

Supplementary information for

**Gelation Behaviour of a Bent-core Dihydrazide Derivative : Effect of  
Incubation Temperature in Chloroform and Toluene**

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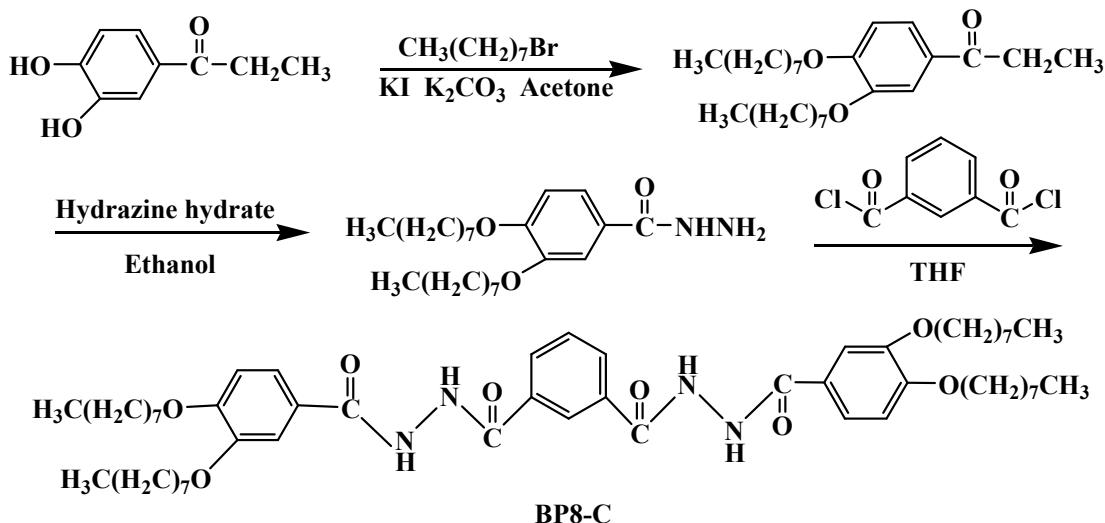
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Scheme 1 Synthetic route of BP8-C.

**<sup>1</sup>H NMR** (300MHz, DMSO)(ppm, from TMS): 10.60(s,2H); 10.42(s,2H); 8.5(s,1H); 8.1(m,2H); 7.7(m,1H); 7.56-7.52(m,4H); 7.07(m,2H); 4.05-3.99(m,8H); 1.80-1.78(m,8H); 1.48-1.40(m,8H); 1.38-1.28(m,32H); 0.90-0.82(m,12H). **FT-IR** (KBr, pellet, cm<sup>-1</sup>): 3189, 3022, 2952, 2922, 2852, 1652, 1606, 1570, 1517, 1480, 1390, 1340, 1268, 1225, 1147, 1125, 1059, 1014, 857, 720, 638, 515. **Elemental analysis**: calculated for C<sub>54</sub>H<sub>82</sub>N<sub>4</sub>O<sub>8</sub> (%), C, 70.86; H, 9.03; N, 6.12; Found, C, 70.97; H, 8.73; N, 6.06.

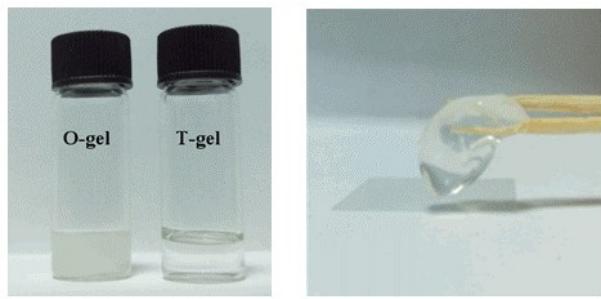


Photo 1. Pictures of T-gel and O-gel (left), and jelly- like T-gel (right).

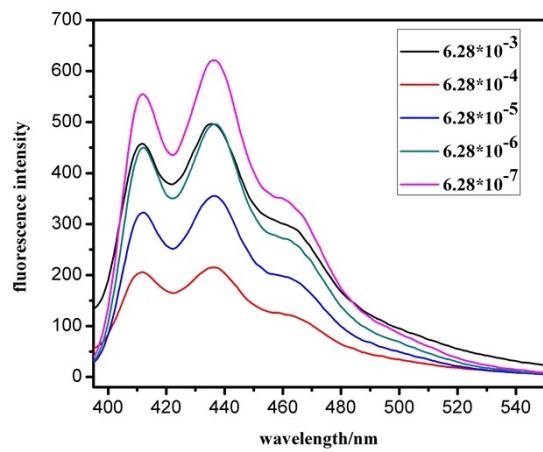


Fig.S1 Concentration related fluorescence spectrum of BP8-C/CHCl<sub>3</sub> ( $\lambda_{\text{ex}} = 370$  nm) under room temperature.

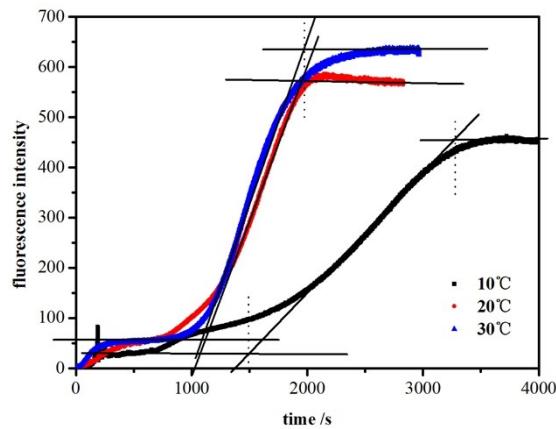


Fig.S2 Dynamic fluorescence intensity for BP8-C in toluene (10.12 mg/mL) undergoing gelation process at different incubation temperatures ( $\lambda_{\text{ex}} = 339$  nm,  $\lambda_{\text{em}} = 360$  nm).

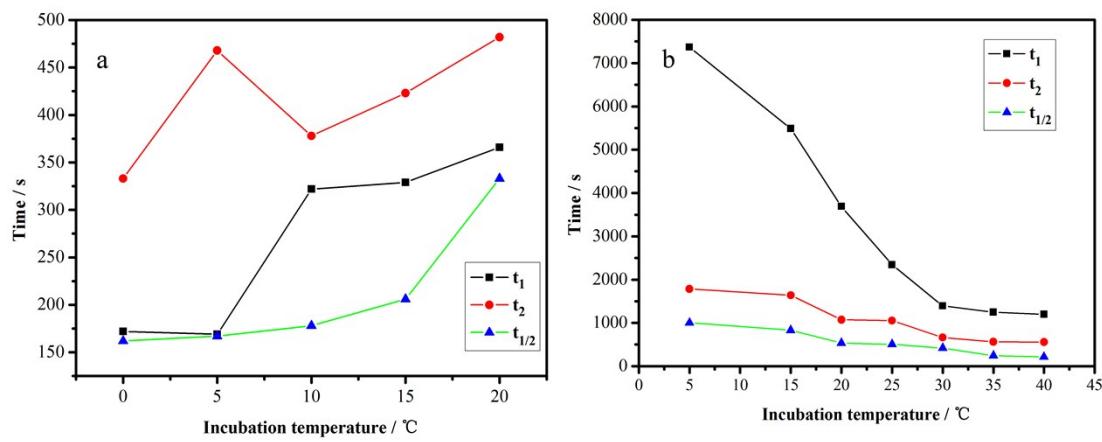


Fig. S3 Nucleation time  $t_1$ , gelation time  $t_2$  and  $t_{1/2}$  verse incubation temperatures for 5.00 mg/mL BP8-C in  $\text{CHCl}_3$  (a) and 5.12 mg/mL in toluene (b).

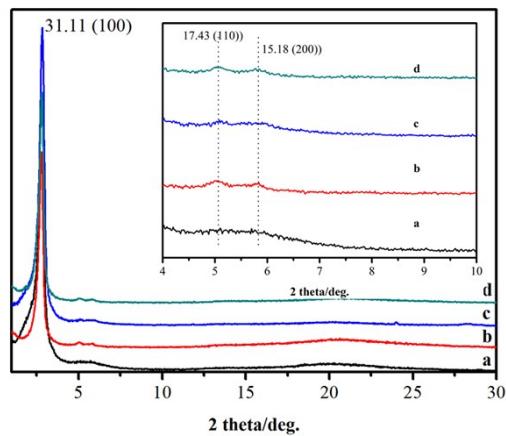


Fig.S4 XRD results of xerogels from BP8-C/toluene system. (a) toluene, 20 °C, xerogels, 10.12 mg/mL; (b) toluene, -24 °C, precipitate, 10.12 mg/mL; (c) toluene, 20 °C, xerogels, 5.34 mg/mL; (d) toluene, -24 °C, precipitate, 5.34 mg/mL.

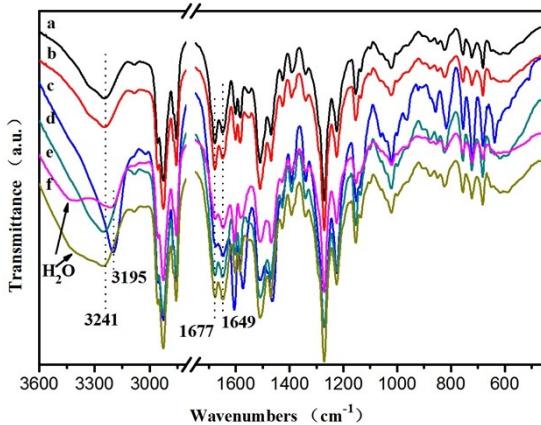


Fig.S5 Comparison of partial FT-IR results of BP8-C xerogels: (a) xerogels for T-gel in  $\text{CHCl}_3$ , 20 °C, 5.00 mg/mL; (b) xerogels for O-gel in  $\text{CHCl}_3$ , -24 °C, 5.00 mg/mL; (c) xerogels from toluene, 20 °C, 10.12 mg/mL; (d) precipitate from toluene, -24 °C, 10.12 mg/mL; (e) xerogels from toluene, 20 °C, 5.34 mg/mL; (f) precipitate from toluene, -24 °C, 5.34 mg/mL.

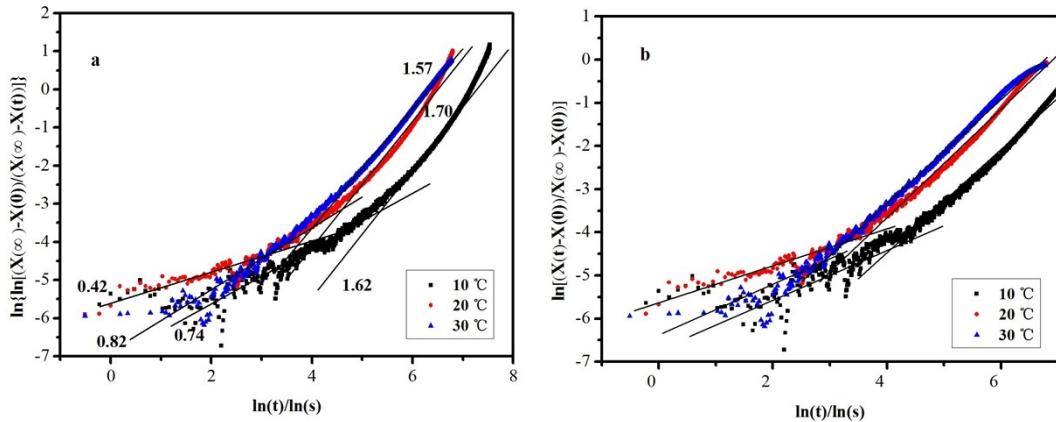


Fig.S6 Kinetic plots for gelation of sols of 10.12 mg/mL BP8-C/toluene. (a) Avrami data and values of  $n$ ; (b) Dickinson plots, (10 °C, first stage: slope = 0.57,  $D_f$  = 1.91; second stage: slope = 1.21,  $D_f$  = 1.36), (20 °C, first stage: slope = 0.43,  $D_f$  = 2.09; second stage: slope = 1.27,  $D_f$  = 1.32), (30 °C, first stage: slope = 0.60,  $D_f$  = 1.87; second stage: slope = 1.21,  $D_f$  = 1.36).

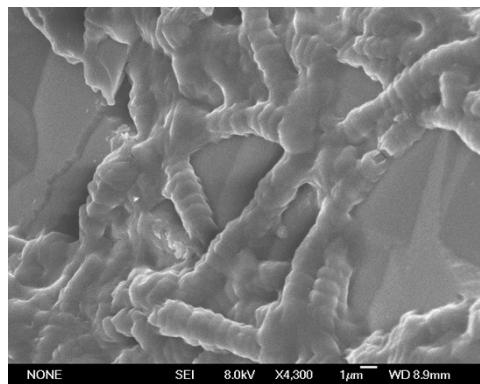


Fig.S7 FE-SEM pictures of xerogels of BP8-C/toluene with concentration of 5.34 mg/mL (0 °C).

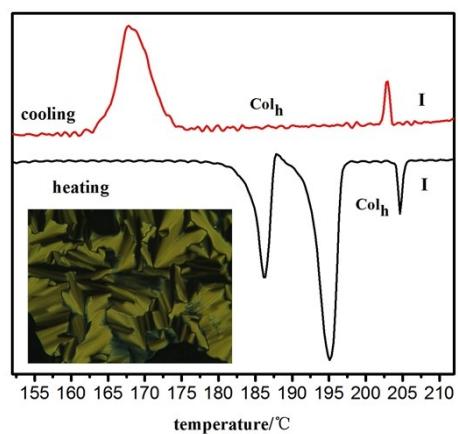


Fig.S8 DSC lines for BP8-C in the second heating run and first cooling run; insert: POM picture of Col<sub>h</sub> mesophase of BP8-C at 195 °C.

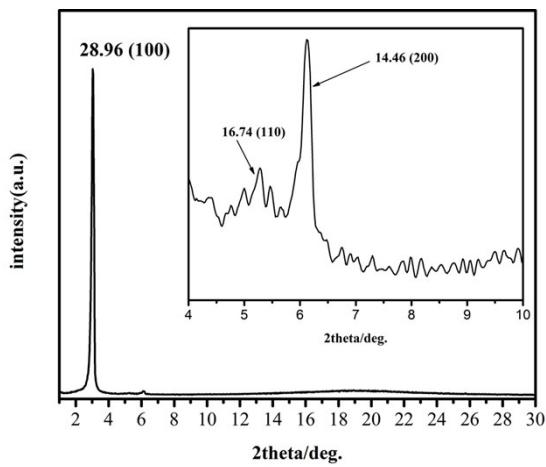


Fig.S9 XRD results of BP8-C crystal cooled to room temperature after heated to liquid.

Table S1  $t_1$ ,  $t_2$ ,  $t_{1/2}$  values for dynamic gelation process of 5.00 mg/mL BP8-C/CHCl<sub>3</sub>.

	0 °C	5 °C	10 °C	15 °C	20 °C
$t_1$ (s)	172	169	322	329	366
$t_2$ (s)	333	468	378	423	482
$t_{1/2}$ (s)	162	167	178	206	333
$K$ ( $\times 10^{-3}$ s <sup>-1</sup> )	6.17	5.98	5.62	4.85	3.00

Table S2  $t_1$ ,  $t_2$ ,  $t_{1/2}$  values for dynamic gelation process of 5.34 mg/mL BP8-C/toluene.

	5 °C	15 °C	20 °C	25 °C	30 °C	35 °C	40 °C
$t_1$ (s)	7370	5487	3689	2342	1393	1246	1197
$t_2$ (s)	1785	1639	1074	1053	664	563	559
$t_{1/2}$ (s)	1003	832	535	507	419	244	216
$K$ ( $\times 10^{-3}$ s <sup>-1</sup> )	1.00	1.20	1.87	1.97	2.39	4.10	4.63

Table S3  $t_1$ ,  $t_2$ ,  $t_{1/2}$  values for dynamic gelation process of 10.12 mg/mL BP8-C/toluene.

	10 °C	20 °C	30 °C
$t_1$ (s)	1492	1075	1093
$t_2$ (s)	1804	892	853
$t_{1/2}$ (s)	926	417	402
$K$ ( $\times 10^{-3}$ s <sup>-1</sup> )	1.08	2.40	2.49

Table S4 Assignments of infrared frequencies for xerogels of BP8-C/toluene of 10.12 mg/mL incubated under 20 °C.

Wavenumbers (cm <sup>-1</sup> )		Assignments	
3197		$\nu(\text{NH})$	
3080	3024	$\text{c}(\text{C-H})$ of aromatic ring	
2955	2871	$\nu_{\text{as}}(\text{CH}_3)$ $\nu_{\text{s}}(\text{CH}_3)$	
2925	2855	$\nu_{\text{as}}(\text{CH}_2)$ $\nu_{\text{s}}(\text{CH}_2)$	
1674	1646	Amide I	
1605	1573	$\nu(\text{C=C})$ of aromatic ring	
1509		$\nu(\text{C=C})$ of aromatic ring	
1464		$\text{CH}_2$ scissoring, $\delta(\text{CH}_3)$	
1392		$\text{CH}_3$ symmetrical C-H bending	
1339		$\text{CH}_2$ twisting	
1270		$\nu(\text{Ar-O})$	
1224		Amide III	
1151		$\nu(\text{C-O})$	
1020		$\nu(\text{Ar-C})$	
856	817	754	$\delta(\text{CH})$ (out of the plane)
722		$(\text{CH}_2)_n$ rocking $n \geq 4$	