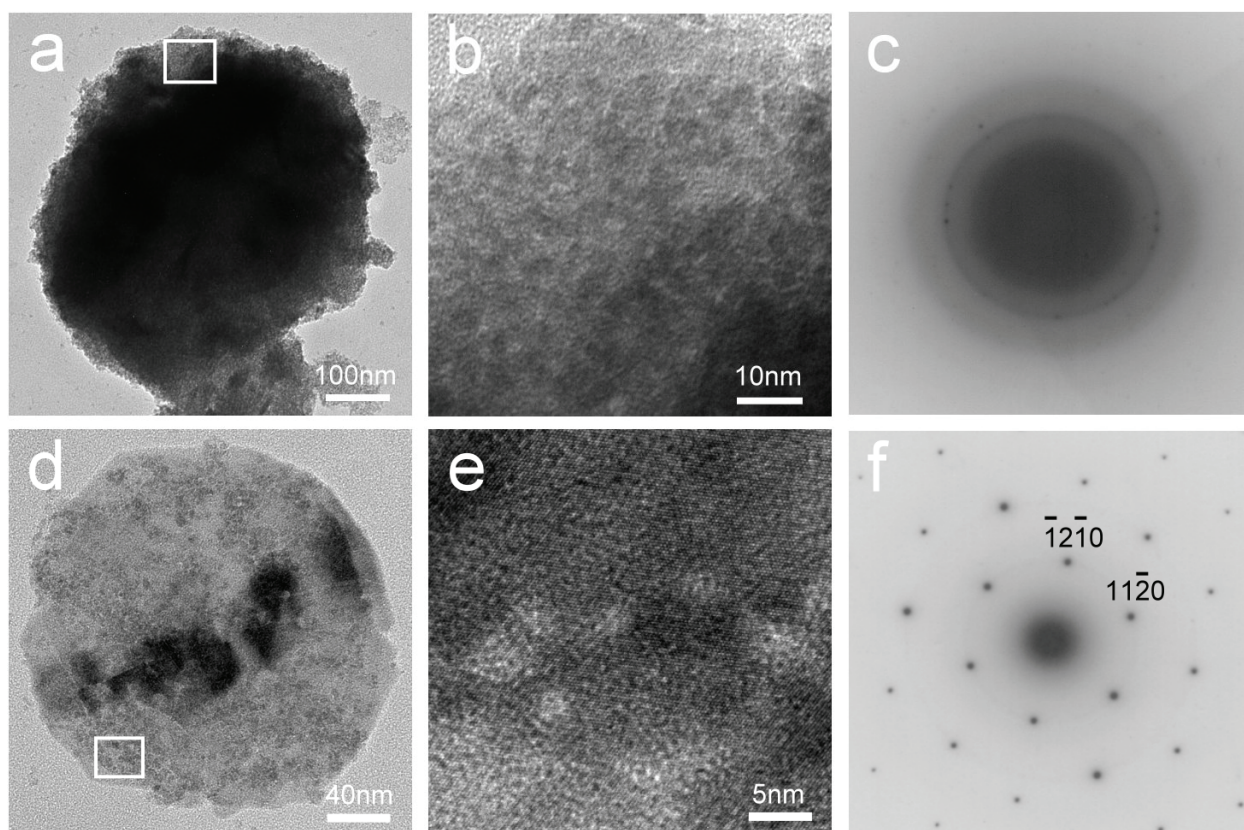


Figure S2. TEM (a, d), high-resolution TEM images (b, e) and SAED patterns (c, f) of samples grown for 2.0 h (a-c) and 4.0 h (d-f) respectively. Inside the plate there are some irregularly distributed nanoparticles (d, e). The SAED pattern indicates their distribution was in crystallographic orientation.

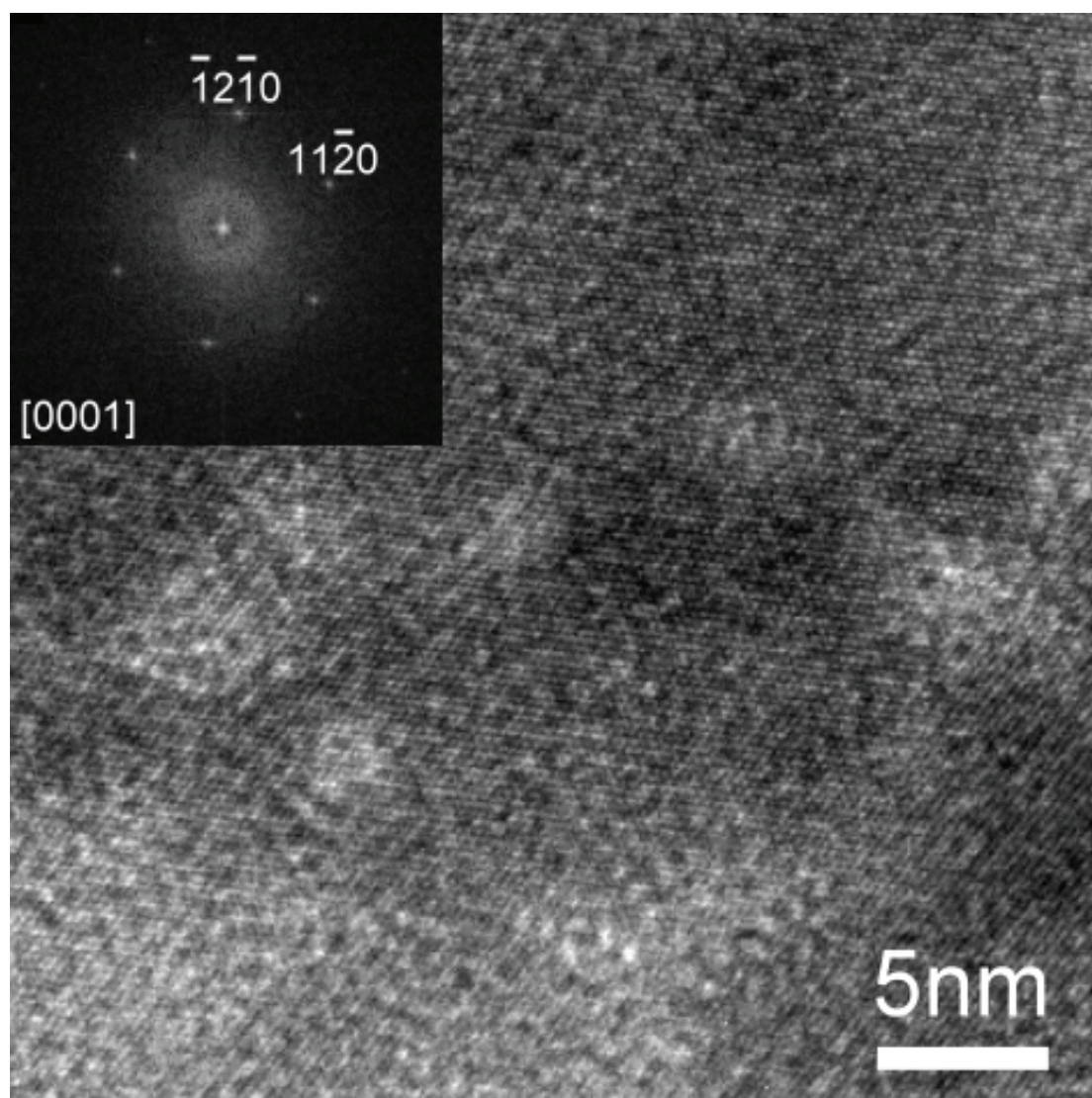


Figure S3. High resolution TEM image with its FFT pattern of the part from the sample in Figure S2d.

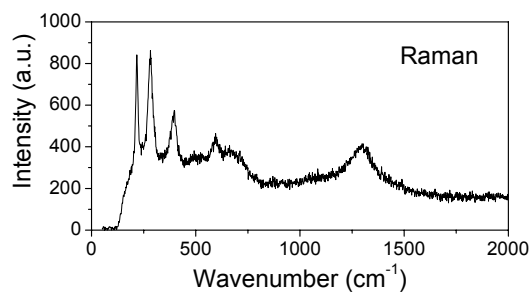


Figure S4. Raman spectrum of the sample in Figure 4b.

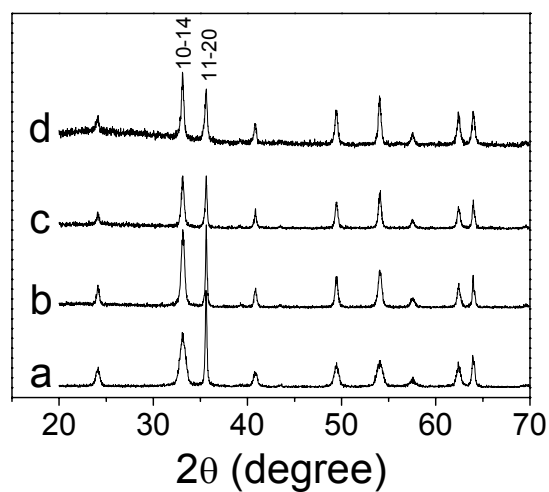


Figure S5. Powder XRD patterns of hematite products grown from the solvent of ethanol with an addition of (a) 0.3 mL, (b) 0.7 mL, (c) 1.2 mL and (d) 2.5 mL of distilled water. The volume of ethanol was kept at 10.0 mL and the use of sodium acetate is 0.8g. Please see Figure 5.

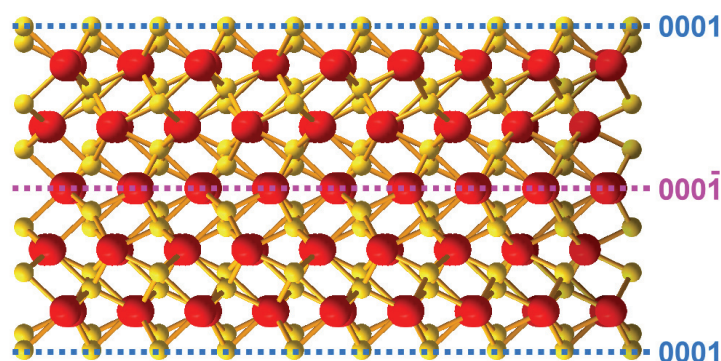


Figure S6. Side view of hematite α -Fe₂O₃ (0001), terminated by a single iron layer. The middle is (0001̄) oxygen layer, a center-symmetrical one. This means growth along two opposite (0001) directions is from (0001̄) center-symmetrical plane. The small spheres are Fe and the large ones are O atoms.

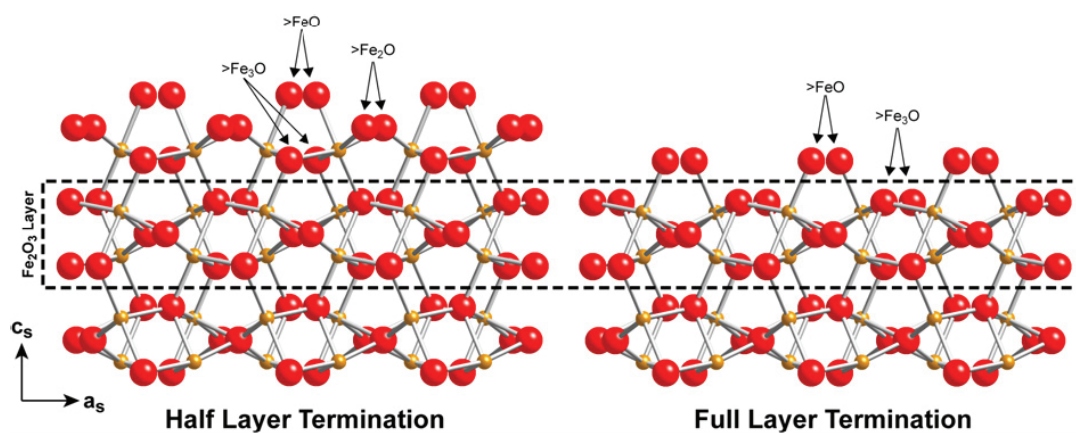


Figure S7. Structural models of two possible terminations of α -Fe₂O₃ (101̄2) surface. It is assumed that these groups protonate and/or hydrogen bond to interfacial water molecules to maintain charge balance and preserve appropriate bond valence sums (Jeffrey G. Catalano, Zhan Zhang, Changyong Park, Paul Fente, Michael J. Bedzyk, *Geochimica et Cosmochimica Acta* **2007**, 71, 1883-1897).

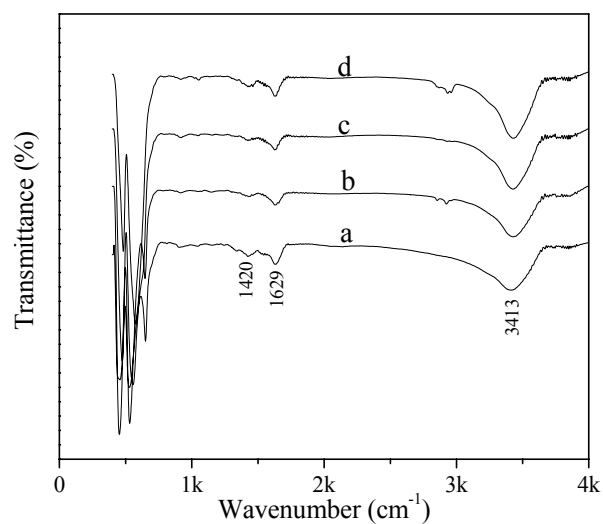


Figure S8. FTIR spectra of the hematite products grown from the solvent of ethanol with an addition of (a) 0.3 mL, (b) 0.7 mL, (c) 1.2 mL and (d) 2.5 mL of distilled water as shown in Figure 5.

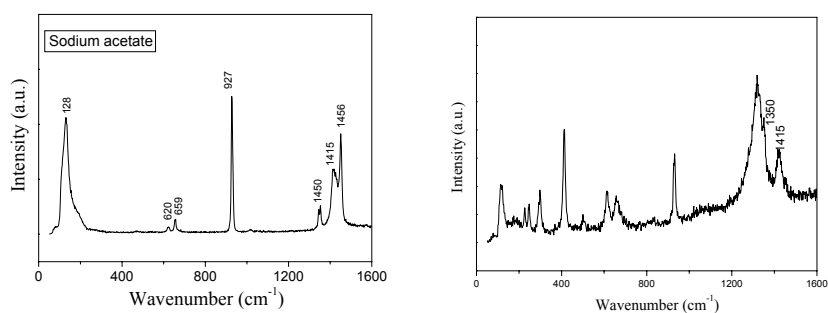


Figure S9. Raman spectra of sodium acetate (left) and hematite nanoplate product without washed thoroughly (right).