NJC

Supplementary Materials

Chemical Synthesis of $Nd_2Fe_{14}B$ Hard Phase Magnetic Nanoparticles with Enhanced Coervivity Value; Effect of CaH_2 Amount on the Magnetic Properties

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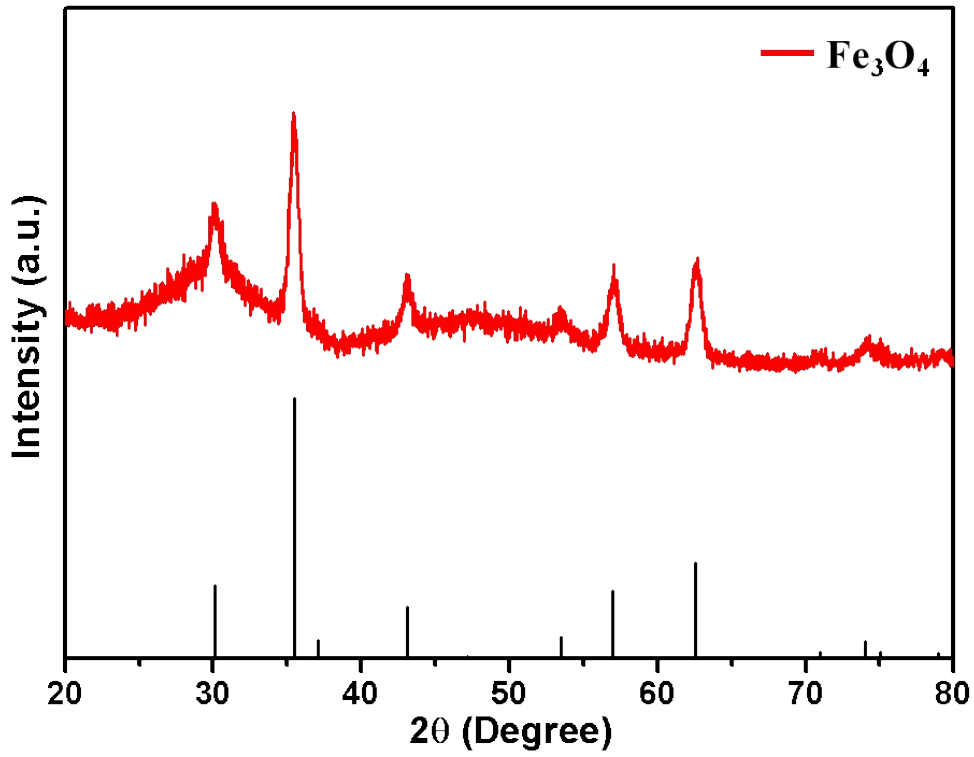


FIG. S1. X-ray diffraction pattern of the synthesized Nd-Fe-B oxide powders. Standard peak positions for Fe_3O_4 (JCPDS# 65-3107) are indicated at the bottom.

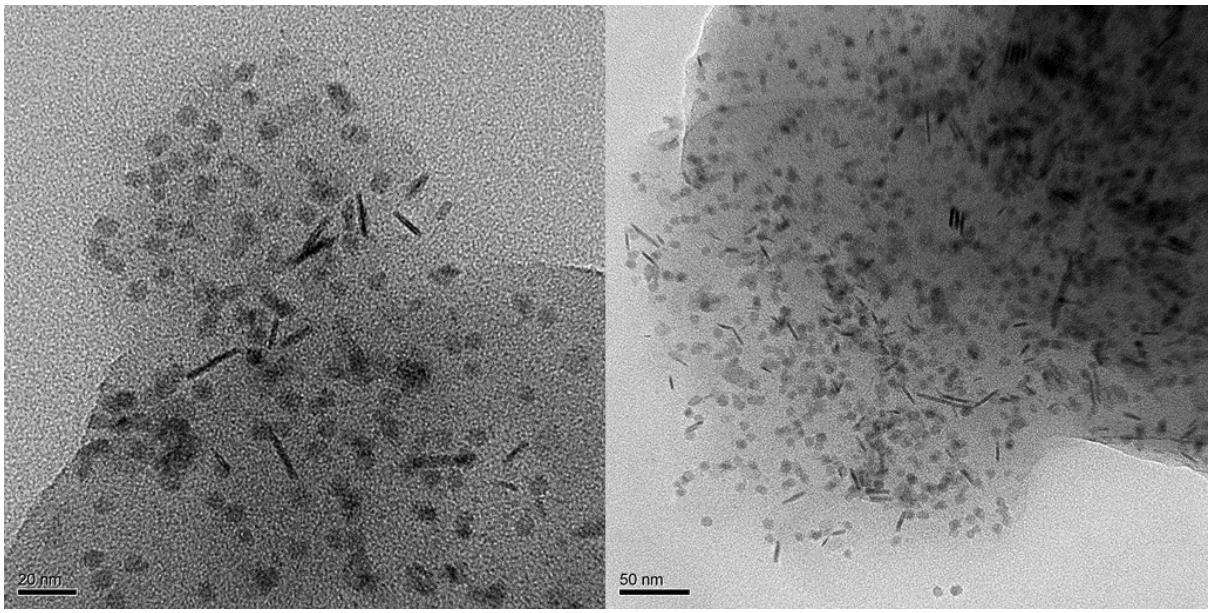
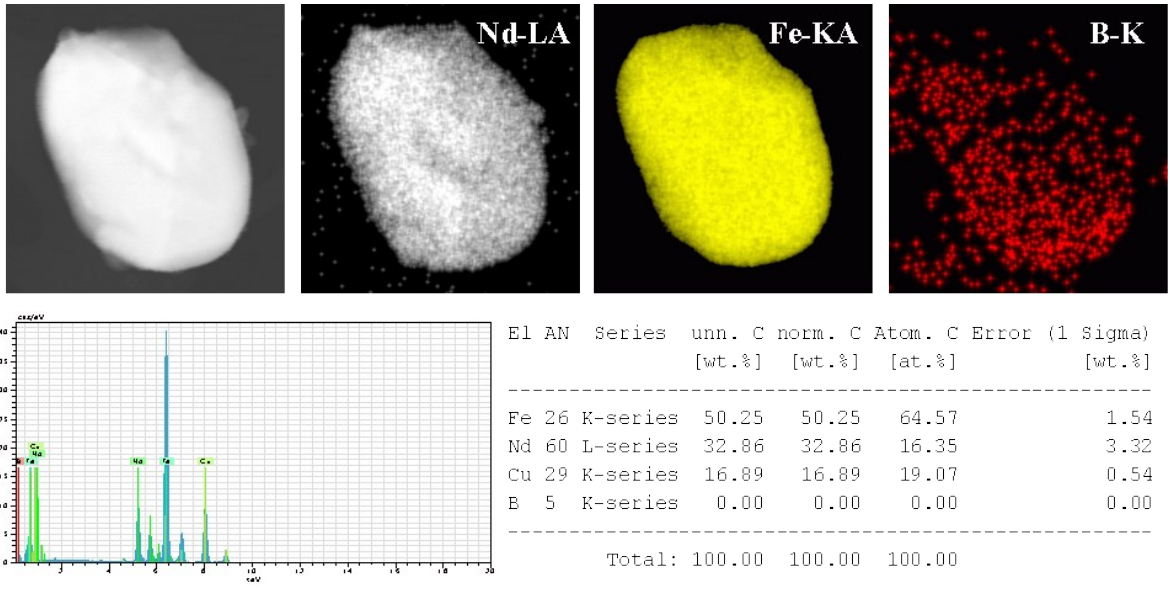


FIG. S2. TEM images of Nd-Fe-B oxide powders. The Fe_3O_4 nanoparticles (round and rod-like shape) are surrounded by the amorphous phase of neodymium and boron elements.



El	AN	Series	unn. C [wt.%]	norm. C [wt.%]	Atom. C [at.%]	Error (1 Sigma) [wt.%]
Fe	26	K-series	50.25	50.25	64.57	1.54
Nd	60	L-series	32.86	32.86	16.35	3.32
Cu	29	K-series	16.89	16.89	19.07	0.54
B	5	K-series	0.00	0.00	0.00	0.00
		Total:	100.00	100.00	100.00	

FIG. S3. EDS elemental mapping and EDS spectrum analysis of $Nd_2Fe_{14}B$ magnetic nanoparticle after annealing process at 900 ° C for 2 h with CaH_2 under high purity Ar gas.

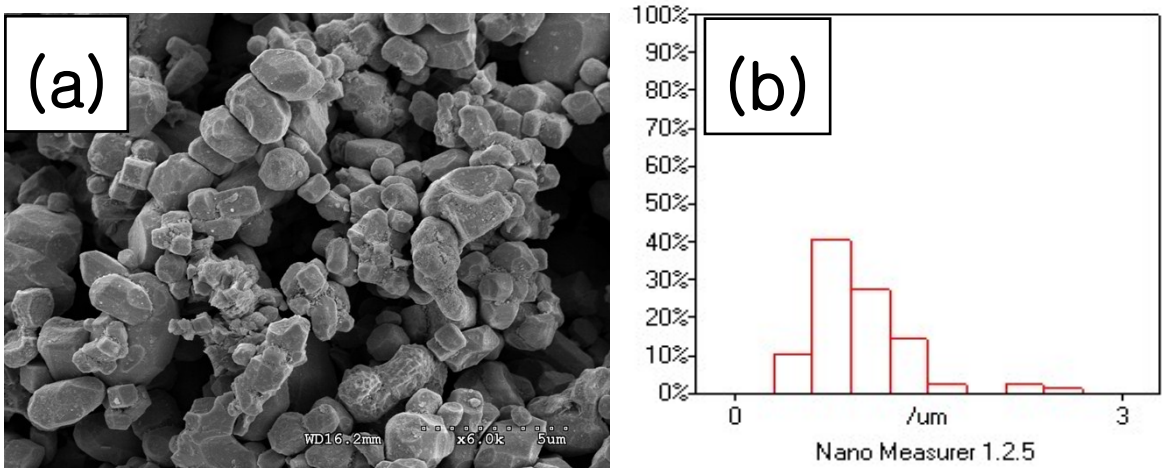


FIG. S4. (a) SEM images of $Nd_2Fe_{14}B$ particles which was synthesized by the weight ratio of 1:1.0. (b) The size distribution of the $Nd_2Fe_{14}B$ particles.