

Electronic Supplementary Information

First-order-reversal-curve analysis of rare earth permanent magnet nanostructures: Insight into coercivity enhancement mechanism through regulating the Nd-rich phase

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Supplementary Figures

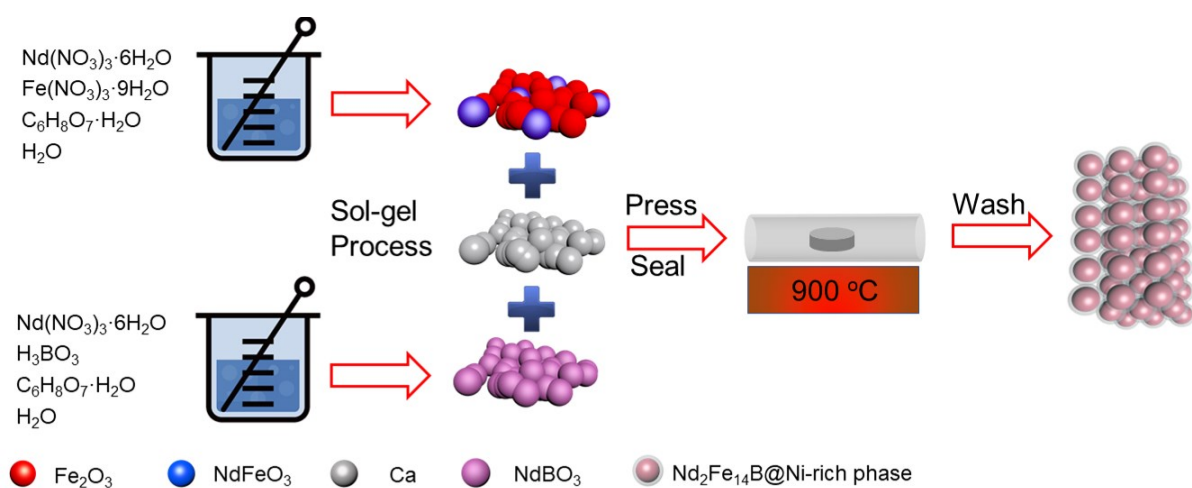


Figure S1 Schematic illustration of the synthetic process.

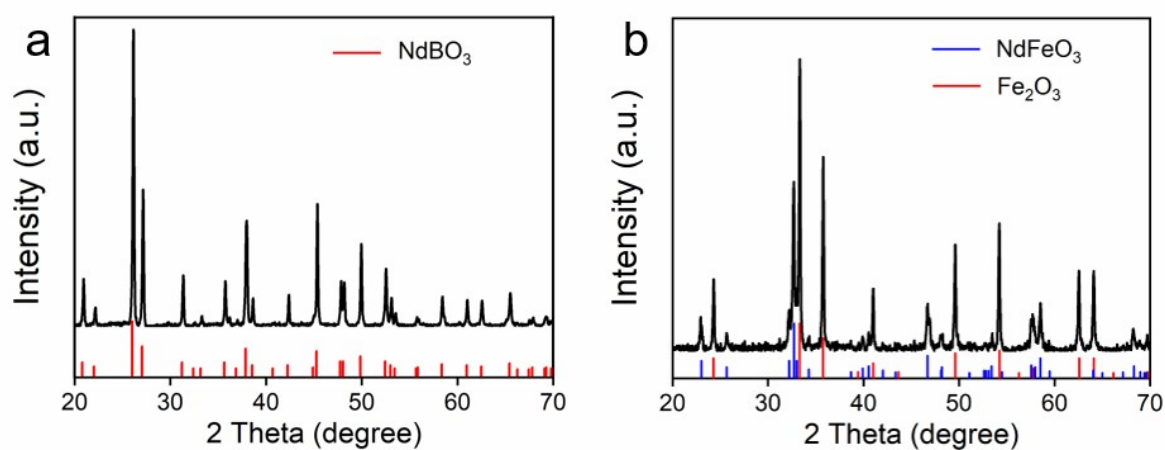


Figure S2 XRD patterns of (a) Nd-B-O and (b) Nd-Fe-O oxides precursors.

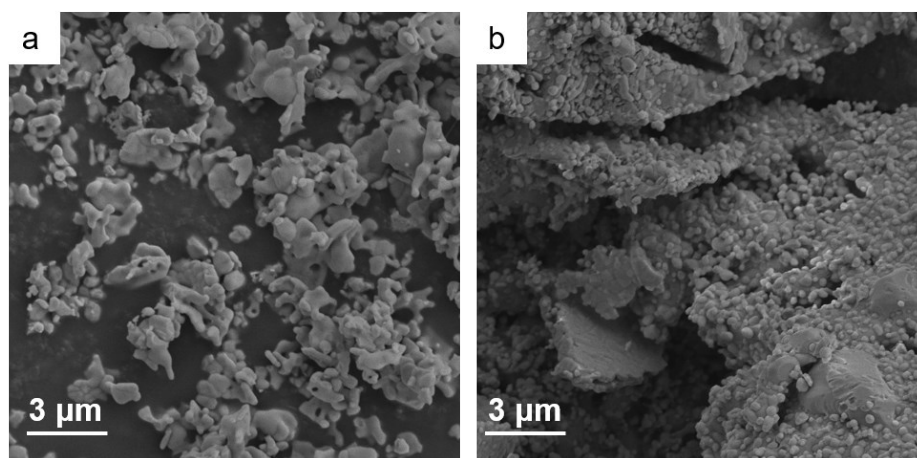


Figure S3 SEM images of (a) Nd-B-O and (b) Nd-Fe-O oxides.

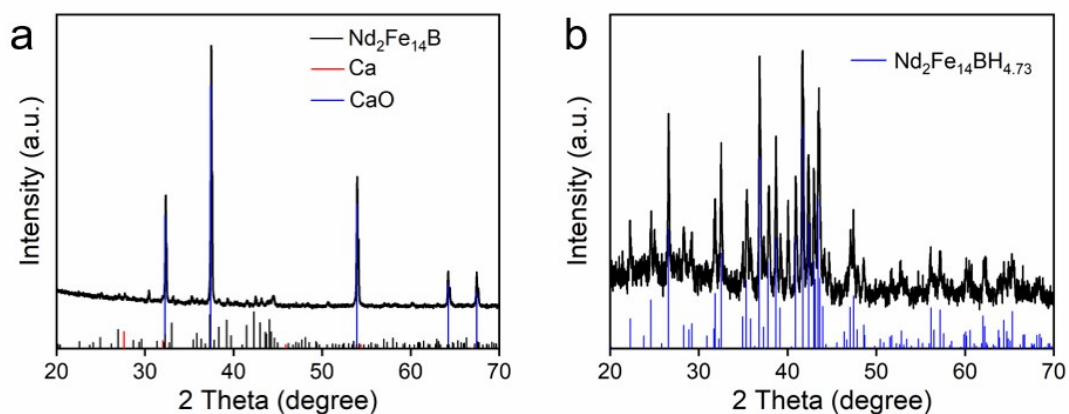


Figure S4 XRD patterns of (a) the unwashed products of $\text{Nd}_{15}\text{Fe}_{77}\text{B}_8$ and (b) the products of $\text{Nd}_{15}\text{Fe}_{77}\text{B}_8$ washed by DI water.

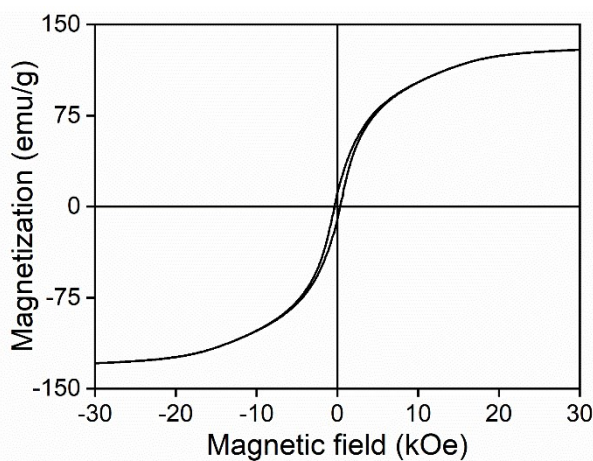


Figure S5 Room-temperature hysteresis loop of the reduction-diffusion products washed by DI water.

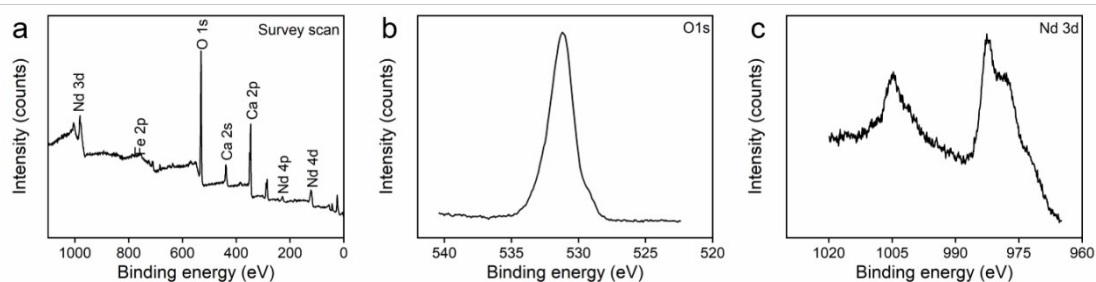


Figure S6 Survey and fitted XPS of the $\text{Nd}_2\text{Fe}_{14}\text{B}$ -based nanostructures with a composition of $\text{Nd}_{15}\text{Fe}_{77}\text{B}_8$. (a) survey scan, (b) O $1s$ spectra, and (c) Nd $3d$ spectra.

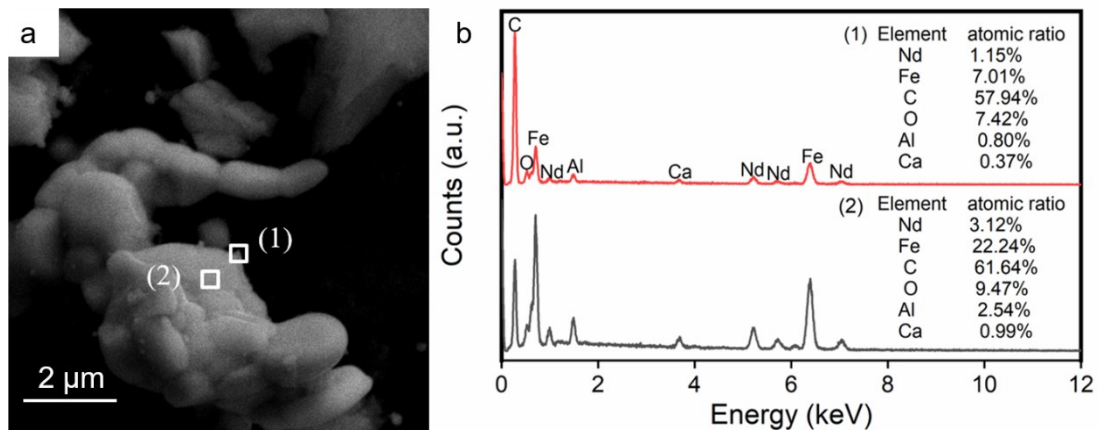


Figure S7 (a) SEM image and (b) EDX spectra of the $\text{Nd}_{15}\text{Fe}_{77}\text{B}_8$.

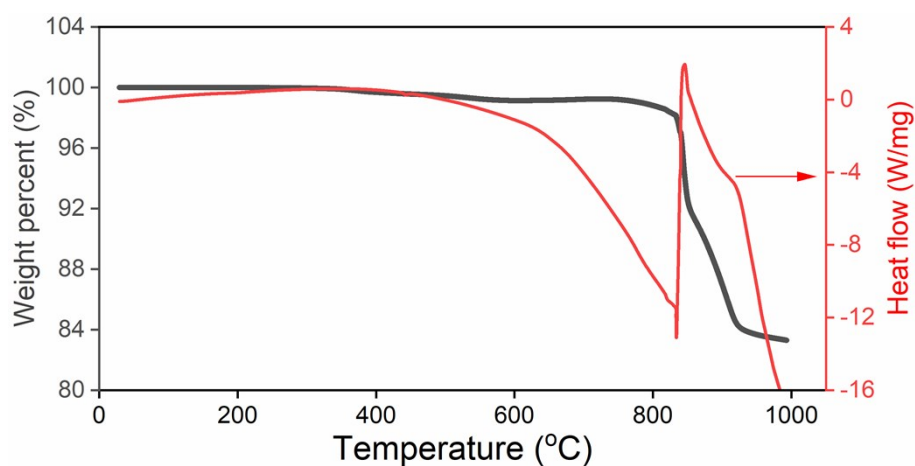


Figure S8 TG and DSC curves of the reduction-diffusion process.

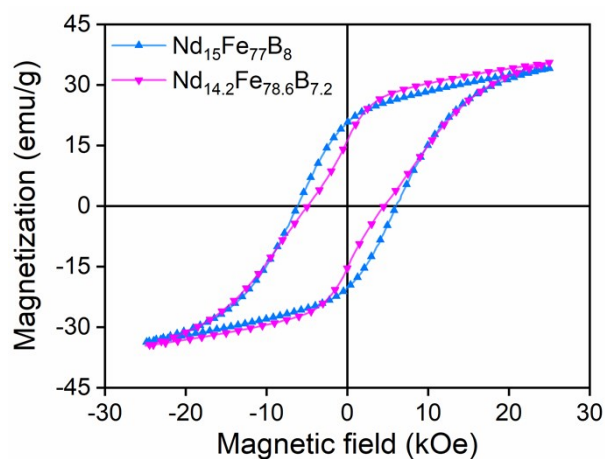


Figure S9 Room-temperature hysteresis loop of the reduction-diffusion products.

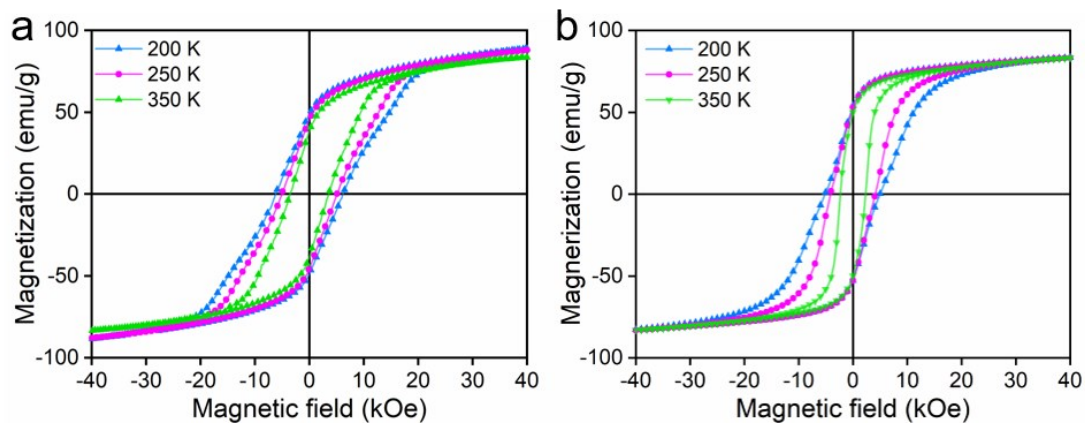


Figure S10 Hysteresis loops of the $\text{Nd}_{15}\text{Fe}_{77}\text{B}_8$ and $\text{Nd}_{14.2}\text{Fe}_{78.6}\text{B}_{7.2}$ at different temperatures.

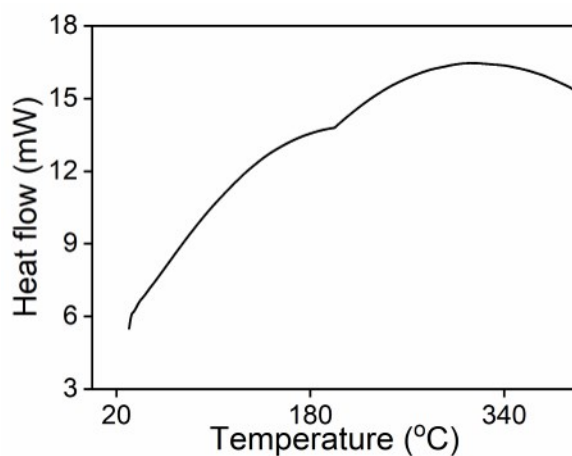


Figure S11 DSC curve of $\text{Nd}_{15}\text{Fe}_{77}\text{B}_8$.

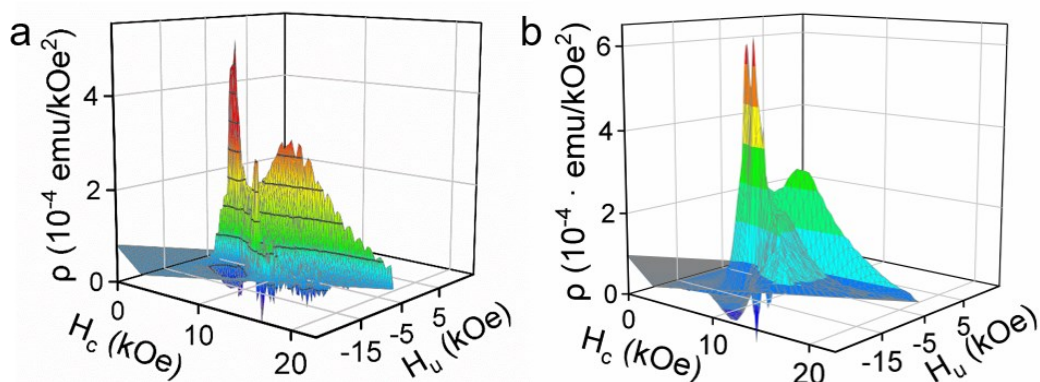


Figure S12 3D FORC contours of (a) $\text{Nd}_{15}\text{Fe}_{77}\text{B}_8$ and (b) $\text{Nd}_{14.2}\text{Fe}_{78.6}\text{B}_{7.2}$.