

# **Supplementary Material**

## **570228 Hainan, China**

### **In-site construction strategy for three-dimensional Janus cellulose aerogel with high efficient oil-water separation performance: from hydrophobicity to asymmetric wettability**

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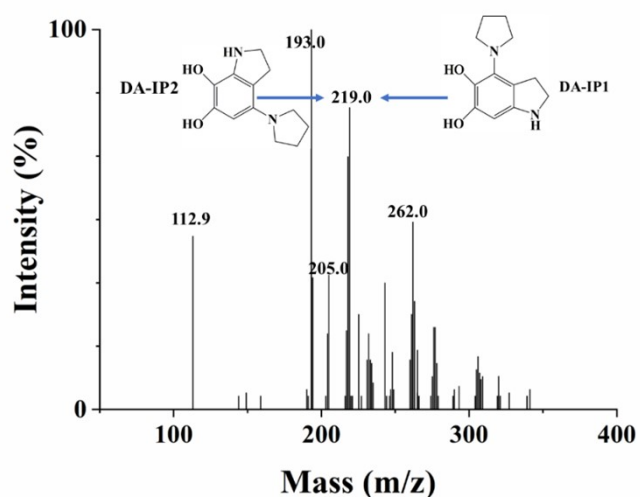


Fig. S1. Mass spectrogram of the dopamine solution after 9 min.

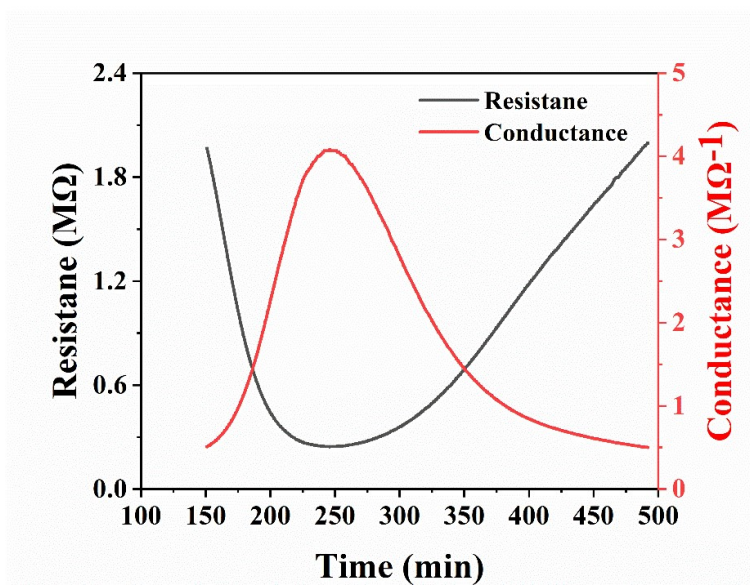
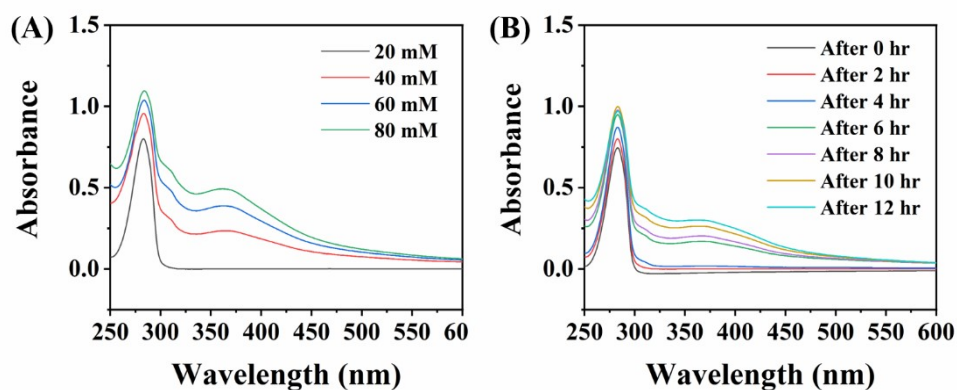
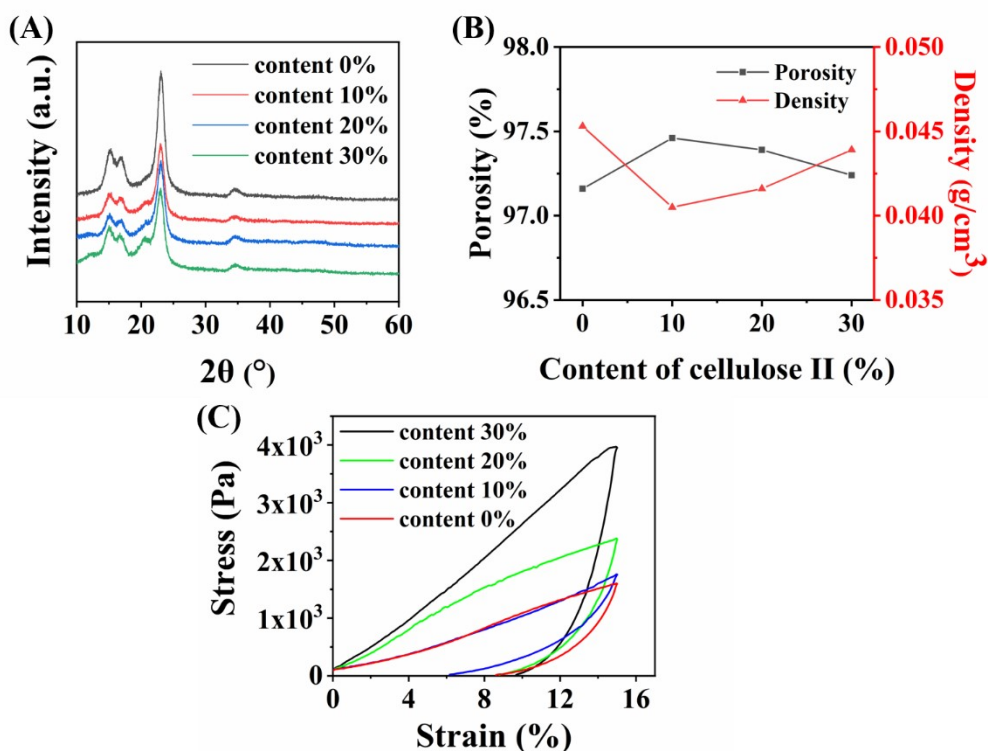


Fig. S2. Conductivity and resistance of dopamine solution with reaction time.



**Fig. S3.** The UV/Vis spectra of methanol solutions with dopamine (10 mM) and pyrrolidine (20mM, 40mM, 60mM, 80mM) (A), The UV/Vis spectra of methanol solutions (pyrrolidine=10mM, dopamine=10mM) with different reaction times(B).



**Fig. S4.** XRD patterns of CA(A), porosity and density of CA(B), stress-strain patterns of CA compression properties (C).

**Tab. S1.** Various solvents' relative polarity to water.

Dopamine-insoluble	Relative polarity	Dopamine-soluble	Relative polarity
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solvents		solvents	
Cyclohexane	0.006	DMF	0.386
Xylene	0.074	DMSO	0.444
Benzene	0.111	Benzyl alcohol	0.608
Tetrahydrofuran	0.207	1-propanol	0.617
Chloroform	0.259	Ethanol	0.654
Acetone	0.355	Methanol	0.762
		Water	1.000

**Tab. S2.** pH values of three organic base solutions.

	Pyrrolidine solution	Diethylamine solution	Triethylamine solution
pH	8.14	7.85	7.39

**Tab. S3.** pH values of pyrrolidine at different concentrations.

	20mM	40mM	60mM	80mM
pH	8.27	8.36	8.41	8.45