Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B

Electronic Supplementary Information

Synthesis of 5'-GMP - mediated porous hydrogel containing β-FeOOH nanostructures – optimization of its morphology, optical and magnetic properties

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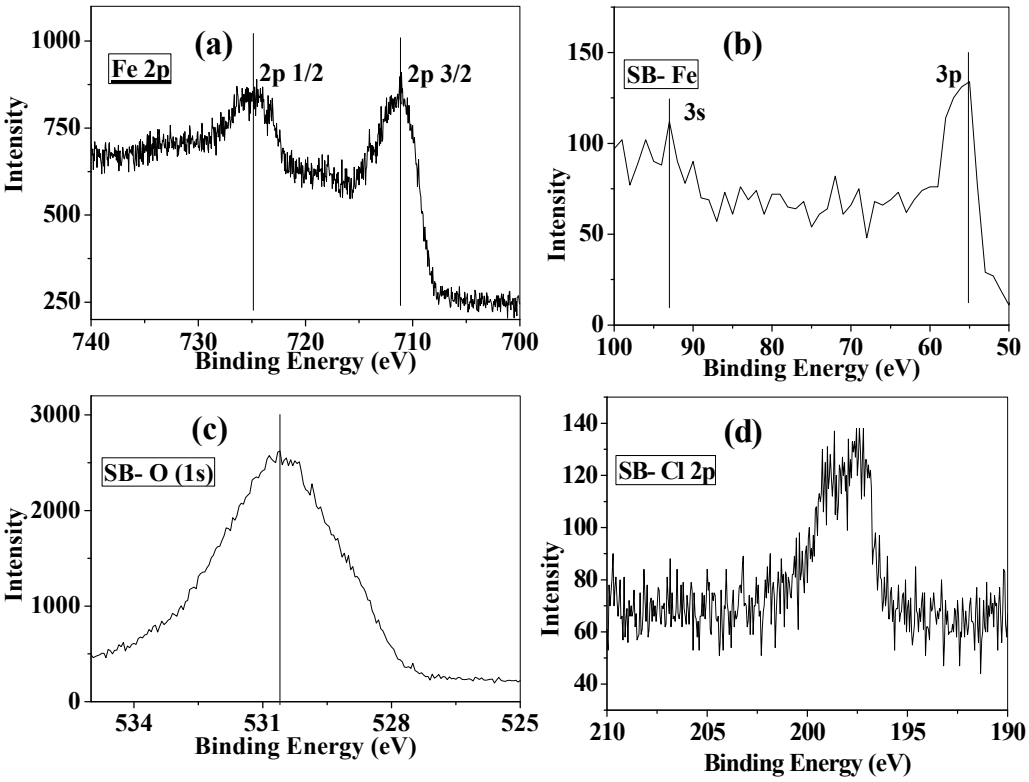

Fig. S1 XPS analysis of sample SB for Fe 2p (a), Fe 3s and 3p (b), O 1s (c) and Cl 2p (d).

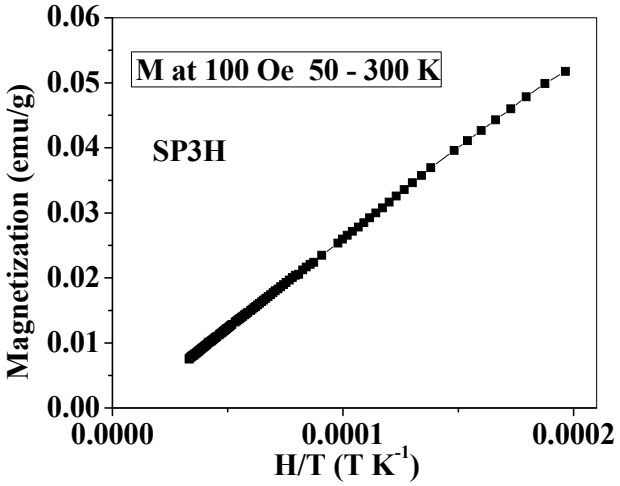

Fig. S2 Magnetization versus H/T plot for SP3H from ZFC curve recorded at 100 Oe from 300-50 K.

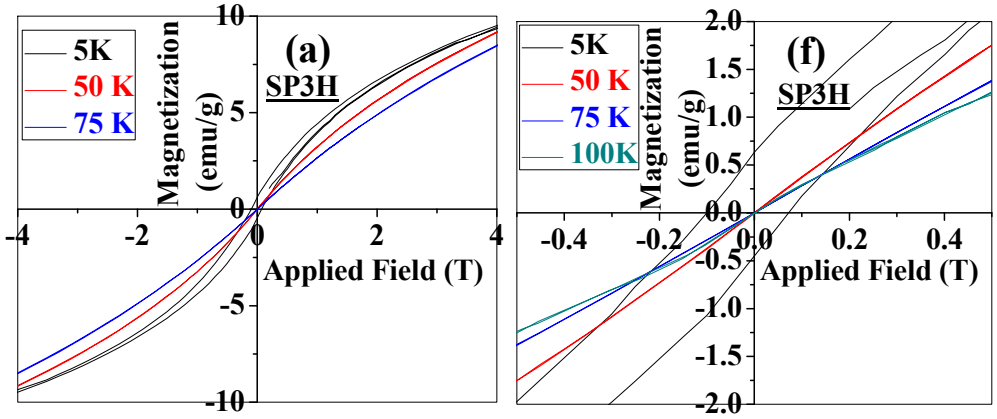

Fig. S3 Magnetic hysteresis loop for SP3H at 5, 50 and 75 K (a); Magnified magnetic hysteresis loops for SP3H at 5, 50, 75 and 100 K (b).

Table. S1 FTIR data for Na_2-GMP, β-FeOOH, SP3 and SP3H.

Group/ Moeity	**Na_2-GMP(cm^{-1}) (Literature)**	**Na_2-GMP (cm^{-1}) (observed)**	**(SB) β-FeOOH (cm^{-1})**	**SP3 (cm^{-1}) Fresh (observed)**	**SP3 (cm^{-1}) Hydrogel (observed)**
>C(6)=O	1700	1696 (s)	-	1676 (w & sh)	1676 (w & sh)
-NH_2	1630	1653 (sh)	-	1637 (s)	1637 (s)
C=N and ring skeletal vibrations	1599	1607 (m)		1600 (sh)	1600 (sh)
Pyrimidine/ Imidazole vibration	1539(m)	1535 (s)	-	1535 (sh)	Almost disappeared
N(7)-C(8) stretching, C(8)-H bending	1494 (s)	1481 (s)	-	1481(m)	1482(w)
Imidazole	1396 (s)	1416 (m)		1409 (w)	1402 (w)
Imidazole	1358 (s)	1371 (m)	-	1357(w)	1359(sh)
Pyrimidine	1249 (w)	1256 (br)	-	1261(w)	1259 (w)
υ-C-C (sugar)	1176 (s)	1180		-	-
υ-C-O (sugar)	1132 (m)	1113 (sh)		1109 (sh)	1108 (sh)
PO_3^{2-} antisymmetric stretching	1083 (m)	1090 (br)	-	1069 (br)	1084 (br) (shape is changed)
PO_3^{2-} symmetric stretching	982 (s)	978 (s)	-	991 (m)	989 (sh)
Sugar ring	901 (s)	905 (w)		904 (w)	-
Sugar ring	874 (s)	866 (w)	-	868 (w)	-
P-O-5'-sugar	822 (m)	806 (m)	-	799 (w)	802 (almost

C2'-endo/anti conformer					disappeared)
P-O	783 (s)	780 (m)	-	782(sh)	781(w)
Ring mode		625 (w)	-	635 (w)	-
Skeletal deformation	548 (m)	535 (w)	-	-	-
H_2O bending		-	1634(s)	1637(s)	1637 (s)
O-H···Cl deformation		-	833,	-	-
Fe-O-Fe stretching		-	696,644, 471, 420	681(br), 635 (w), 498 (sh), 483, 472	687(br), 631 (w), 470 (br)
		1241, 724, 692, 580	-	1383, 799, 606	1460, 1402, 1018

Table. S2 XPS data of the samples SB and SP3H.

	SB	**SP3H**
Fe 2p 1/2	**724.9** (726.3, 723.8)	**724.9** (724.1, 726.4)
Fe 2p 3/2	**711.1**(710.4, 712.3)	**711.1** (710.6, 712.8)
O 1s	**530.5**(528.8, 530.4, 531.6)	**530.5** (529.2, 530.5, 531.9)
P 2p	**-**	**133.0**
N 1s	**-**	**399.2**
C 1s	**-**	**283.9**
Cl 2p 1/2	**198.9**	**-**
Cl 2p 3/2	**197.4**	**-**
Fe 3s	**93.0**	**94.1**
Fe 3p	**55.1**	**55.1**
VB	**22.9**	**22.1**
VB	**4.0**	**6.1**

Table. S3 Various magnetic paprameters for SP3 and SP3H.

	T_b		**M_s (300 K)**	**M_s (100 K)**	**M_s (5 K)**
	100 Oe	**500 Oe**			
SP3	25.4	26.0	3.2	6.9	12.0
SP3H	39.9	38.6	4.9	9.2	12.4