

Supplementary Information

Preparation and characterization of various PVPylated divalent metal-doped ferrite nanoparticles for magnetic hyperthermia

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1. Effect of increasing metal doping:

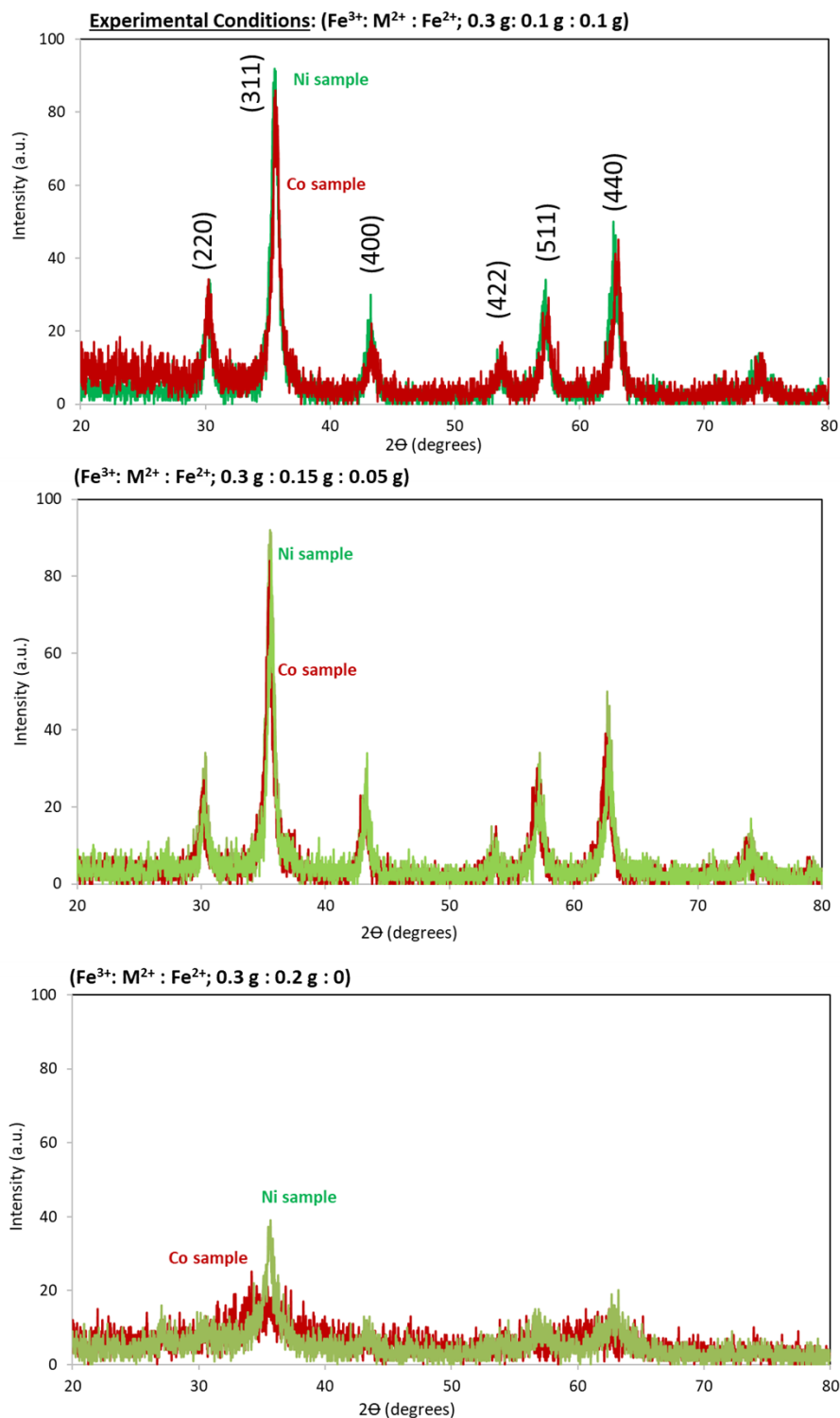


Figure S1. Effect of metal doping on the ferrite phase. It can be clearly seen that no difference is observed when concentration of Ni^{2+} or Co^{2+} was increased from 0.1 to 0.15 g in the presence of Fe^{2+} , however absence of Fe^{2+} will distort the crystalline phase.

2. Rietveld analysis:

Table S1. Rietveld analysis results of XRD patterns of PVP-capped MFe₂O₄ NPs.

Sample (Phase %)	DB card No.	Size (nm)	Micro strain	Lattice Parameter (Å°)	Fitting Parameters					
					Rwp:		Rp:		Re:	
PVP-Fe ₃ O ₄ (100 %)	01-071-6337	9	0.314 (7)	a:8.344 b:8.344 c:8.344	Rwp:	41.4	Rp:	31.06	Re:	37.85
					S:	1.09	X2	1.19		
PVP-NiFe ₂ O ₄ (100 %)	01-071-3850	18.5	0.093 (6)	a:8.355 b:8.355 c:8.355	Rwp:	38.58	Rp:	27.38	Re:	36.92
					S:	1.044	X2	1.09		
PVP-CoFe ₂ O ₄ (100 %)	01-074- 6402	9.3	0.09 (7)	a:8.379 b:8.379 c:8.379	Rwp:	41.29	Rp:	30.42	Re:	41.61
					S:	0.992	X2	0.983		
PVP-ZnFe ₂ O ₄ (100 %)	01-071-5149	8.9	0.343 (12)	a:8.436 b:8.436 c:8.436	Rwp:	24.11	Rp:	16.76	Re:	22.91
					S:	1.05	X2	1.1		
PVP-MgFe ₂ O ₄ (100 %)	01-071-4919	5.2	1.13 (4)	a:8.355 b:8.355 c:8.355	Rwp:	29.68	Rp:	22.84	Re:	27.24
					S:	1.08	X2	1.18		
PVP-Sn _{0.5} Fe _{2.5} O ₄ (100%)	01-071-0695	10.7	0.59 (13)	a:8.642 b:8.642 c:8.642	Rwp:	31.2	Rp:	31.95	Re:	19.66
					S:	1.58	X2	2.5		

3. Elemental analysis:

Tables S2. SEM-EDX elemental composition of the different PVP-capped MFe_2O_4 doped ferrites.

PVP- Fe_3O_4

Element	Weight %	Atomic %
C	2.80	7.50
O	25.4	51.2
Fe	71.8	41.3

PVP- $CoFe_2O_4$

Element	Weight %	Atomic %
C	3.7	9.25
O	29.7	55.7
Fe	42.7	22.95
Co	23.9	12.1

PVP- $NiFe_2O_4$

Element	Weight %	Atomic %
C	3.0	7.6
O	29.9	56.6
Fe	49.6	26.8
Ni	17.5	9.00

PVP- $ZnFe_2O_4$

Element	Weight %	Atomic %
C	3.6	9.00
O	31.0	57.9
Fe	44.3	23.5
Zn	21.1	9.60

PVP- $MgFe_2O_4$

Element	Weight %	Atomic %
C	4.5	10.6
O	27.7	49.0
Fe	55.1	27.9
Mg	10.7	12.5

PVP- $Sn_{0.5}Fe_{2.5}O_4$

Element	Weight %	Atomic %
C	3.9	11.3
O	25.3	54.8
Fe	40.2	25.0
Sn	30.6	8.90