Supporting Information

Controlled Synthesis of Water-Dispersible and Superparamagnetic Fe_3O_4 Nanomaterials by Microwave-assisted Solvothermal Method: From Nanocrystals to Nanoclusters

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Table S1. Experimental parameters for the synthesis of Fe_3O_4 nanoparticles by Orthogonal experiment.

Samples	$m_{FeCl_3 \cdot 6H_2O}$/g	m_{Na_3Cit}/g	$m_{NaAc \cdot 3H_2O}$/g	t/h	T/°C
1	0.8115	0.4	2	1	200
2	0.8115	0.4	4	2	220
3	0.8115	0.4	6	3	240
4	1.3525	0.4	2	2	240
5	1.3525	0.4	4	3	200
6	1.3525	0.4	6	1	220
7	1.8935	0.4	2	3	220
8	1.8935	0.4	4	1	240
9	1.8935	0.4	6	2	200

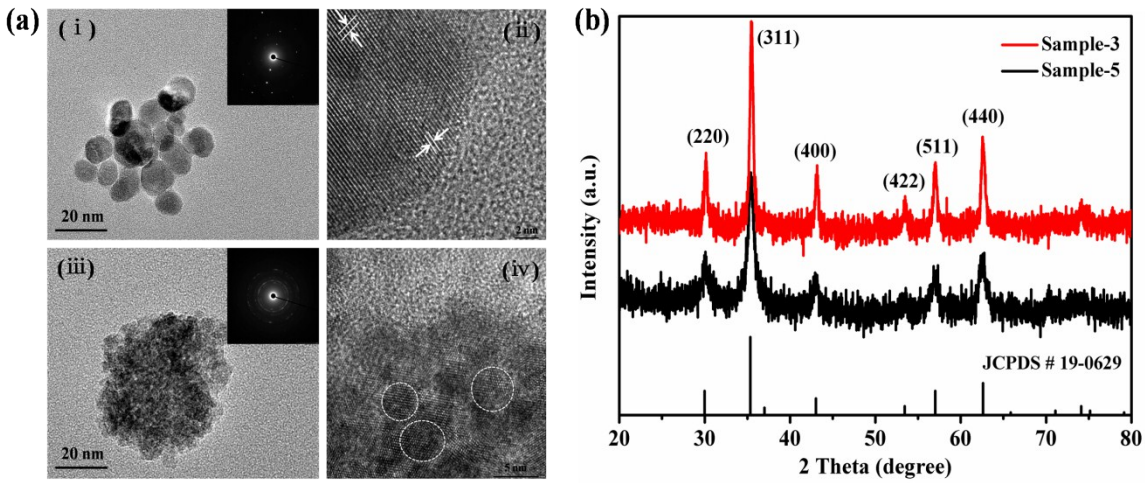

Figure S1. **(a)** Low magnification TEM images (i, iii) and high-resolution TEM images (ii, iv) and （b） XRD patterns of SPION crystal (sample-3) and SPION cluster (sample -5).

Table S2. Experimental parameters for the synthesis of SPION crystals (Fe_3O_4 1-7) and SPION clusters (Fe_3O_4 8-14).

Samples	$m_{FeCl_3 \cdot 6H_2O}$/g	m_{Na_3Cit}/g	$m_{NaAc \cdot 3H_2O}$/g	t/h	T/°C
Fe_3O_4-1	0.8115	0.4	4	3	200
Fe_3O_4-2	0.8115	0.4	4	3	220
Fe_3O_4-3	0.8115	0.4	4	3	240
Fe_3O_4-4	0.8115	0.4	4	1	240
Fe_3O_4-5	0.8115	0.4	4	2	240
Fe_3O_4-6	0.8115	0.4	2	3	240
Fe_3O_4-7	0.8115	0.4	6	3	240
Fe_3O_4-8	1.3525	0.4	4	2	240
Fe_3O_4-9	1.3525	0.4	4	2	200
Fe_3O_4-10	1.3525	0.4	4	2	220
Fe_3O_4-11	1.3525	0.4	4	1	200
Fe_3O_4-12	1.3525	0.4	4	3	200
Fe_3O_4-13	1.3525	0.4	2	2	200
Fe_3O_4-14	1.3525	0.4	6	2	200

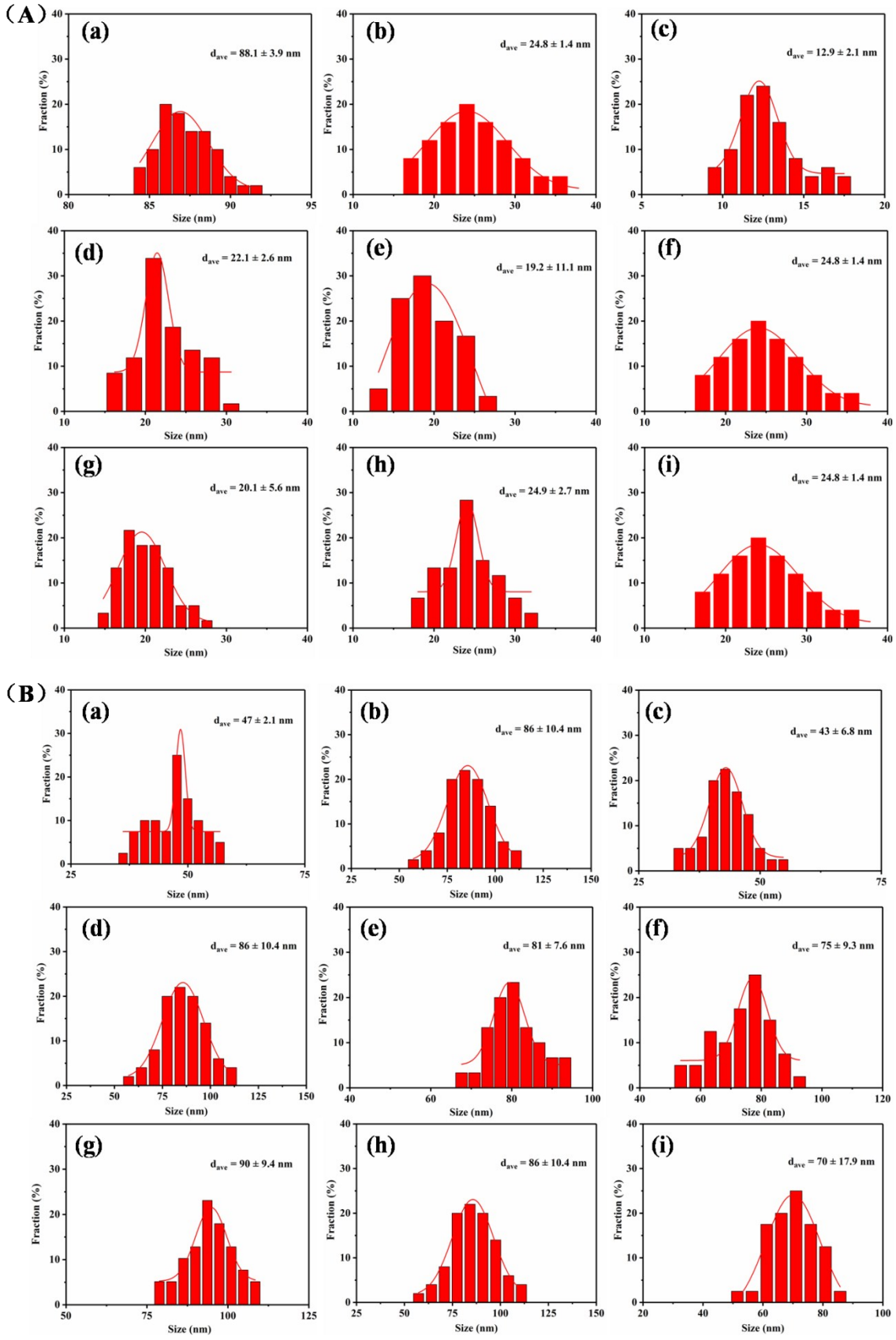

Figure S2. The size distribution of (A) SPION crystals (Fe_3O_4 1-7) and (B) SPION clusters (Fe_3O_4 8-14).

Table S3. Zeta potential for the synthesis of SPION crystals (Fe_3O_4 1-7) and SPION clusters (Fe_3O_4 8-14).

Samples	Fe_3O_4-1	Fe_3O_4-2	Fe_3O_4-3	Fe_3O_4-4	Fe_3O_4-5	Fe_3O_4-6	Fe_3O_4-7
ζ potential[a] (mV)	-16.3	-12.5	-17.1	-15.6	-16.1	-34.3	-8.4
	±0.6	±0.4	±0.3	±0.3	±0.2	±0.9	±0.1

Samples	Fe_3O_4-8	Fe_3O_4-9	Fe_3O_4-10	Fe_3O_4-11	Fe_3O_4-12	Fe_3O_4-13	Fe_3O_4-14
ζ potential[a] (mV)	-22.9	-37.8	-33.5	-37.2	-23.4	-18.3	-14.2
	±0.3	±0.7	±1.0	±0.9	±0.6	±0.8	±0.5

[a] Values are averaged from three measurements in DI-water.

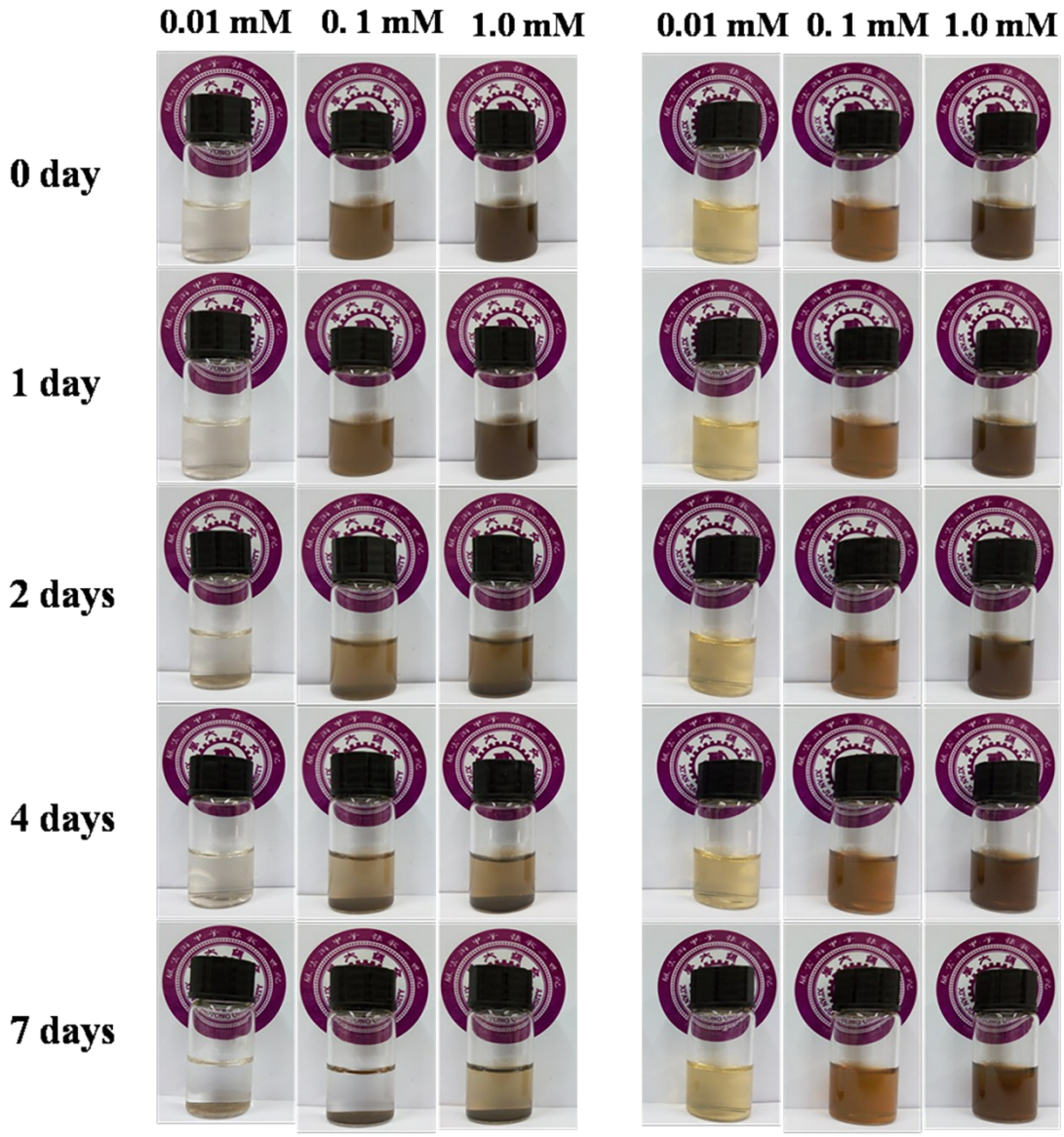

Figure S3. Photographs of the SPION crystal (Fe_3O_4-3, left) and SPION cluster (Fe_3O_4-9, right) suspended in DI-water.