

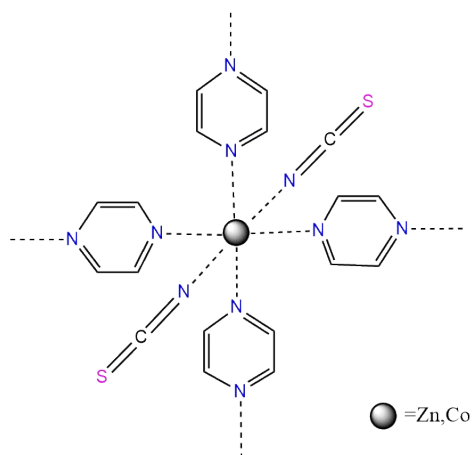
## **Hydrophilic-Hydrophobic Hybrid Gel for Effective Humidity Capture and Response**

Shu-Hua Ma, Feng-Lian Zeng, Xue-Ting Jin, Hui Dong, Min Liu, and Yang-Hui

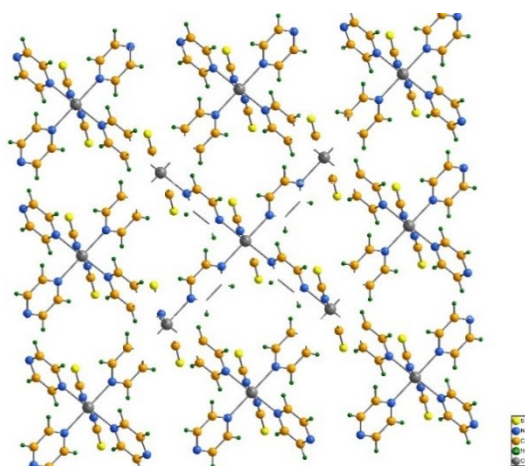
Luo\*

School of Chemistry and Chemical Engineering, Southeast University,

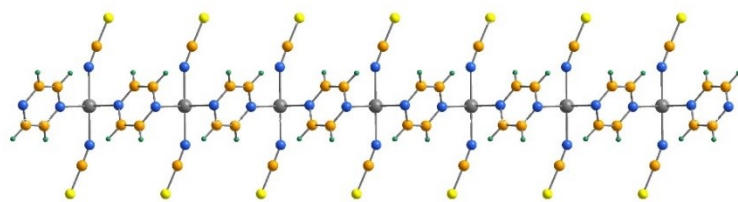
Nanjing, 211189, P.R. China. E-mail: luoyh2016@seu.edu.cn



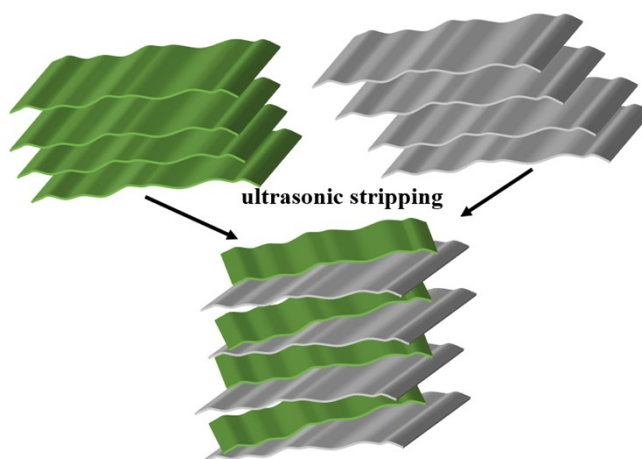
**Figure S1.** Coordination environment for center metal ions of  $[\text{Zn}(\text{NCS})_2(\text{pyrazine})_2]$  and  $[\text{Co}(\text{NCS})_2(\text{pyrazine})_2]$ .



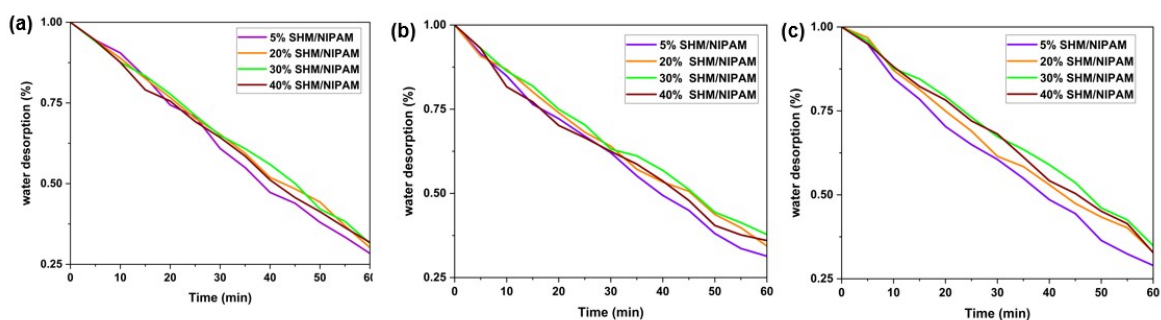
**Figure S2.** Single-layer structure of  $[\text{Zn}(\text{NCS})_2(\text{pyrazine})_2]$  and  $[\text{Co}(\text{NCS})_2(\text{pyrazine})_2]$ .



**Figure S3.** Side view of a single layer structure of  $[\text{Zn}(\text{NCS})_2(\text{pyrazine})_2]$  and  $[\text{Co}(\text{NCS})_2(\text{pyrazine})_2]$ .



**Figure S4.** The assembly method of SHM.



**Figure S5.** The ratio of the difference value (the mass of hybrid gel at a certain moment subtracts the original dry weight of hybrid gel) to the initial water adsorption mass of the hybrid gel with time at (a) RH=43% (b) RH=90% (c) RH=98% during the process of desorption.

**Table S1.** R、G、B and G/B of 30% SHM/NIPAM gel color change with time during water adsorption.

Time/min	R	G	B	G/B
0	4	8	59	0.14
20	13	17	68	0.25
35	9	20	64	0.31
50	0	40	92	0.43
200	12	45	76	0.59
300	46	76	102	0.75
360	23	71	91	0.78
400	70	85	90	0.94
500	114	126	132	0.95
540	68	87	86	1.01
600	158	138	127	1.09
700	147	124	109	1.14