Supramolecular –directed superparamagnetic 5'-adenosine monophosphate mediated β-FeOOH hydrogel

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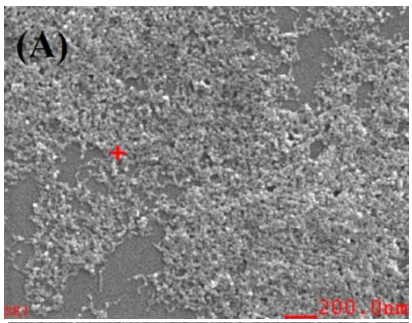
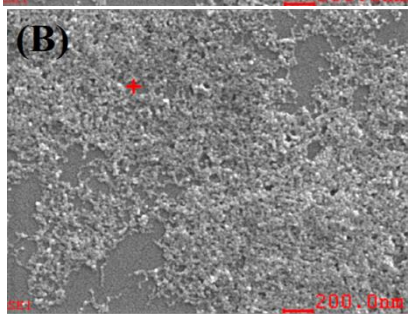


Element	*Wt%*	*At%*
CK	32.74	39.91
NK	03.52	03.68
OK	60.47	55.34
PK	00.36	00.17
ClK	00.93	00.38
FeK	01.98	00.52
Matrix	Correction	ZAF



Element	*Wt%*	*At%*
CK	23.65	29.45
NK	04.38	04.68
OK	69.32	64.82
PK	00.96	00.46
ClK	00.88	00.37
FeK	00.81	00.22
Matrix	Correction	ZAF

Fig. S1 EDAX analysis of SP4H at different marked locations in images A and B and their corresponding elemental distribution.

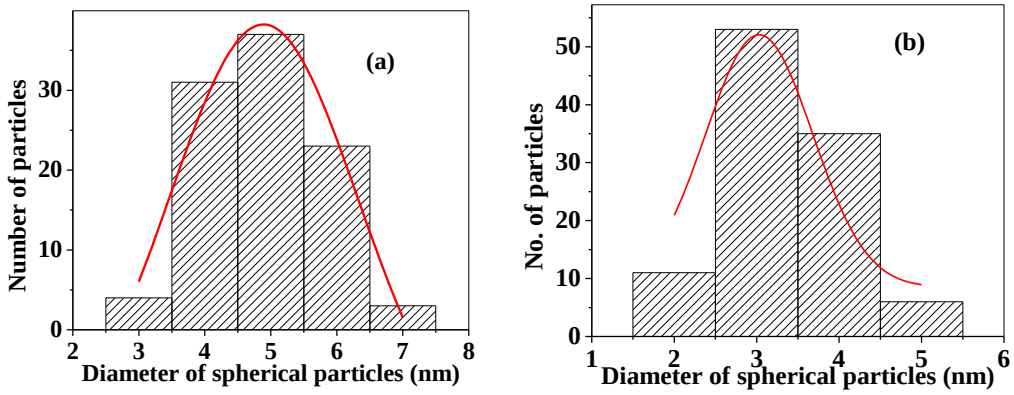


Fig. S2 Size-distribution histogram of the diameter spherical nanoparticles in SP3 (a) and SP5 (b) as obtained from their TEM images.

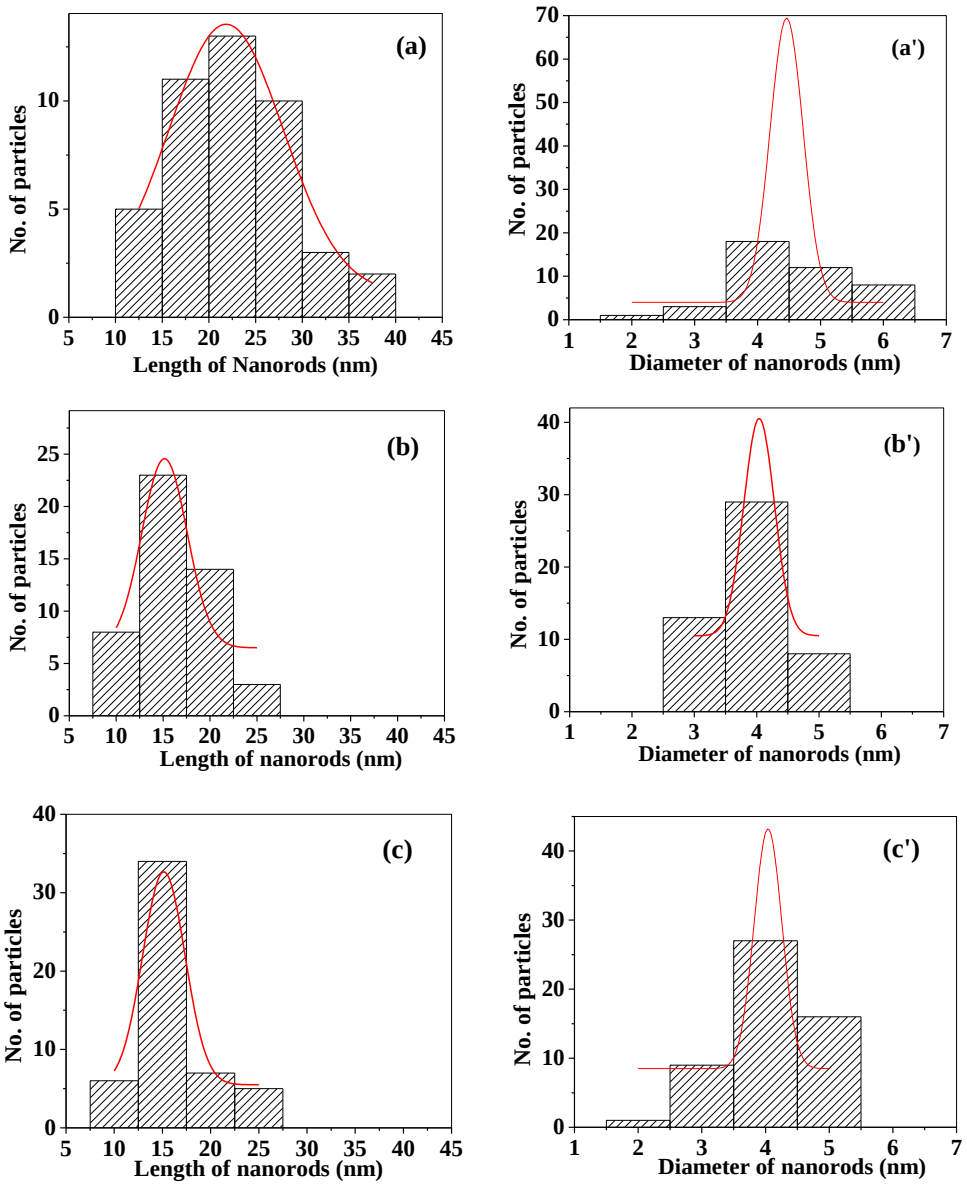


Fig. S3 Size-distribution histogram of the length and diameter of the nanorods in SP3 (a), (a'); SP4 (b), (b') and SP5 (c), (c') as obtained from their TEM images.

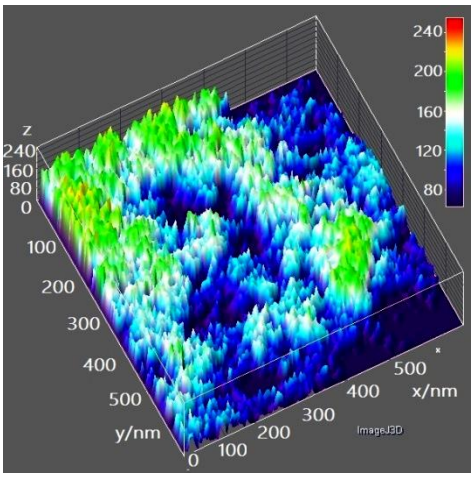


Fig. S4 Interactive 3D surface plot of the TEM image of the SP4H.

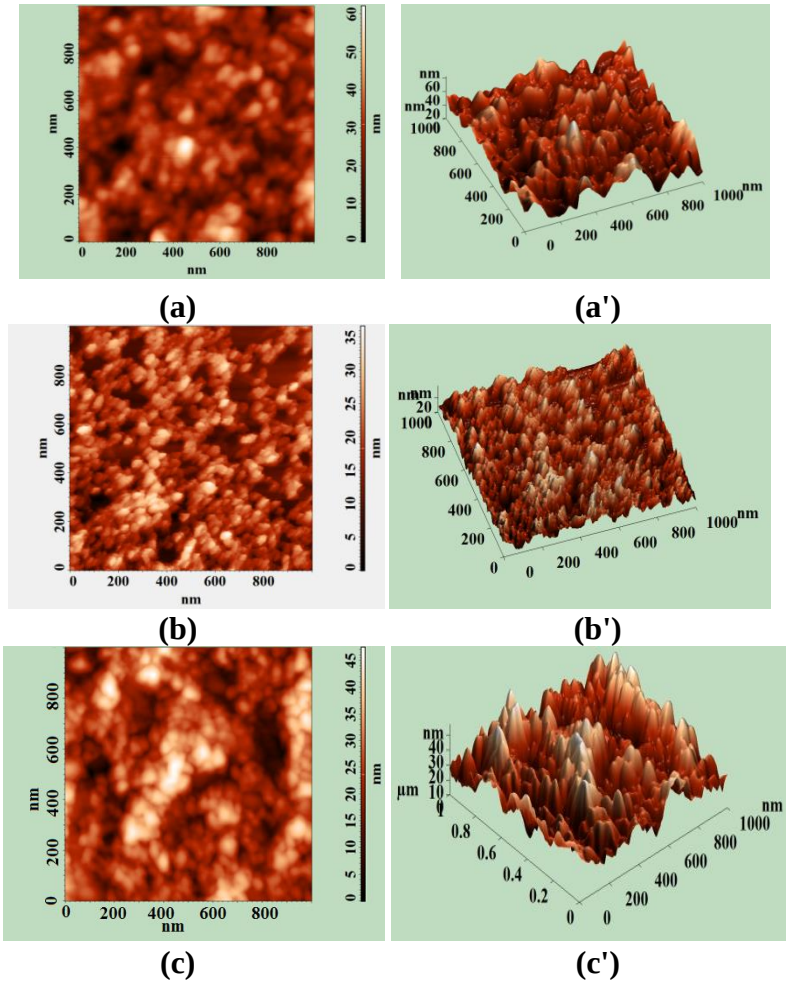


Fig. S5 AFM image of the fresh samples and their respective 3D images: SP3 (a) and (a'); SP4 (b) and (b') and SP5 (c) and (c'). *Average surface roughness (distribution): SP3-27 nm (10 to 40 nm); SP4-18 nm (5 to 30 nm) and SP5-22 nm (5 to 45 nm).

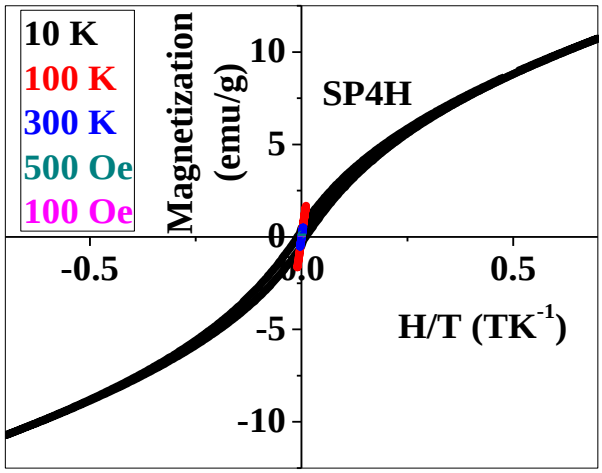


Fig. S6 Magnetization *vs* H/T plots for SP4H at 100 and 300 K for applied field up to ±1 T and at 100 and 500 Oe up to 50 K including data point from M-H curve recorded at 5 K at ± 1T.

Table S1 IR spectral data of 5'-AMP, β-FeOOH (SB, SP4 and SP4H).

Group/ Moiety	**5'-AMP (cm^{-1}) (Literature)**	**5'-AMP (cm^{-1}) (observed)**	**(SB) β-FeOOH (cm^{-1})**	**SP4 (cm^{-1}) Fresh (observed)**	**SP4H (cm^{-1}) Hydrogel (observed)**
NH_2- bending mode	1656	1655 (s)	-	1632 (s)	1633(s)
C-4-C-5 skeletal vibrations	1605	1610 (s)		1602 (m)	1602 (w) (almost disappeared)
pyrimidine ring vibration	1576 (m)	1576 (sh)	-	1583 (sh)	1574 (w) (almost disappeared)
N(7)C(8)stretching	1510	1510 (w)		1510 (almost disappeared)	disappeared
Imidazole	1480 (s)	1480 (m)	-	1479 (m)	1478 (m)
C(6)-N(1) bending	1419	1423 (w)		1407 (s)	1407 (m)
Imidazole	1396 (s)	1394 (sh)		1383 (s)	1383 (m)
Pyrimidine	1356 (s)	1339 (m)	-	1336 (m)	1336 (m)
		1302 (w)		disappeared	-

C-(6)-NH_2 deformation mode of adenine base	1250 (w)	1255 (sh)	-	1255(w)	1255 (w)
in plane C(8)-H bending	1214	1216 (m)		1212 (w)	1211 (w)
sugar ring	1160 (s)	1151 (sh)		disappeared	-
sugar ring	1116 (m)	1115 (br)		1115 (m)	1111 (sh)
Sugar ring	1085 (m)	1086 (m)	-	1060 (br)	1060 (br)
C(8)N(9)	1026	1029 (sh)		disappeared	1020 (w)
PO_3^{2-} symmetric stretching	982 (s)	987 (m)	-	986 (m)	982 (w)
Sugar ring	874 (s)	873 (w)	-	857 (almost disappeared)	(disappeared)
P-O-5'-sugar C2'-endo/anti conformer	822 (m)	810 (br)	-	-	
P-O	783 (s)	768	-	disappeared	-
Ring mode		629 (s)	-	635 (sh)	
Skeletal deformation	548 (m)	562 (w)	-	-	
H_2O bending		-	1634(s)	1632(s)	1633 (s)
O-H···Cl deformation		-	833	830 (m)	830 (almost disappeared)
Fe-O-Fe stretching		-	696,644, 471, 420	702(m), 648 (w)	701 (w), diaappeared

Table S2 The XPS analysis data of SP4H.

	SP4H
Fe 2p 1/2	723.8 (723.8 and 727.0)
Fe 2p 3/2	710.4 (710.4 and 723.6)
O 1s	531.0
P 2p	133.1
N 1s	399.5
C 1s	286.1
Cl 2p 1/2	–
Cl 2p 3/2	199.6
Fe 3s	94.6
Fe 3p	56.1
VB	22.5
VB	3.1