

Anisotropy and domain state dependent enhancement of single domain ferrimagnetism in Cobalt substituted Ni-Zn ferrites

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Supplementary Material

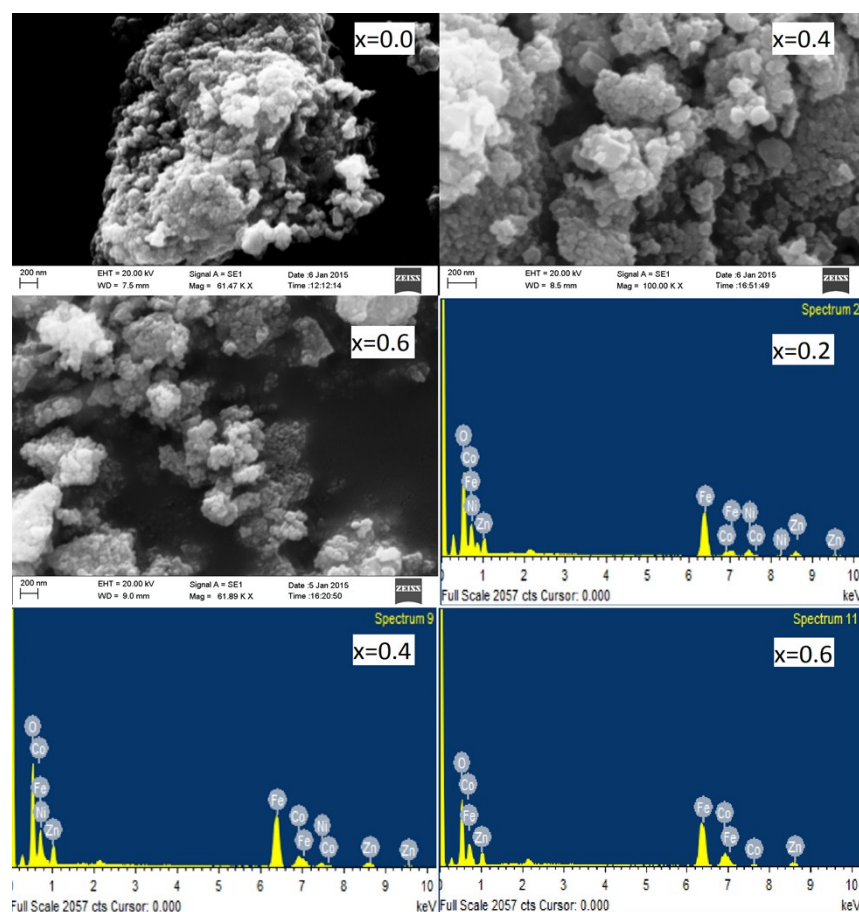


Fig. S1 SEM images and EDS spectra of some representative samples of Co substituted Ni-Zn Ferrite.

Table S1 Probable Cation distribution and Y-K angle for $\text{Co}_x\text{Ni}_{0.6-x}\text{Zn}_{0.4}\text{Fe}_2\text{O}_4$ ($x=0.0$ to 0.6) nanoparticles as a function of Co substitution.

Co	A-site	B-site	Y-K angle
0.0	$\text{Zn}_{0.4}\text{Ni}_{0.04}\text{Fe}_{0.56}$	$\text{Ni}_{0.56}\text{Fe}_{1.44}$	47.92
0.1	$\text{Zn}_{0.4}\text{Ni}_{0.07}\text{Co}_{0.1}\text{Fe}_{0.43}$	$\text{Ni}_{0.43}\text{Fe}_{1.57}$	51.70
0.2	$\text{Zn}_{0.4}\text{Ni}_{0.05}\text{Co}_{0.14}\text{Fe}_{0.41}$	$\text{Co}_{0.06}\text{Ni}_{0.35}\text{Fe}_{1.59}$	52.73
0.3	$\text{Zn}_{0.3}\text{Ni}_{0.08}\text{Co}_{0.25}\text{Fe}_{0.37}$	$\text{Zn}_{0.1}\text{Co}_{0.05}\text{Ni}_{0.22}\text{Fe}_{1.63}$	49.83
0.4	$\text{Zn}_{0.35}\text{Ni}_{0.08}\text{Co}_{0.17}\text{Fe}_{0.4}$	$\text{Zn}_{0.05}\text{Co}_{0.23}\text{Ni}_{0.12}\text{Fe}_{1.60}$	50.20
0.5	$\text{Zn}_{0.35}\text{Ni}_{0.05}\text{Co}_{0.23}\text{Fe}_{0.37}$	$\text{Zn}_{0.05}\text{Co}_{0.27}\text{Ni}_{0.05}\text{Fe}_{1.63}$	50.45
0.6	$\text{Zn}_{0.35}\text{Co}_{0.32}\text{Fe}_{0.33}$	$\text{Zn}_{0.05}\text{Co}_{0.28}\text{Fe}_{1.67}$	51.01

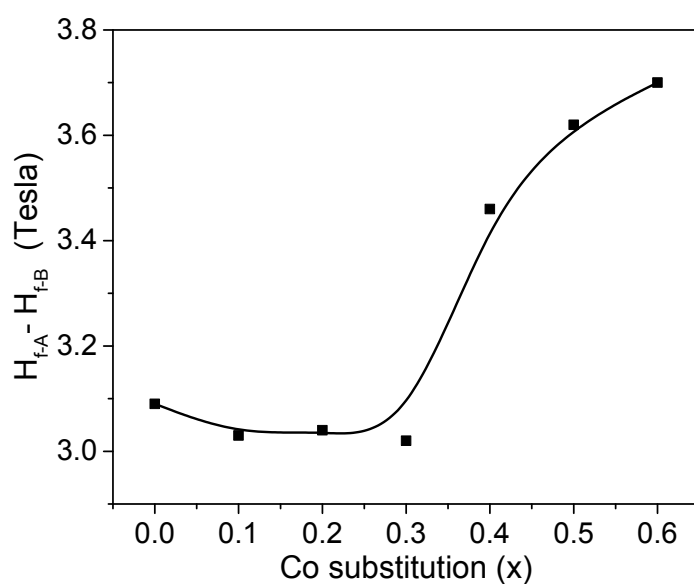


Fig. S2 Difference between the hyperfine field of sextet A (H_{fA}) and sextet B (H_{fB}) with Co substitution in $\text{Co}_x\text{Ni}_{0.6-x}\text{Zn}_{0.4}\text{Fe}_2\text{O}_4$ ferrite.