

Supramolecular Porous Ionic Network based on Triazinonide and Imidazolium: A Template-Free Synthesis of Meso-/Macroporous Organic Materials *via* One-Pot Reaction-Assembly Procedure

Ze-Huan Hei^a, Gan-Lin Song^a, Chen-Yu Zhao^a, Wenhao Fan^b, Mu-Hua Huang^{a*}

^aSchool of Materials Science and Engineering, Beijing Institute of Technology, Beijing, 100081, China. E-mail: mhhuang@bit.edu.cn

^bBeijingCenter for Physical & Chemical Analysis, Beijing, 100089, China

Table S1 Optimization of conditions for preparing SPIN-1

Entry	Conc. of 2 (wt%)	Assembly temp. ^a	Drying temp. ^b	BET SA /m ² g ⁻¹	Pore volume/ cm ³ g ⁻¹
1	50	r.t.	r.t.	109	0.37
2	1.5	r.t.	r.t.	263	0.75
3	1.5	r.t.	85 °C	152	0.52
4	1.5	90 °C	r.t.	154	0.53
5	1.5	-	r.t.	40	-

^a The temperature for stirring the mixture with H₂O before filtration. ^b The temperature to remove residual solvent from the materials

Table S2 elemental analysis data of SPIN-1

Entry	N %	C %	H %
1	35.44	38.89	2.79
2	35.14	37.95	2.56

Table S3 Detailed data of N₂ adsorption @77 K for SPIN-1

Relative Pressure (P/P ₀)	Absolute Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	Elapsed Time (h:min)
0.010242	7.732513	38.7151	1:37
0.031932	24.10829	48.5375	1:50
0.06246	47.1544	55.5282	2:00
0.078441	59.21803	58.2819	2:06
0.099717	75.27944	61.3333	2:11
0.119923	90.53162	63.9535	2:16
0.140221	105.8537	66.359	2:20
0.160266	120.9846	68.5959	2:23
0.180083	135.9424	70.6729	2:27
0.200366	151.2527	72.7528	2:30
0.248982	187.9492	77.3481	2:35
0.301994	227.9634	82.2574	2:39
0.352644	266.1932	87.0821	2:43
0.400285	302.1511	91.8038	2:47
0.450284	339.8879	97.0466	2:51
0.500125	377.5048	102.849	2:55
0.550324	415.3896	109.3978	3:00
0.600081	452.9393	116.9841	3:05
0.650006	490.6293	126.2219	3:12
0.699548	528.0379	137.8509	3:18
0.748906	565.3143	153.5114	3:26
0.798006	602.4008	176.2062	3:35
0.821781	620.3693	191.4688	3:43
0.849481	641.3082	214.9655	3:53
0.874361	660.1256	242.9178	4:05
0.899235	678.9429	279.0953	4:18
0.924901	698.3634	324.3227	4:32
0.94955	717.0187	373.0889	4:46
0.973439	735.1016	423.9927	5:00
0.980158	740.2011	439.8635	5:08
0.989185	747.0919	464.1947	5:19
0.994322	751.0319	483.1021	5:27
0.981742	741.567	471.1373	5:32
0.964623	728.7021	446.1716	5:41
0.929704	702.4362	399.8897	5:57
0.907045	685.3986	367.7256	6:09
0.874841	661.1703	321.0622	6:25
0.844893	638.6322	282.5447	6:40
0.819383	619.431	252.6718	6:53
0.790568	597.7371	221.3345	7:08
0.760183	574.8385	193.8828	7:21

0.732795	554.2667	175.2643	7:33
0.706503	534.491	161.4812	7:42
0.67756	512.6772	149.877	7:49
0.649267	491.3483	140.8419	7:56
0.620291	469.4741	133.3933	8:01
0.591972	448.092	127.2451	8:06
0.563225	426.3811	121.9509	8:11
0.534862	404.9468	117.3406	8:15
0.506268	383.3331	113.1775	8:19
0.477784	361.8079	109.3211	8:24
0.450054	340.8404	104.8319	8:28
0.419224	317.528	101.0743	8:33
0.392563	297.3548	98.3064	8:36
0.363765	275.56	95.5321	8:39
0.335279	254.0048	92.8774	8:43
0.306751	232.4135	90.2853	8:47
0.278414	210.9586	87.7432	8:50
0.250097	189.5193	85.2079	8:54
0.221719	168.0306	82.635	8:58
0.193326	146.5261	80.0433	9:02
0.16504	125.0988	77.3017	9:06
0.13658	103.5362	74.3706	9:10
0.108314	82.11855	71.1685	9:15
0.080039	60.68864	67.4409	9:20
0.050378	38.20435	62.4084	9:27
0.031058	23.55384	57.6317	9:36

Table S4 Detailed data of CO₂ adsorption @273 K for SPIN-1

Absolute Pressure (mmHg)	Quantity Adsorbed (cm ³ /g STP)	Elapsed Time (h:min)
54.76447	5.5859	0:40
112.9465	8.7986	0:42
163.8594	10.9159	0:45
199.4487	12.2145	0:47
249.7386	13.8142	0:49
299.89	15.2178	0:51
349.6315	16.4948	0:53
401.2186	17.7187	0:56
451.1563	18.8244	0:59
500.236	19.8386	1:01
549.6866	20.8637	1:03
600.7783	21.8352	1:05
650.3613	22.7615	1:07
700.4559	23.6636	1:10
759.8442	24.6955	1:12
686.3224	23.6596	1:15
636.0325	22.9051	1:18
586.1324	22.1132	1:20
550.7477	21.5311	1:23
501.346	20.6401	1:26
450.9756	19.6331	1:28
399.6597	18.5429	1:30
349.7033	17.3881	1:33
299.7186	16.1128	1:35
249.8139	14.6942	1:38
199.981	13.1125	1:40
150.0994	11.2553	1:43
100.1148	9.0029	1:46
50.31031	5.9714	1:50

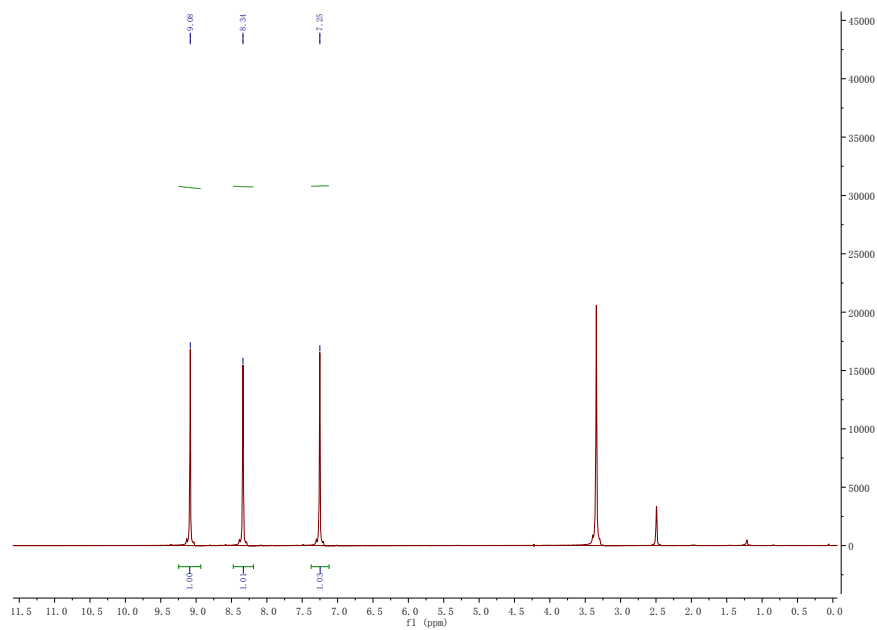


Figure S1 $^1\text{H-NMR}$ (in DMSO-D_6) of compound 2

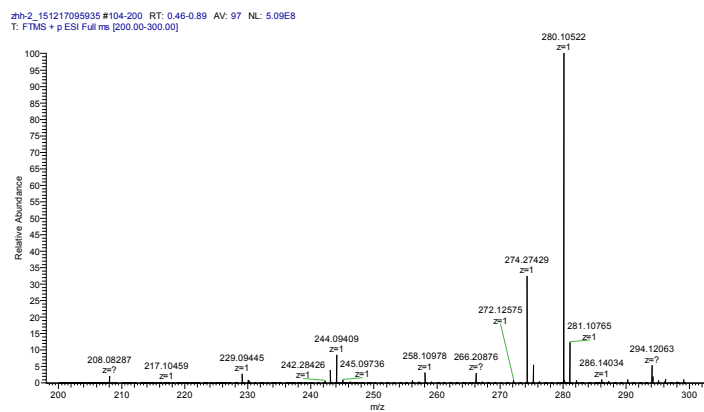


Figure S2 HR-MS of compound 2

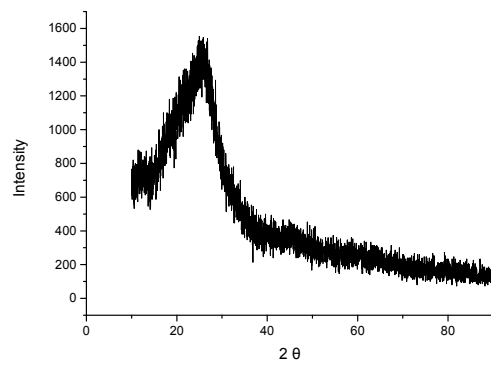


Figure S3 XRD pattern of SPIN-1

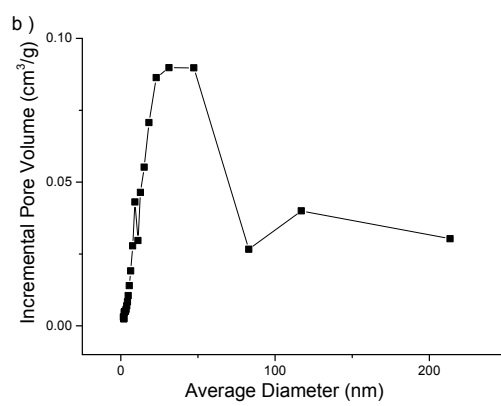


Figure S4 BJH analysis on SPIN-1