

# **FeNi Bimetallic Oxides Derived from MOFs as Precursors Promote Efficient Electrochemical Synthesis of Ammonia**

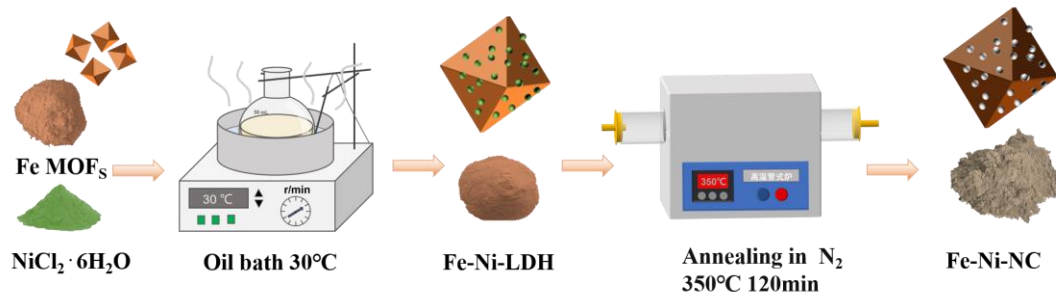
Jiuqing Xiong, Yanli Zhang, Yifan Wang, Haoyu Zhang, Shengwei Huang, Shihai Yan,\* Bingping Liu\*

College of Chemistry and Pharmaceutical Sciences, Qingdao Agricultural University, Qingdao,  
266109, China

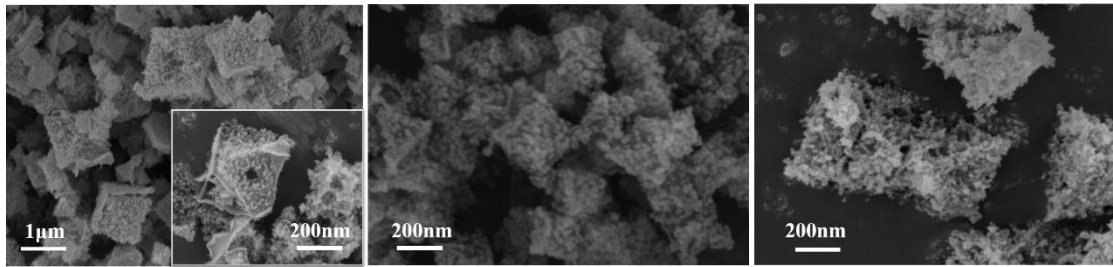
**Corresponding author:**

Shihai Yan, email: [shyan@qau.edu.cn](mailto:shyan@qau.edu.cn); QAU, Qingdao, 266109, China

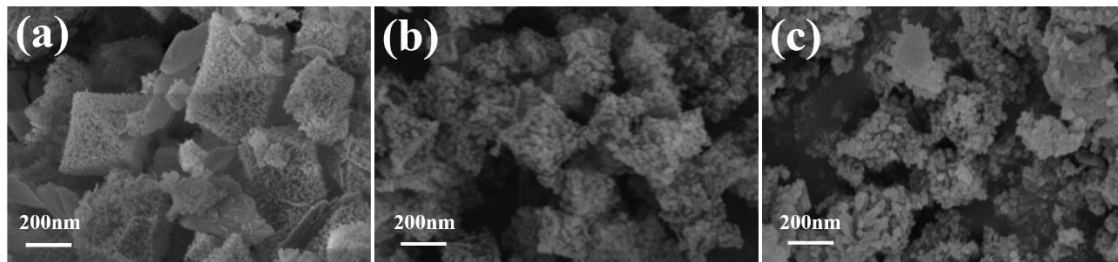
Bingping Liu, email: [bpiliu@qau.edu.cn](mailto:bpiliu@qau.edu.cn); QAU, Qingdao, 266109, China



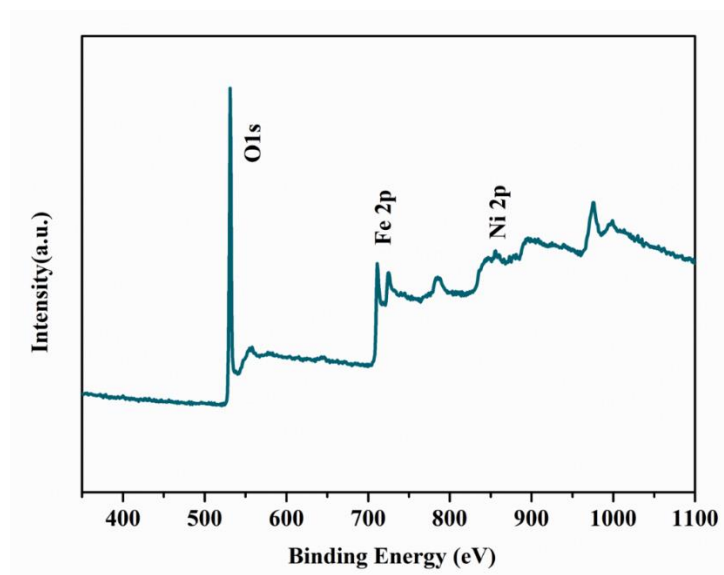
**Fig. S1.** Schematic diagrams to illustrate the synthesis of  $\text{NiFe}_2\text{O}_4$



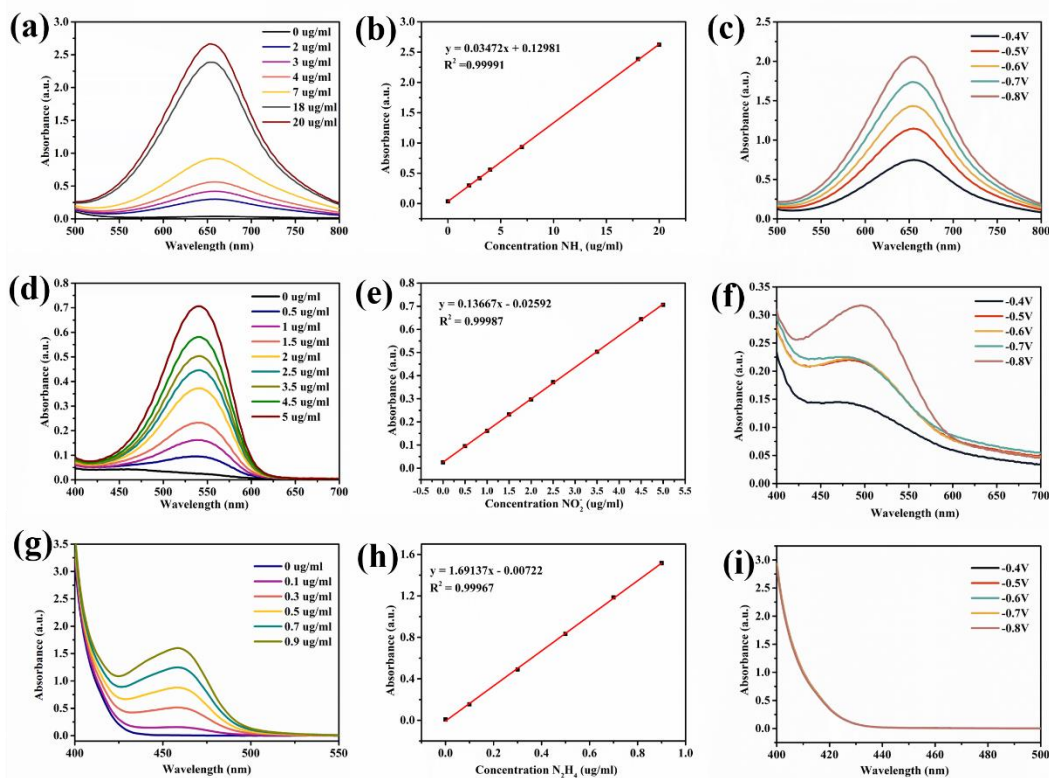
**Fig. S2.** SEM of (a) 0.43 mmol Ni, (b) 0.86 mmol Ni, (c) 1.29 mmol Ni.



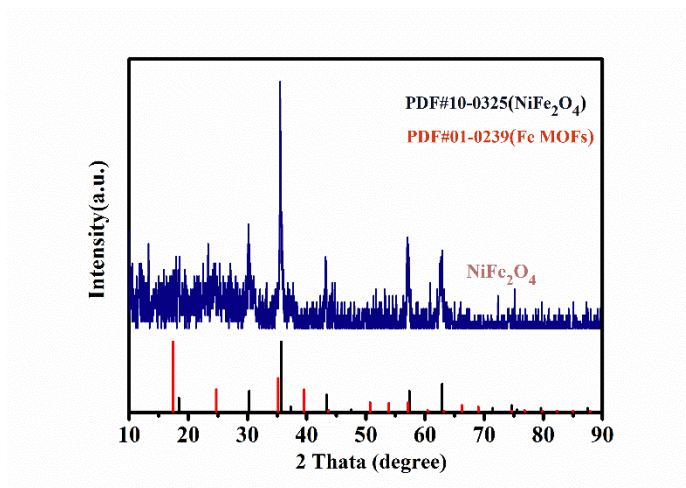
**Fig. S3.** SEM of (a)  $300^\circ\text{C}$ , (b)  $350^\circ\text{C}$ , (c)  $400^\circ\text{C}$ .



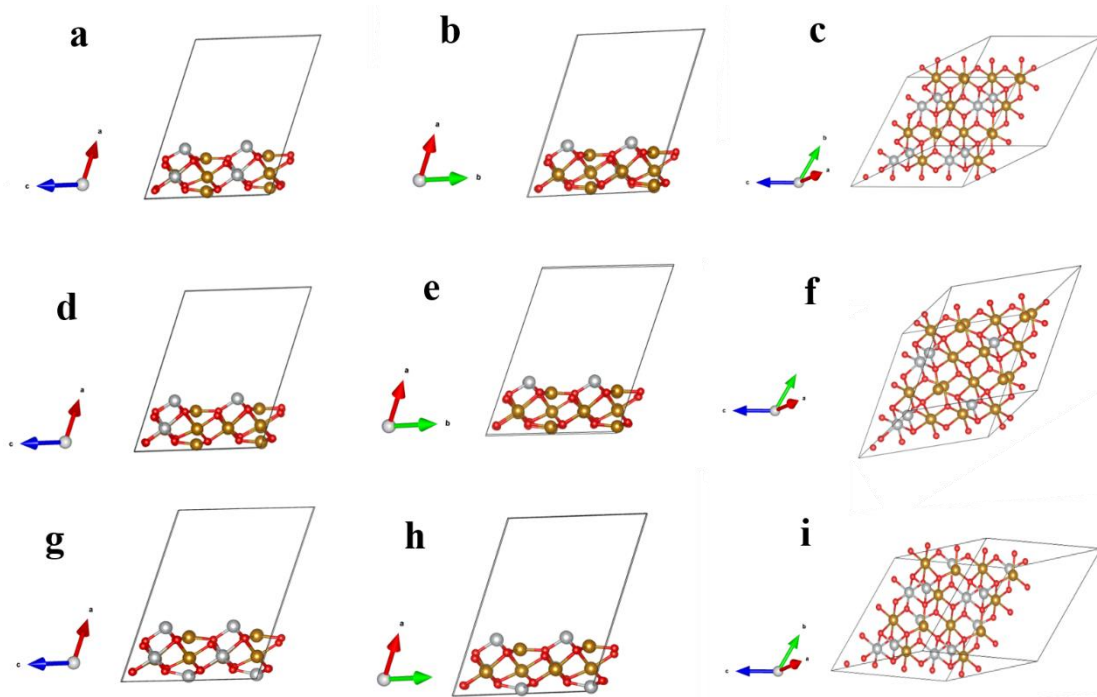
**Fig. S4.** The XPS of  $\text{NiFe}_2\text{O}_4$  full spectrum.



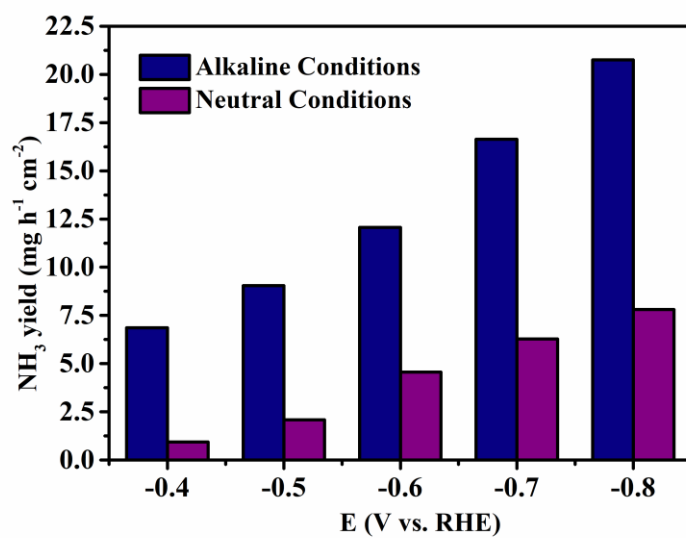
**Fig. S5.** (a)(c) UV-Vis spectra and (b) calibration curve for determining  $\text{NH}_3$ . (d) (e) UV-Vis spectra and (f) calibration curve for determining  $\text{NO}_2^-$ . (g) (h) UV-Vis spectra and (i) calibration curve for determining  $\text{N}_2\text{H}_4$ .



**Fig. S6.** The XRD of  $\text{NiFe}_2\text{O}_4$ .



**Fig. S7.** The structural models of (a-c)  $\text{NiFe}_2\text{O}_4$ , (d-f)  $\text{Ni}_{0.75}\text{Fe}_{2.25}\text{O}_4$ , and (g-i)  $\text{Ni}_{1.5}\text{Fe}_{1.5}\text{O}_4$ .



**Fig. S8.** The effect of pH on  $\text{NH}_3$  yield.