

Supporting Information

The Growth Mechanism Aurivillius $\text{Bi}_{11}\text{Fe}_3\text{Ti}_6\text{O}_{33}$ nanoparticles: critical role of OH^- concentration and citrate acid

Zhiang Li,^a Tong Chen,^a Jifang Chen,^a Dejuan Sun,^a Liu Liu,^a Min Liu^{*a,c,d} and Yalin Lu^{*a,b,c,e}

^a CAS Key Laboratory of Materials for Energy Conversion; Department of Materials Science and Engineering, University of Science and Technology of China, Hefei 230026, P. R. China.

Email: liumin1106@ustc.edu.cn, yllu@ustc.edu.cn

^b Hefei National Laboratory for Physical Sciences at the Microscale, Hefei 230026, P. R. China

^c Synergetic Innovation Center of Quantum Information & Quantum Physics, University of Science and Technology of China, Hefei 230026, P. R. China

^d Hefei Physical Sciences and Technology Center, CAS Hefei Institutes of Physical Sciences, Hefei 230031, Anhui, China

^e National Synchrotron Radiation Laboratory, University of Science and Technology of China, Hefei 230026, Anhui, China

[†]Electronic Supplementary Information (ESI) available: [details of any supplementary information available should be included here]. See

DOI: 10.1039/x0xx00000x

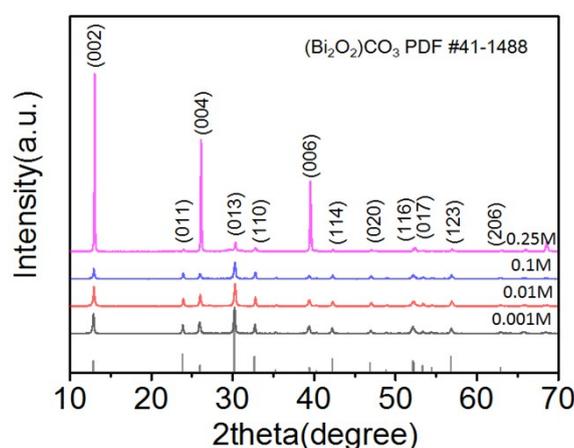


Fig. S1. XRD patterns of all the samples synthesized by hydrothermal method at 200 °C for 72 h under various NaOH concentration (C_{NaOH}) 0.001M, 0.01M, 0.1M and 0.25M.

Fig. S1 shows the XRD patterns for the production under low NaOH concentration condition. The diffraction peaks of the 0.001M-, 0.01M- and 0.1M- samples are consistent with the standard diffraction pattern of $\text{Bi}_2\text{O}_2\text{CO}_3$ (JCPDS Card No.41-1488). The peaks of [001] planes have significantly enhanced shows a special orientation in 0.25M- sample. And in our experiment condition, this oriented $\text{Bi}_2\text{O}_2\text{CO}_3$ only appeared when C_{NaOH} was between in 0.15M to 0.25M. (Fig. 2)

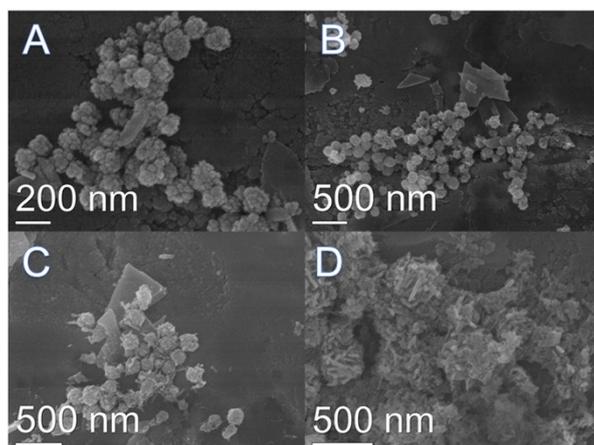


Fig. S2. The SEM images of the samples synthesized by varying NaOH concentration: (A) 0.001M; (B) 0.01M; (C) 0.1M; (D) 0.25M;

Fig. S2 is the SEM images of 0.001M- sample, 0.01M- sample, 0.1M- sample and 0.25M- sample. From the Fig. S2(A), the samples of 0.001M- are mainly composed of many nanospheres with 30-50 nm diameter. The morphology of 0.01M- sample (Fig. S2(B)) and 0.1M- samples (Fig. S2(C)) are similar to 0.001M- sample. This result is consistent to the XRD patterns in Fig. S1. But for the 0.25M- sample in Fig. S2(D), many nanorods have appeared. Some of nanorods have made up to sphere like morphology.

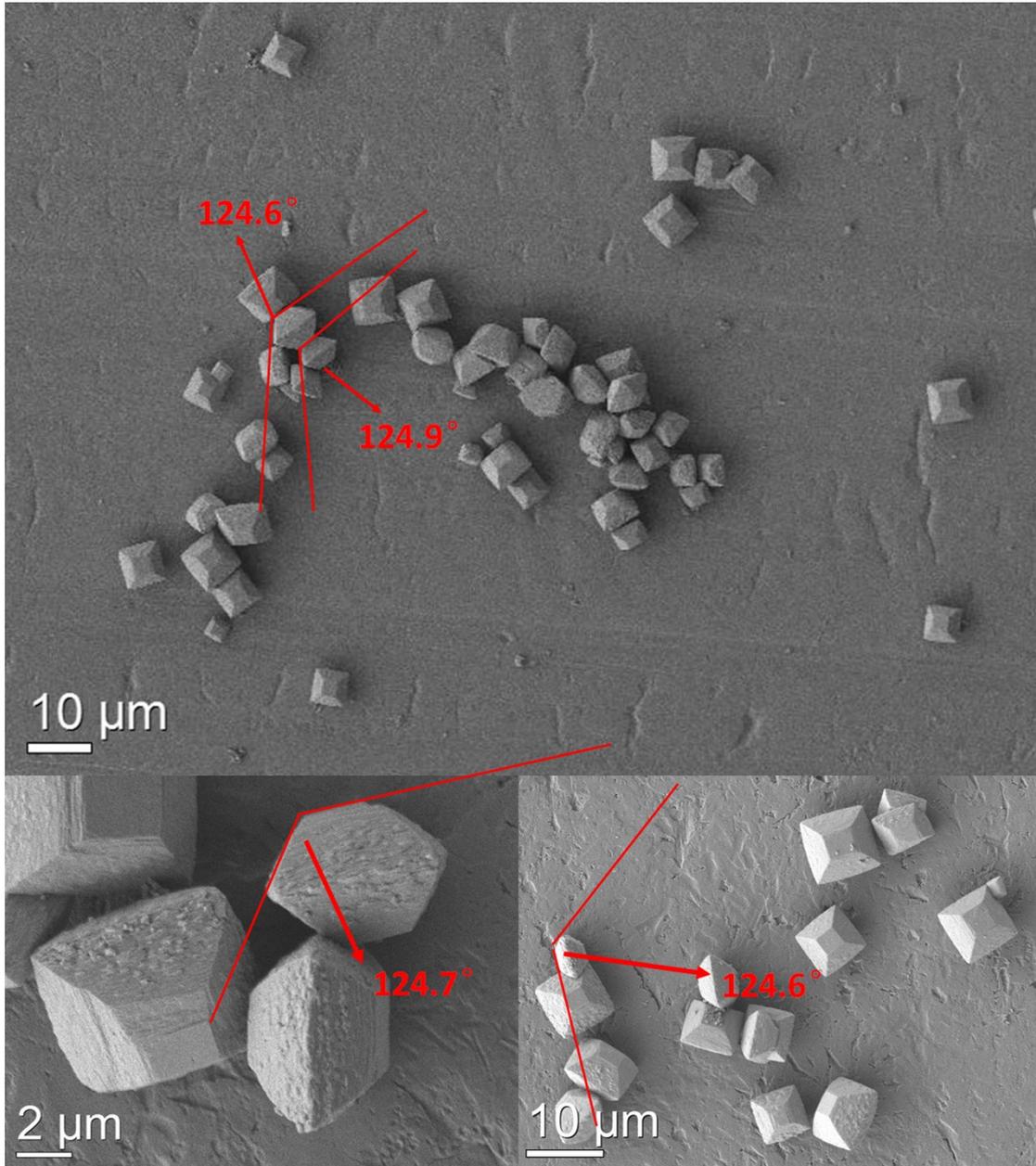


Fig. S3. The angle between the top and lateral surface for sample 1.5M- BFCrO microcrystals.