

Electronic Supplementary Information

Synthesis of mesoporous carbon-silica nanocomposite water-treatment membranes using a triconstituent co-assembly method

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Experimental

Table S1 Compositions of carbon and silica precursors and surfactant for the synthesis of CSN materials.

	Resorcinol	Formaldehyde	TEOS	F127	F127/(Si+C)
CSi _{2.5}	1	1.6	2.47	0.0326	0.0094
CSi _{3.7}	1	1.6	3.70	0.0429	0.0094
CSi _{6.2}	1	1.6	6.17	0.0326	0.0045

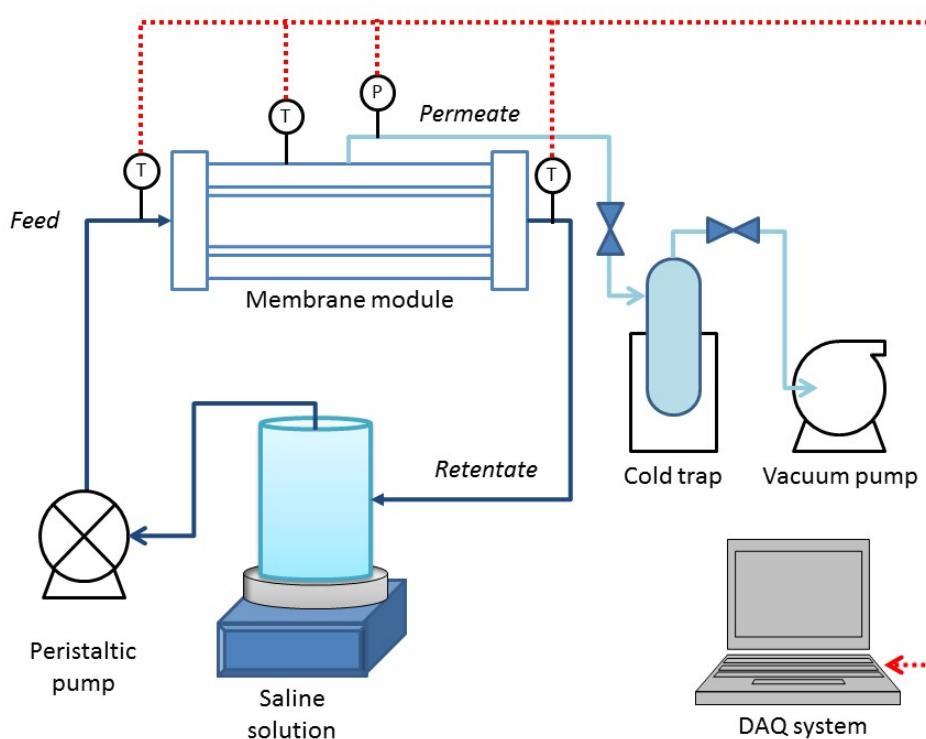


Figure S1 Schematic representation of the experimental set-up of the vacuum membrane distillation.

Results and Discussion

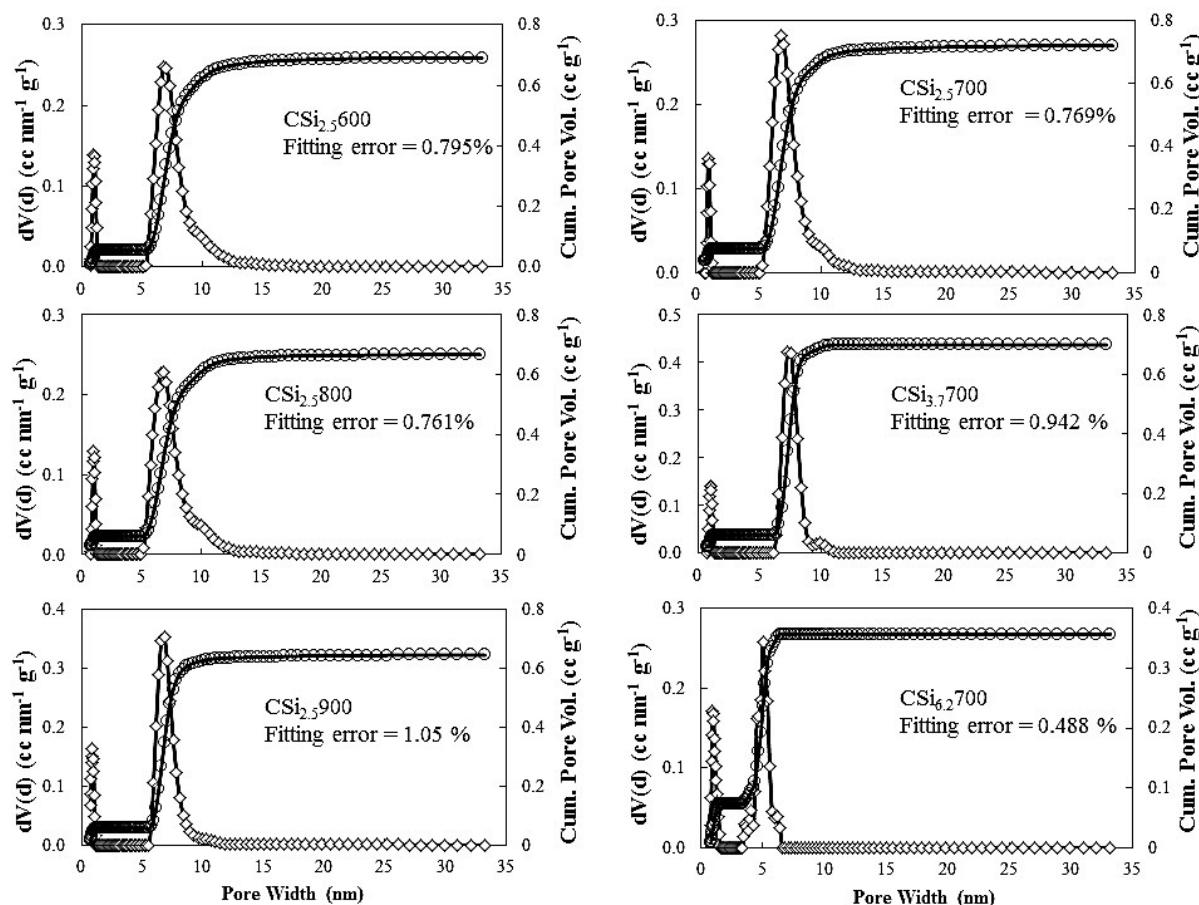


Figure S2 Nitrogen sorption cumulative pore volumes (right axes) and pore size distributions (left axes) of the $\text{CSi}_{2.5}$, $\text{CSi}_{3.7}$ and $\text{CSi}_{6.2}$ samples calculated using the QSDFT method based on the adsorption branch of the isotherms and considering the model of carbon adsorbent with slit/cylindrical pore.

Table S2 Deconvoluted results of Si-O-Si band in Gaussian components.

Sample	CSi_{2.5}600	CSi_{2.5}700	CSi_{2.5}800	CSi_{2.5}900
v₁ (LO) (cm⁻¹)	1222.82	1214.06	1206.23	1198.93
FWHM (cm⁻¹)	44.0463	50.1722	54.9779	54.8409
A (%)	2.33	3.43	4.45	4.50
v₂(LO) (cm⁻¹)	1164.33	1149.21	1137.87	1128.9
FWHM (cm⁻¹)	98	98	98	97.199
A (%)	23.38	22.96	24.04	22.72
v₃(TO) (cm⁻¹)	1120.36	1101.04	1088.32	1080.92
FWHM (cm⁻¹)	50	50	50	50
A (%)	3.99	3.36	4.40	5.68
v₄(TO) (cm⁻¹)	1053.67	1045.84	1038.61	1032.03
FWHM (cm⁻¹)	86	88	88	88
A (%)	58.06	49.99	49.00	47.85
A(4-fold)/A(6-fold) (%)	7.76	9.31	12.11	14.42

*A is the integrated area under the specific deconvoluted peak of each component. FWHM is full width half maximum of the peak. v is the frequency of each mode.