

Supporting information

Table S1. Analysis of Variance for Transformed Response in Case Measured Response is Magnetic Properties.

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Model	6	90.9068	15.1511	42.50	0.000
Linear	4	86.3826	21.5957	60.57	0.000
[TEOS]	1	80.6953	80.6953	226.33	0.000
Ammonia	1	0.6240	0.6240	1.75	0.209
Dose of Fe3O4	1	4.3607	4.3607	12.23	0.004
Addition Mode	1	0.7026	0.7026	1.97	0.184
2-Way	1	3.7080	3.7080	10.40	0.007
Interactions					
[TEOS]*Dose of Fe3O4	1	3.7080	3.7080	10.40	0.007
Curvature	1	0.8162	0.8162	2.29	0.154
Error	13	4.6349	0.3565		
Total	19	95.5417			

Table S2. Analysis of Variance for Transformed Response in Case Measured Response is PS.

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Model	9	19.3435	2.1493	36.97	0.000
Blocks	1	3.8536	3.8536	66.29	0.000
Linear	4	11.4534	2.8633	49.26	0.000
[TEOS]	1	10.3314	10.3314	177.72	0.000
Ammonia	1	0.1099	0.1099	1.89	0.199
Dose of Fe3O4	1	0.0002	0.0002	0.00	0.951
Addition Mode	1	1.0118	1.0118	17.41	0.002
2-Way Interactions	3	2.7518	0.9173	15.78	0.000
[TEOS]*Ammonia	1	0.8894	0.8894	15.30	0.003
[TEOS]*Addition Mode	1	1.5887	1.5887	27.33	0.000
Ammonia*Dose of Fe3O4	1	0.2736	0.2736	4.71	0.055
Curvature	1	1.2848	1.2848	22.10	0.001
Error	10	0.5813	0.0581		
Total	19	19.9248			

Table S3. Analysis of Variance for Transformed Response in Case Measured Response is PSD.

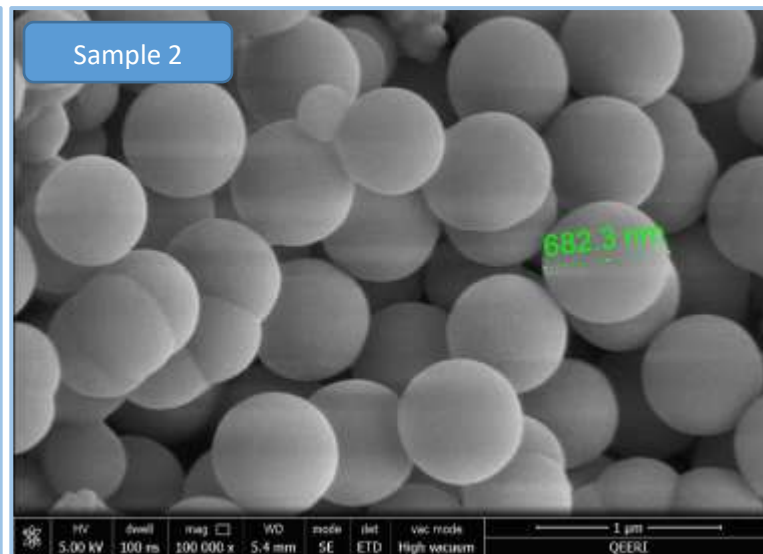
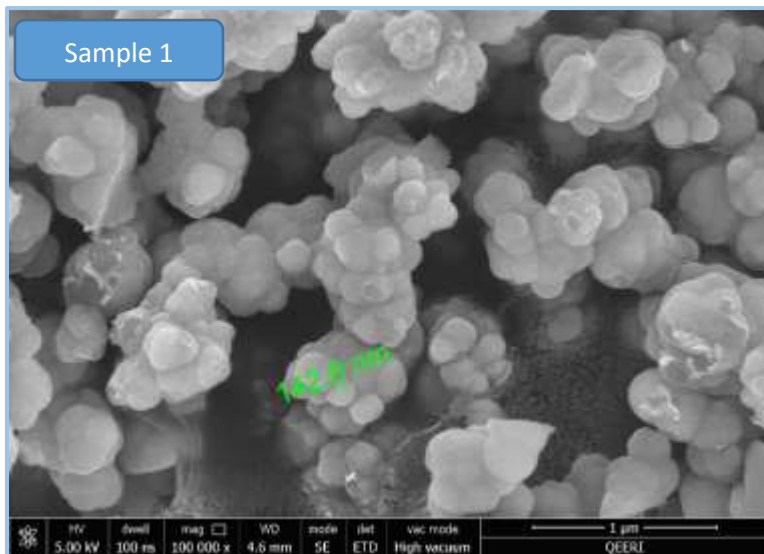
Source	DF	Adj SS	Adj MS	F-Value	P-Value
Model	7	23.8228	3.4033	59.87	0.000
Linear	4	18.5640	4.6410	81.64	0.000
[TEOS]	1	18.1160	18.1160	318.69	0.000
Ammonia	1	0.0006	0.0006	0.01	0.919
Dose of Fe3O4	1	0.2315	0.2315	4.07	0.066
Addition Mode	1	0.2159	0.2159	3.80	0.075
2-Way Interactions	2	4.2952	2.1476	37.78	0.000
[TEOS]*Dose of Fe3O4	1	3.2124	3.2124	56.51	0.000
Ammonia*Addition Mode	1	1.0827	1.0827	19.05	0.001
Curvature	1	0.9636	0.9636	16.95	0.001
Error	12	0.6821	0.0568		
Total	19	24.5049			

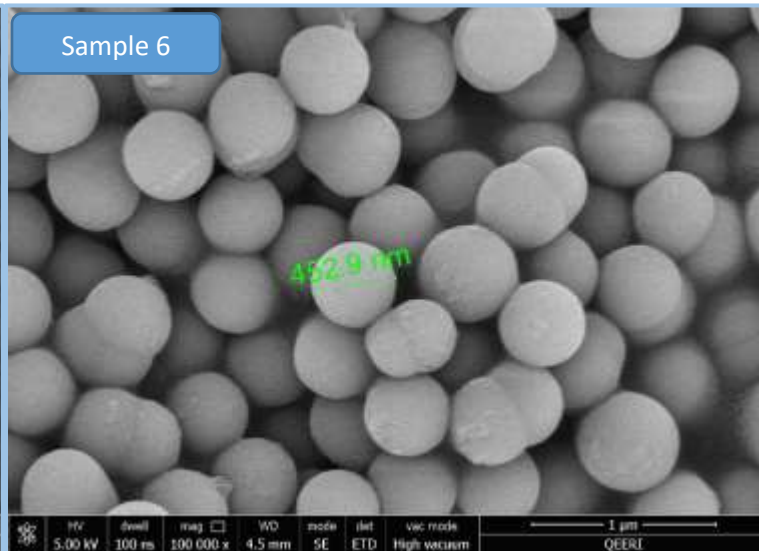
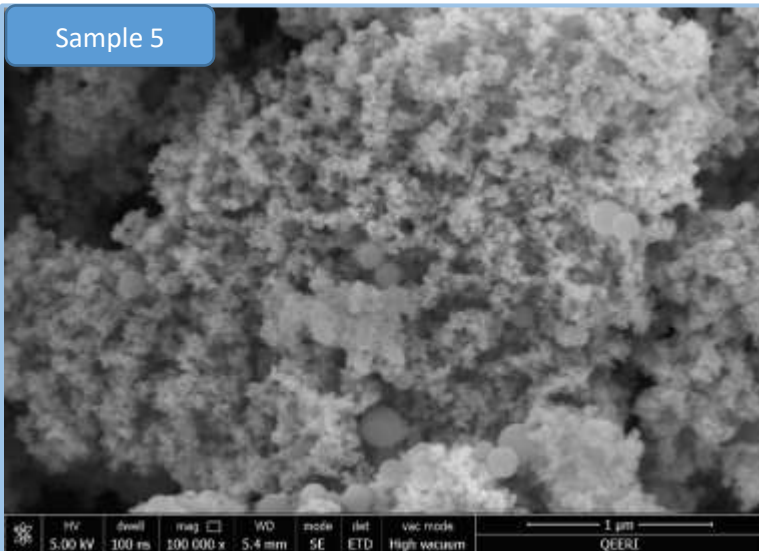
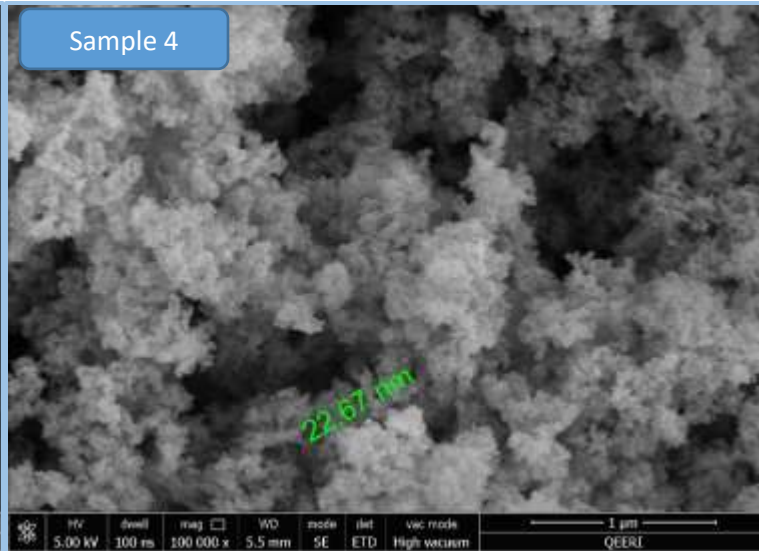
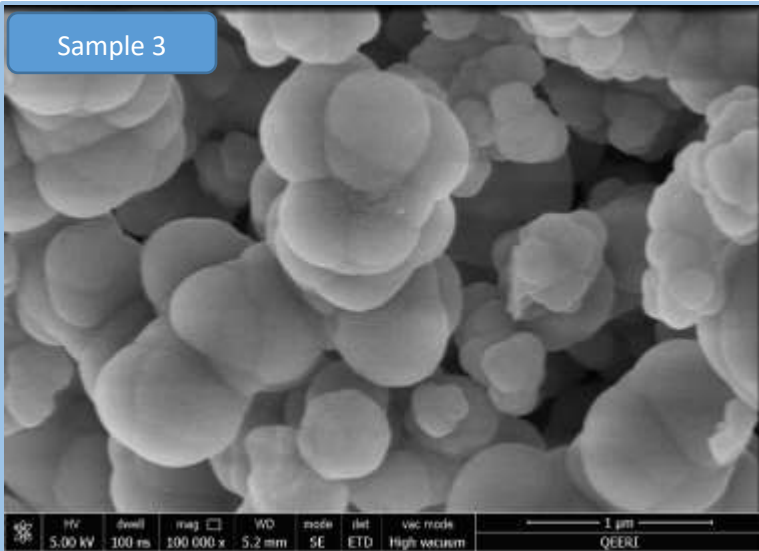
Table S4. Physical properties of the produced samples

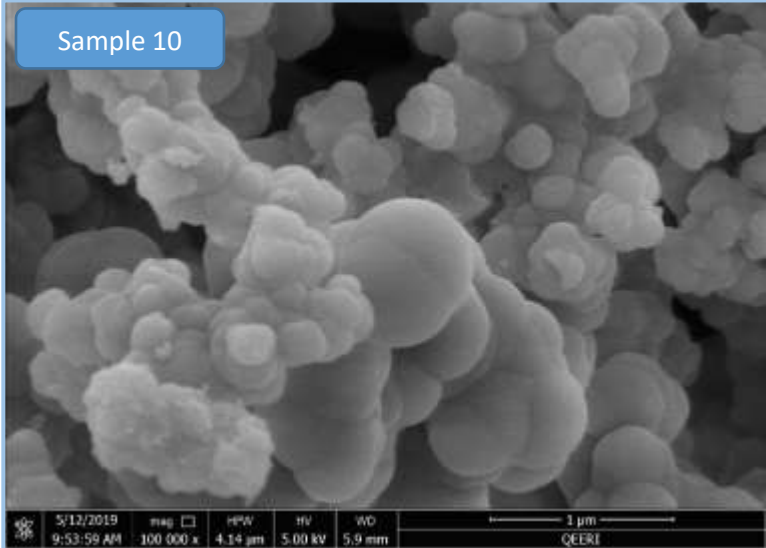
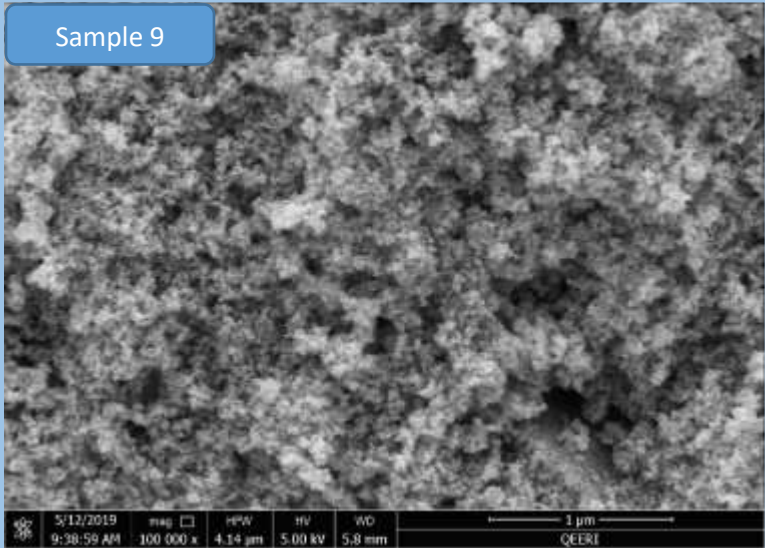
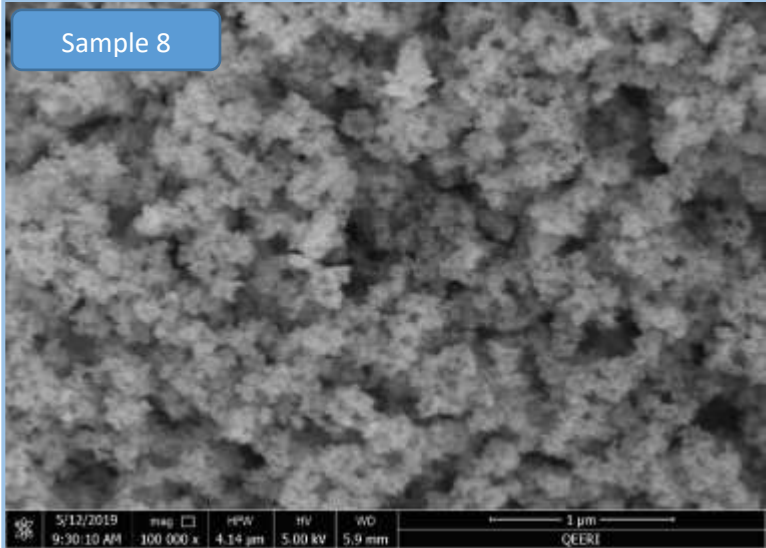
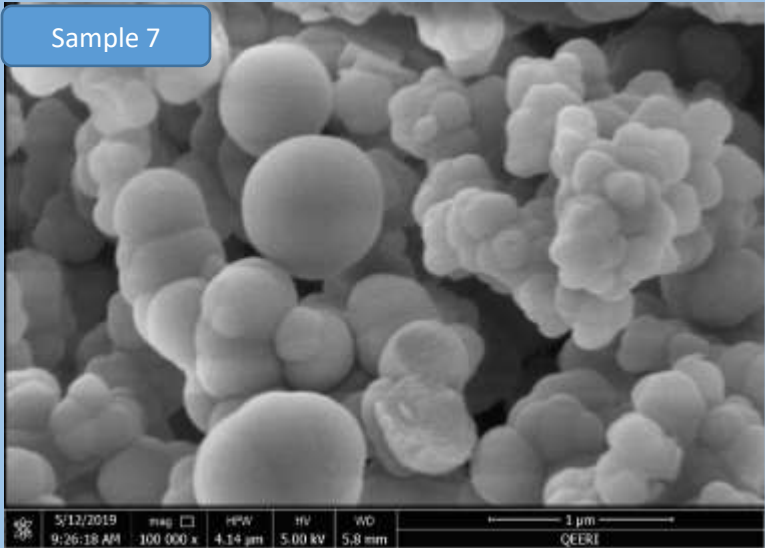
# ID	Yield (Wy)	Attraction weight (Wa)	Ratio (Wa/ Wy)	FTIR ratio	Notes		
	gm	gm			color/state	Homogeneity	volume
1	0.72152	1.8781	2.6030	0.072716136	brown powder (+)	Homogenous	around 5 ml
2	0.3569	0.528	1.479405996	0.088856607	brown powder (++)	there are pieces of white particles (silica)	around 2.5 ml
3	0.7215	0.074	0.102564103	0.072716136	off white powder	Homogenous	around 5 ml

4	0.0978	1.1194	11.44580777	0.487067362	Brown powder (+++)	homogenous	0.5 ml
5	0.00991	0.1914	19.31382442	0.154508354	brown powder (+++)	homogenous	0.1 ml
6	0.36452	0.5142	1.410622188	0.103458844	white cone with internal brown color (+++)	composed of two separate homogenous regions	2 ml
7	0.698	0.0897	0.128510029	0.084808348	off white powder	Homogenous	5 ml
8	0.03671	1.3695	37.3059112	1.177379076	Brown powder (++++)	Homogenous	0.3 ml
9	0.00414	0.29938	72.31400966	4.166648051	almost black powder	Homogenous	0.05 ml
10	0.96211	0.2643	0.274708713	0.091625115	brown powder	Homogenous	6 ml
11	0.00958	0.2017	21.05427975	0.230286364	Brown (+++) powder	Homogenous, as there is electrostatic charge on the particles	0.1 ml
12	0.034	1.2202	35.88823529	0.581771044	Brown powder (++-)	Homogenous	0.2 ml
13	0.73767	0.143	0.19385362	0.067054283	solid white cone with internal brown color (+++)	composed of two separate homogenous regions	2.5 ml
14	0.3653	0.4153	1.136873802	5.334406727	brown (+++) powder with white pieces	heterogeneous	1.0 ml

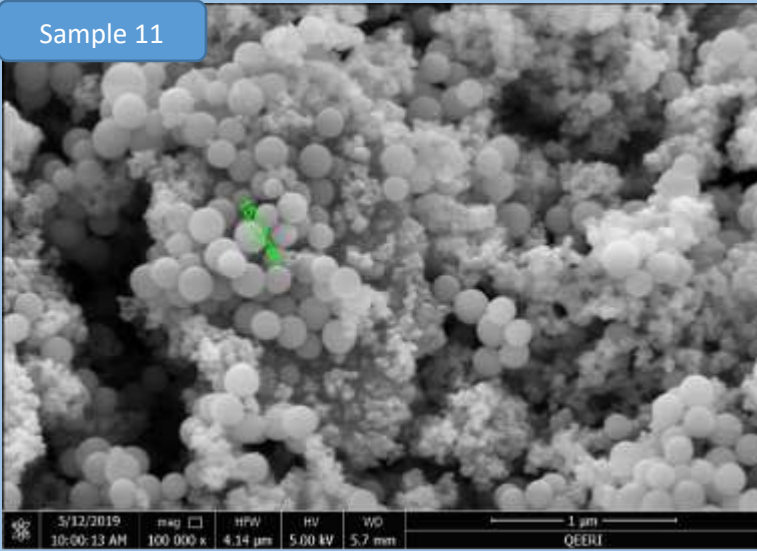
15	0.03749	1.3197	35.20138704	1.177379076	Brown powder (+++)	Homogenous	0.2 ml
16	0.71152	0.578	0.812345401	0.084405797	Brown (++) powder	Homogenous	4.0 ml
17	0.03368	1.9699	58.48871734	5.334406727	almost black powder	Homogenous	0.2 ml
18	0.01661	0.04949	2.9800	0.557276853	Brown (++++) powder	Homogenous (particles as have electrostatic charges)	0.2 ml
19	0.00858	0.1853	21.5967366	0.570663012	Brown(+++) powder	Homogenous	0.2 ml
20	0.91679	0.0763	0.083225166	0.088856607	white cone with internal brown color (++)	composed of two separate homogenous regions	3 ml



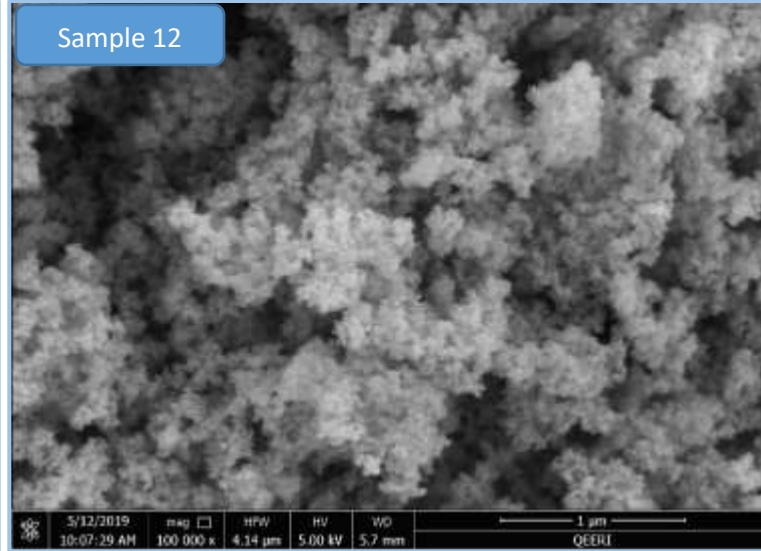




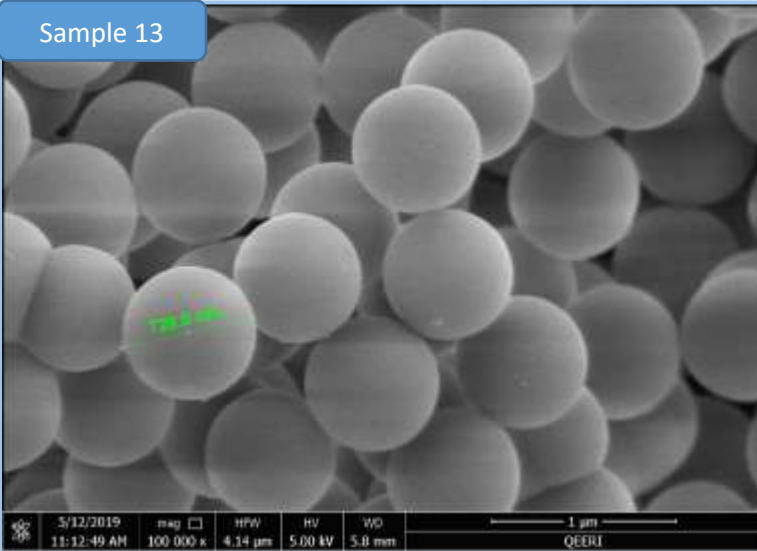
Sample 11



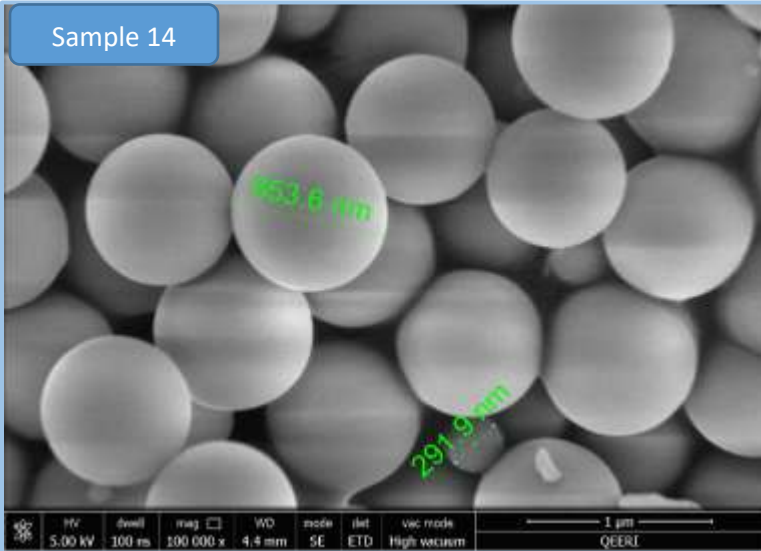
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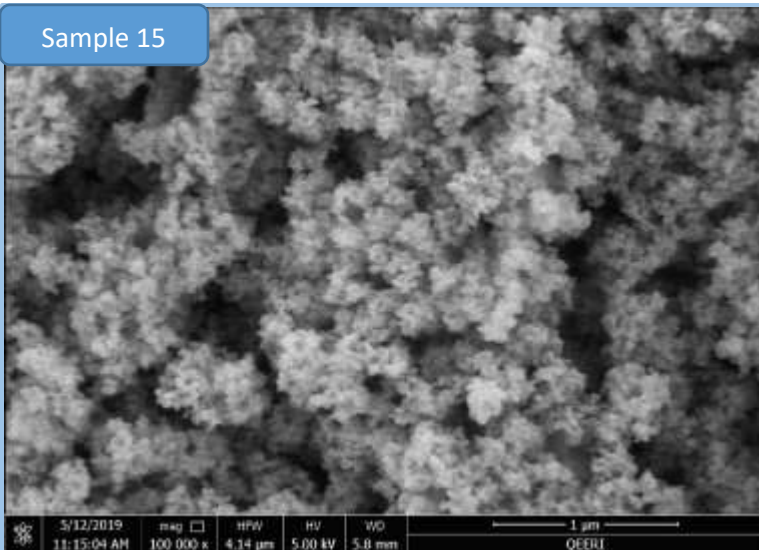
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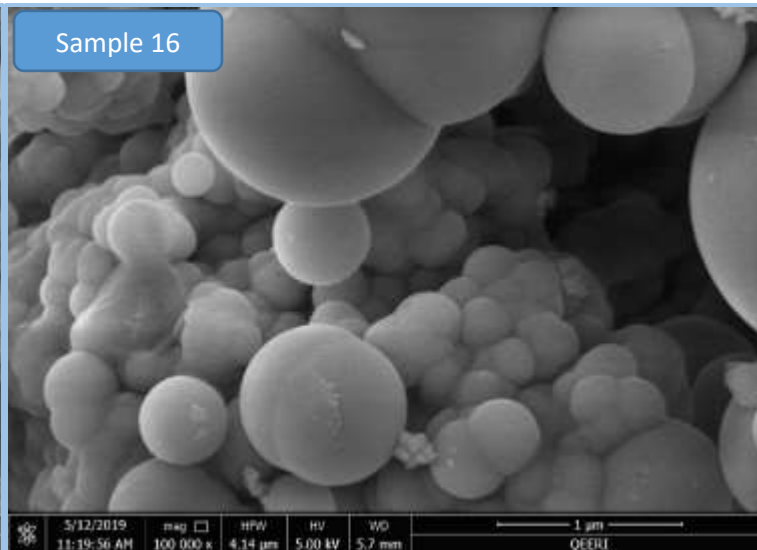
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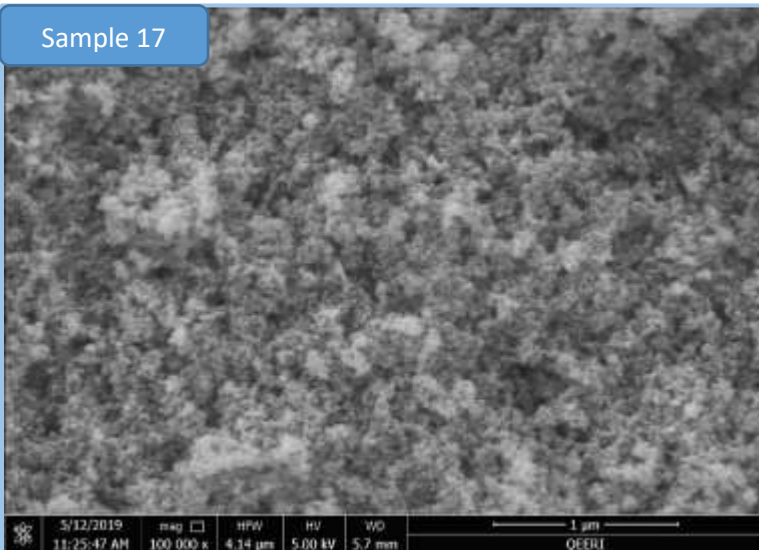
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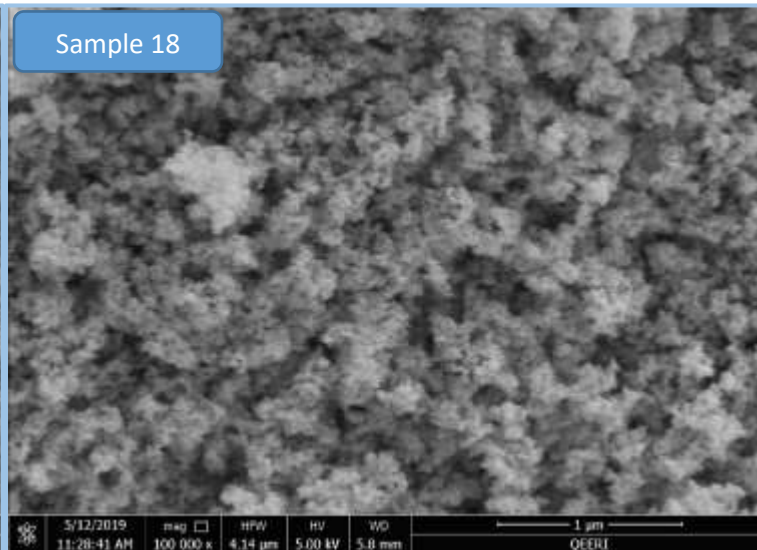
Sample 16



Sample 17



Sample 18



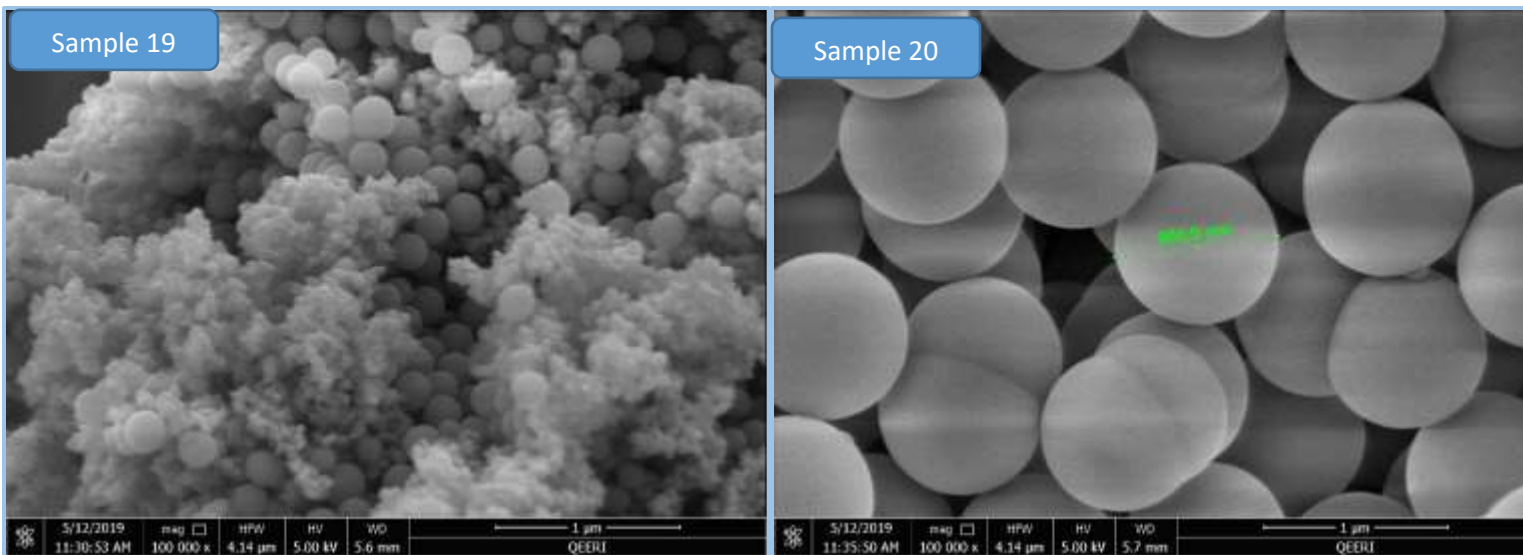


Figure S1. Micrographs of prepared samples as in Table S4.