

# Supporting information

## A Cellulose-Based Dual-Crosslinked Framework with Sensitive Shape and Color Changes in Acid/Alkaline Vapors

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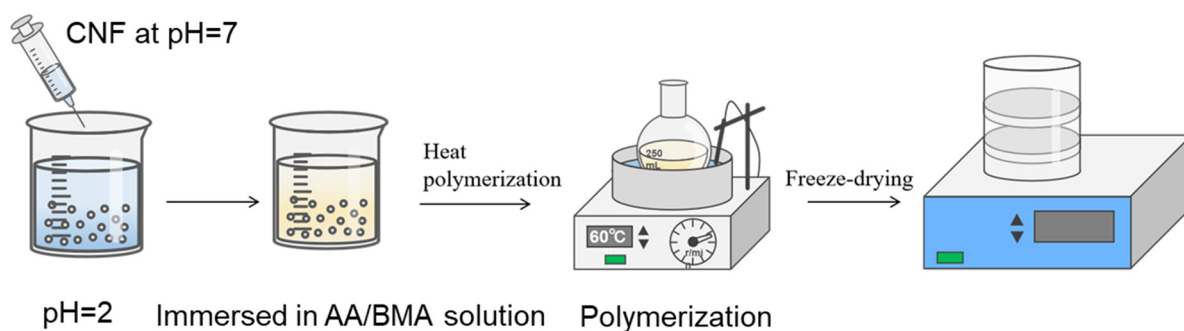


Figure S1 The preparation procedure of CDCF through in-situ free radical polymerization of AA, BMA in CNF gels.

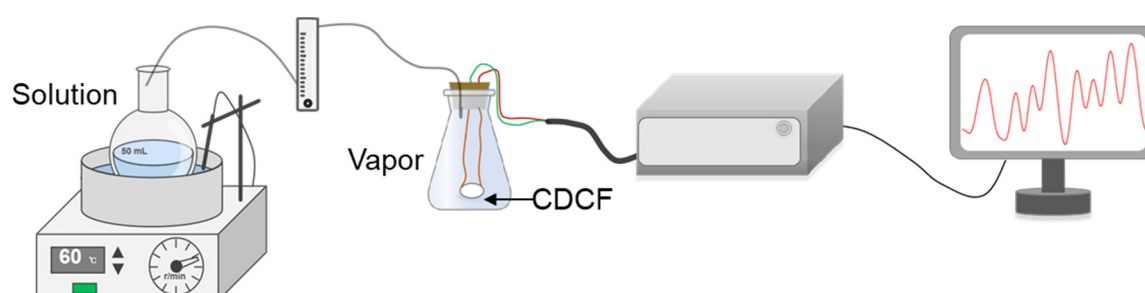


Figure S2 The equipment and experimental illustration of current sensitivity test.

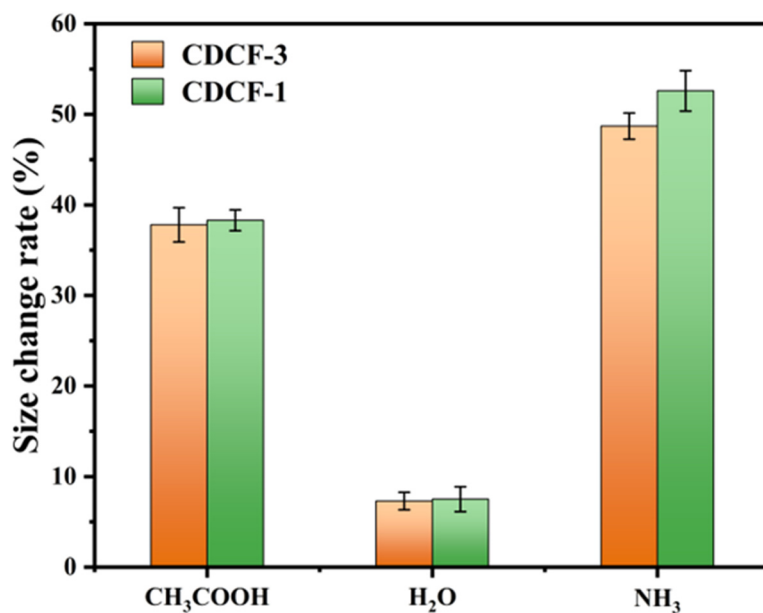


Figure S3 The size change rate of CDCF-1 and CDCF-3 samples in CH<sub>3</sub>COOH, H<sub>2</sub>O and NH<sub>3</sub> vapor samples respectively. The concentration of CH<sub>3</sub>COOH and NH<sub>3</sub> is 300ppm, the pH of H<sub>2</sub>O is 7.

Table S1. Summary of vapor sensors and their performance

Sensing Material	Analyte	Detection limit(ppm)	Response time(s)	Refs.
Copper(II) complex of the (Cu-PAN)	Ammonia	100	60	[1]

PPyNPs	Ammonia	0.1	19	[2]
ZnO/MWCNT	Ammonia	10	8.6	[3]
ZnO	acetic acid	100	50	[4]
Ag-LFO nanotubes	acetic acid	0.5	74.5	[5]
Mesoporous CuO	acetic acid	10	27.2	[6]
This work	Ammonia	7	3	
	acetic acid	10	16	

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