

A simplified and efficient method for production of manganese ferrite magnetic nanoparticles and their application in DNA isolation

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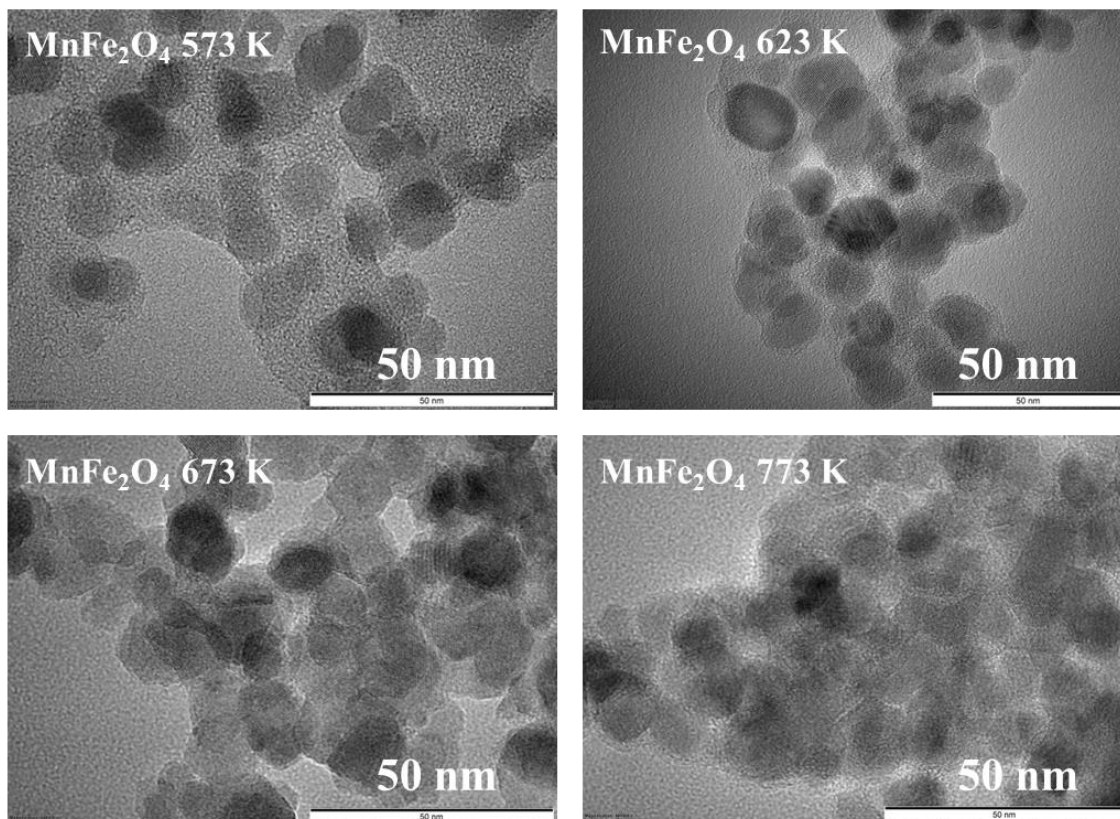


Figure S1. HRTEM images of the manganese ferrite samples synthesised at 573K, 623K, 673K, and 773K.

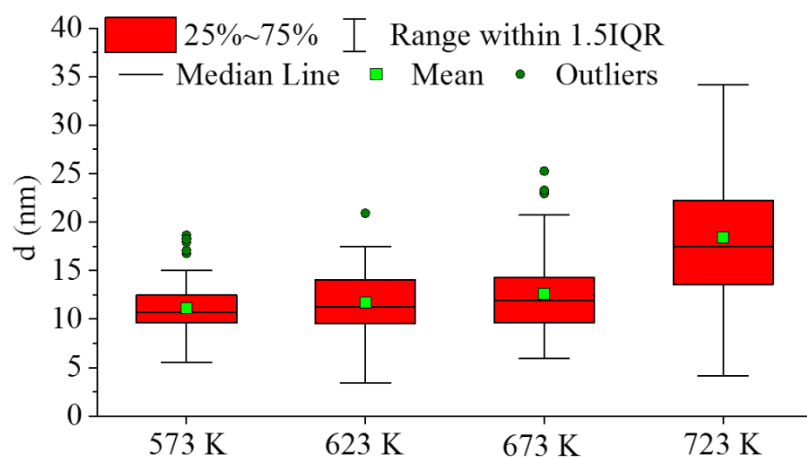


Figure S2. Box plot diagrams of the particle sizes in the manganese ferrite magnetic nanoparticles synthesized at 573K, 623K, 673K, and 773K. The particle sizes were obtained from the analysis of TEM images.

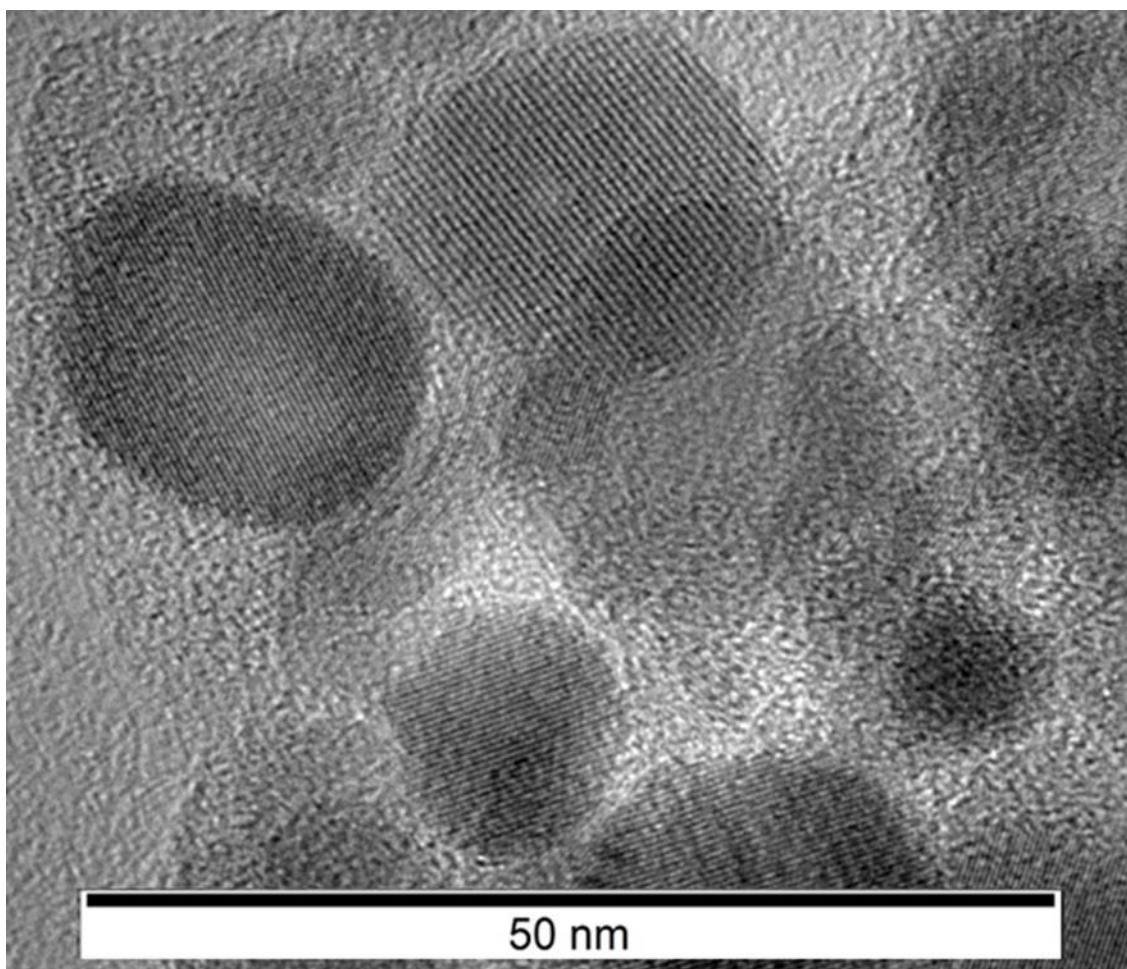


Figure S3. HRTEM picture of the MnFe₂O₄ sample.

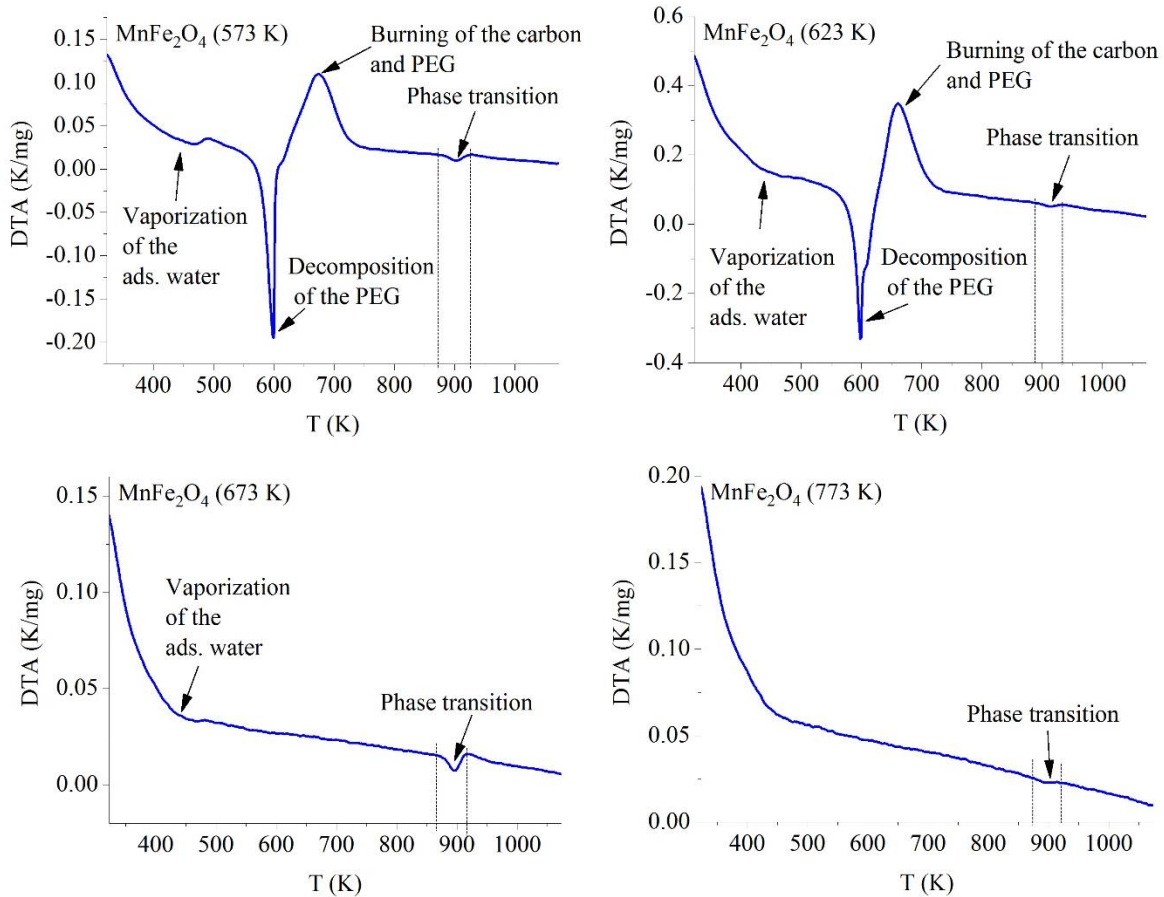


Figure S4. TDA curves of the manganese ferrite samples.

Table S1. Comparison of the coercivity, saturation magnetization, crystallite and particle size of the different ferrite nanoparticles.

Formula of ferrite	Coercivity Hc (Oe)	Ms (emu/g)	Crystallite size by XRD (nm)	Particle size by TEM (nm)	References
MnFe ₂ O ₄ (573K)	0.7	72.0	11.0	11 ± 3	<u>Present work</u>
MnFe ₂ O ₄ (623K)	-	-	11.0	12 ± 3	
MnFe ₂ O ₄ (673K)	-	-	13.0	13 ± 4	
MnFe ₂ O ₄ (773K)	-	-	14.0	18 ± 6	
MnFe ₂ O ₄	94.1	15.9	16.1	-	https://doi.org/10.1016/j.matpr.2021.01.209
	95.2	14.3	14.4	-	
	93.7	14.8	11.5	-	
	40.0	41.0	8.4	24	https://doi.org/10.1016/j.ceramint.2014.11.066
	~ 0	66.4	12.0	12	https://doi.org/10.1016/j.jmmm.2016.10.105
	~ 0	60.8	9.7	9	
NiFe ₂ O ₄	93.4	67.8	29.0	29	https://doi.org/10.1016/j.matchemphys.2022.126793
	94.9	0.8	20.0	24	https://doi.org/10.1016/j.physb.2022.414232
	0.6	35.1	13.0	10-15	https://doi.org/10.1186/1752-153X-6-23
	0.6	34.5	12.0	10-15	
	15.7	39.6	53.0	60	
CoFe ₂ O ₄	508.5	84.8	-	25	https://doi.org/10.1016/j.jmmm.2022.170073
	207.0	49.2	8.7	11 ± 5	https://doi.org/10.1016/j.ceramint.2022.06.104
	188.1	33.6	5.7	5 ± 1	https://doi.org/10.1016/j.jallcom.2020.155710
	44.0	39.6	8.0	8 ± 1	
	19.30	56.7	9.1	9 ± 1	
	556.6	21.7	-	20-160	https://doi.org/10.1016/j.csite.2021.101040
MgFe ₂ O ₄	~ 0	8.5	8.80	8	https://doi.org/10.1016/j.jmmm.2016.08.057
	8.5	12.8	11.1	13	https://doi.org/10.1016/j.jpccs.2021.110051
	9.9	18.6	15.1	16	
	22.3	24.5	22.3	24	
	59.7	29.4	32.7	33	
	419.0	31.8	24.0	15-35	https://doi.org/10.1016/j.mseb.2016.05.019
	106.0	23.9	24.0		
	418.5	0.4	25.1	20-30	https://doi.org/10.1016/j.physb.2020.412660
ZnFe ₂ O ₄	94.9	0.2	16.0	21.00	https://doi.org/10.1016/j.physb.2022.414232
	~ 0	41.5	25.0	310	https://doi.org/10.1016/j.physb.2020.412015
	90.0	77.0	80.0	375	
	9.9	3.1	19.0	-	https://doi.org/10.1016/j.matpr.2022.08.032
	14.5	19.4	41.1	-	