

# Simple Design but Marvelous Performances: Molecular Gels of Superior Strength and Self-healing Properties

Zhiyan Xu, Junxia Peng, Ni Yan, Hang Yu, Shasha Zhang, Kaiqiang Liu, Yu Fang\*

Key Laboratory of Applied Surface and Colloid Chemistry of Ministry of Education, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an, 710062, P. R. China

## 1. Gelation behaviors of the compounds

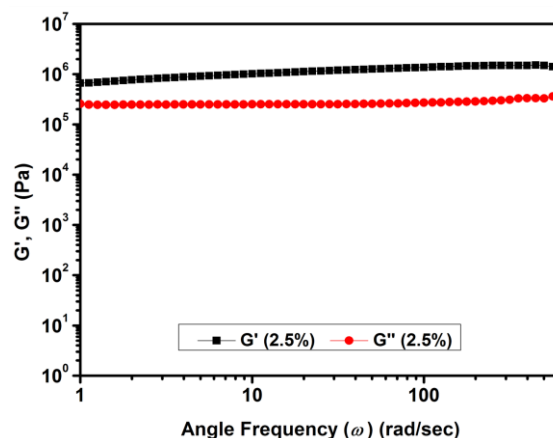
**Table S1** Gelation behaviors of compounds **1**, **2**, **3** and **4** in different solvents (2.5%, w/v).

solvents	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	solvents	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
methanol	P	P	P	P	kerosene	PG*	PG*	I	P
ethanol	PG*	P	P	P	ethyl ether	I	I	I	I
<i>n</i> -propanol	G	P	P	P	petroleum ether	PG*	G*	I	I
<i>n</i> -butanol	G	P	P	P	benzene	G	P	P	S
<i>n</i> -pentanol	PG*	P	P	S	toluene	G	P	P	G*
<i>n</i> -hexanol	PG*	P	S	S	acetic acid	I	P	P	P
<i>n</i> -heptanol	PG*	P	S	S	acetonitrile	I	P	P	P
<i>n</i> -octanol	PG*	P	S	S	TEA	PG*	I	I	VS
<i>n</i> -decanol	G	P	S	S	DMSO	P	G	G	S
H <sub>2</sub> O	I	I	I	I	DMF	S	S	G	P
<i>n</i> -pentane	I	I	I	G*	THF	S	S	S	S
<i>n</i> -hexane	G*	G*	I	G*	acetone	G	P	S	S
<i>n</i> -heptane	G*	G*	I	I	ethyl acetate	G	P	S	S
<i>n</i> -octane	PG*	PG*	I	I	pyridine	S	S	S	S
<i>n</i> -nonane	PG*	PG*	I	I	CH <sub>2</sub> Cl <sub>2</sub>	P	P	S	S
<i>n</i> -decane	I	I	I	PG*	CHCl <sub>3</sub>	P	S	S	S
cyclohexane	PG*	I	I	PG*	CCl <sub>4</sub>	I	P	VS	G

G = Gel; PG = Partial gel; S = Solution; P = Precipitation; I = Insoluble; VS = Viscous solution.

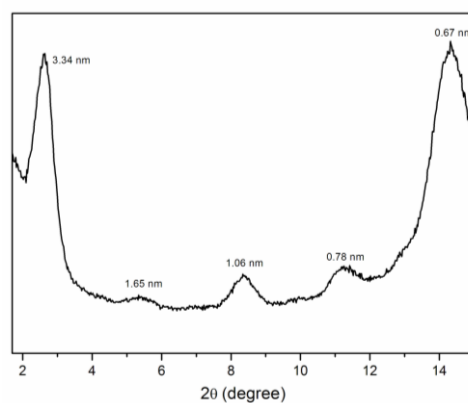
G\* = Gels formed after sonication.

## 2. Rheological Studies



**Fig. S1** Evolution of  $G'$  and  $G''$  as functions of the angle frequency. The applied shear stress is equal to 4 000 Pa. The sample is a gel of **1** in pyridine/methanol ( $v:v=4:6$ , 2.5%, w/v).

### 3. XRD Studies



**Fig. S2** XRD profile of **1**/pyridine-methanol ( $v:v=4:6$ ) recorded at room temperature.

### 4. Self-healing Behavior

Video