Supporting Information

Controllable $Nd_2Fe_{14}B$/α-Fe Nanocomposites: Chemical Synthesis and Magnetic Properties

Lianqing Yu[a, b], *Ce Yang*[a], *and Yanglong Hou*[a, *]

[a] Department of Materials Science and Engineering, College of Engineering, Peking University, Beijing 100871, China.

[b] College of Science, China University of Petroleum,Qingdao 266580, China

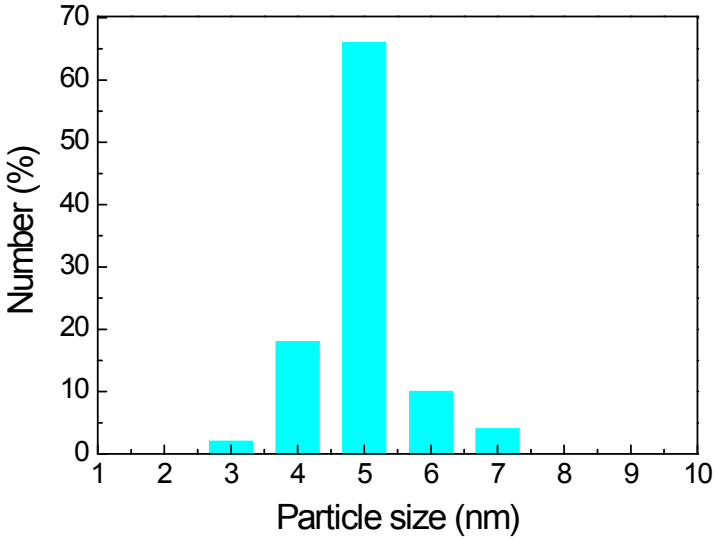
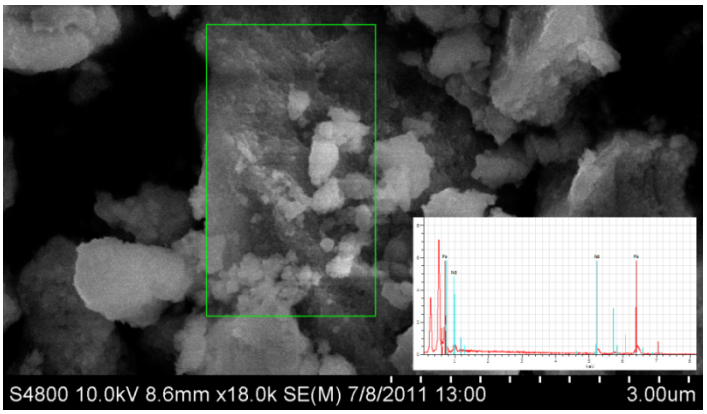


Figure S1. The size distribution histograms of 5 nm α-FeNPs



FigureS2. SEM images of $Nd_2Fe_{14}B$/α-Fe nanocomposite powder with total Nd/Fe ratio of 2.6/10. EDS analysis shows the molar ratio of Nd to Fe=1.42:10

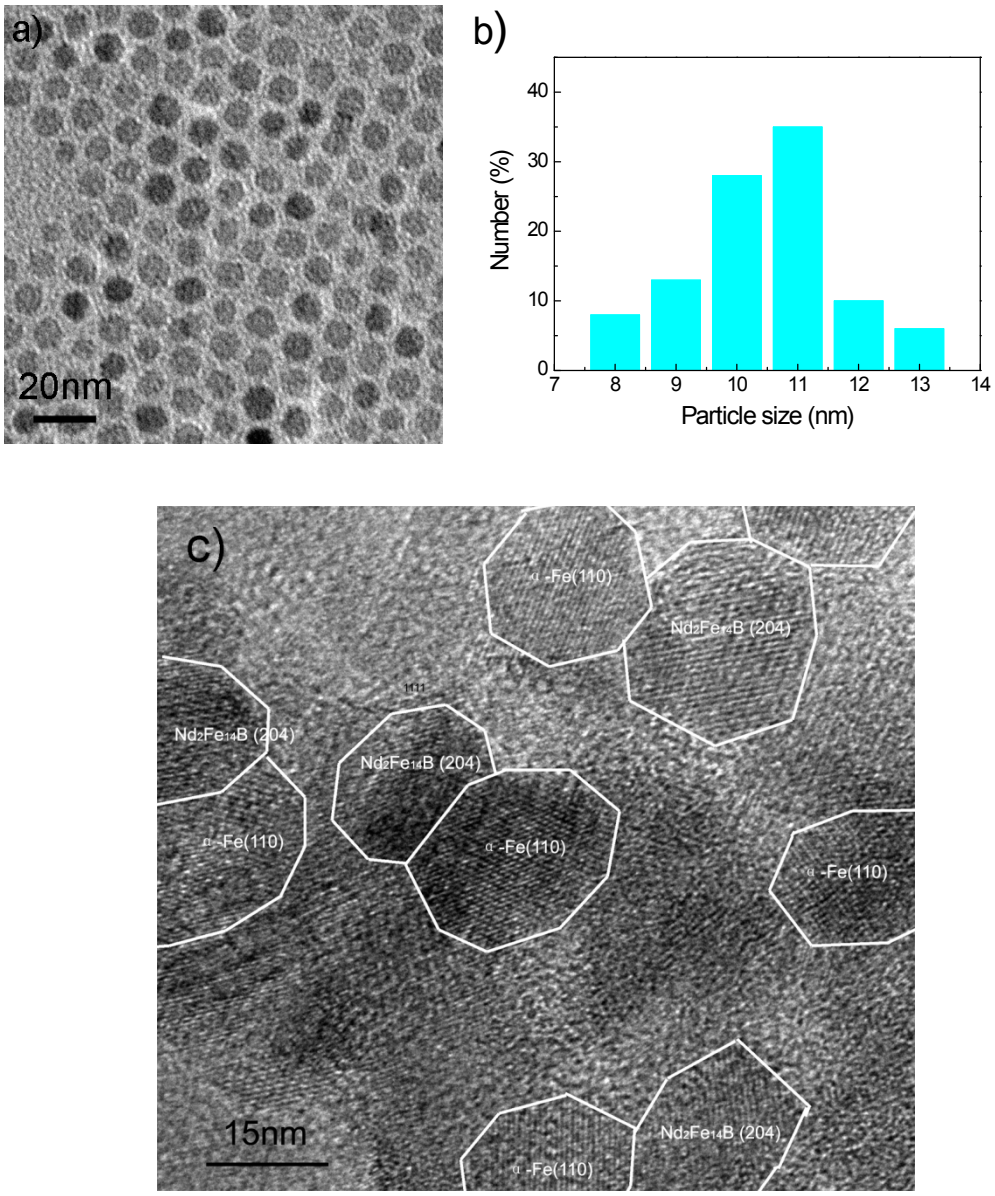


Figure S3 α-Fe NPs with size of 10nm prepared by $Fe(CO)_5$ a) SEM, b) size distribution, c) HRTEM of the corresponding nanocomposite.

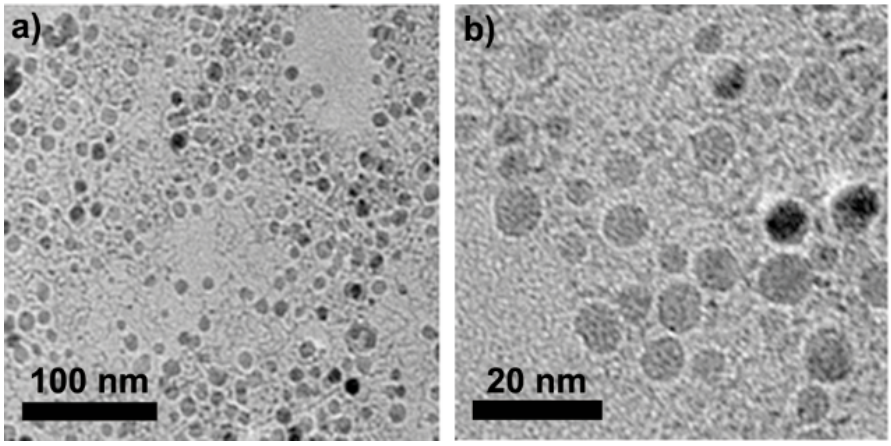


Figure S4. TEM images of Nd-Fe-B-oxide/α-Fe precursor with total Nd/Fe ratio of 1.3/10.

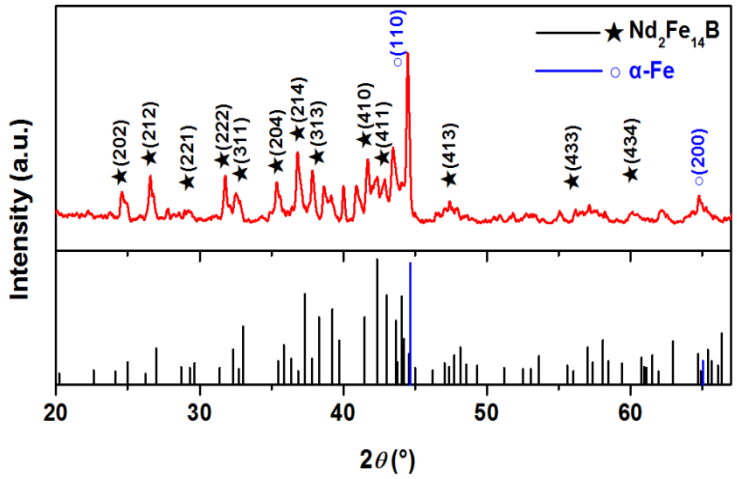


Figure S5. XRD patterns of $Nd_2Fe_{14}B$/α-Fe nanocomposites synthesized from Nd-Fe-B-oxide/α-Fe precursor with total Nd/Fe ratio of 1.3/10. The nanocomposites can be indexed as a tetragonal structure $Nd_2Fe_{14}B$ phase (JCPDS No. 36-1296) and α-Fe phase (JCPDS No. 06-0696).

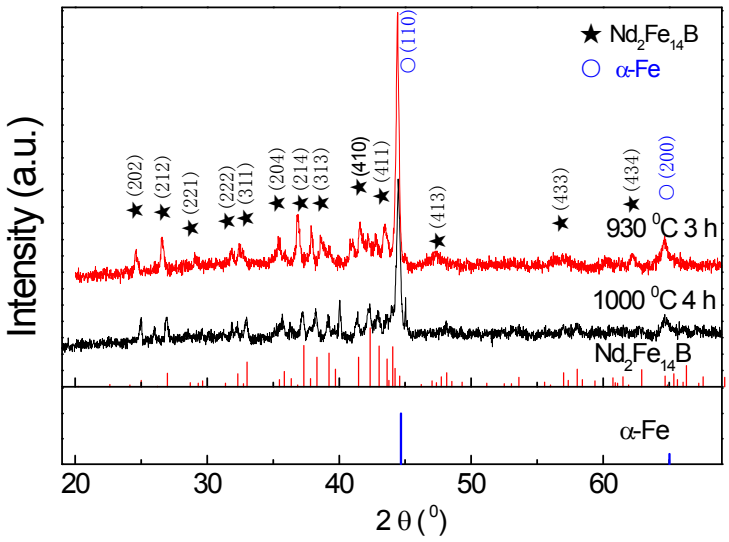


Figure S6. XRD patterns of $Nd_2Fe_{14}B$/α-Fe nanocomposites synthesized from Nd-Fe-B-oxide/α-Fe precursor with total Nd/Fe ratio of 2.6/10 under reduction & diffusion process of different temperature and time. The nanocomposites can be indexed as a tetragonal structure $Nd_2Fe_{14}B$ phase (JCPDS No. 36-1296) and α-Fe phase (JCPDS No. 06-0696).