Supporting Information

MOF-Embedded Bifunctional Composite Nanofiber Membranes with Tunable Hierarchical Structure for High-Efficiency PM$_{0.3}$ Purification and Oil/Water Separation

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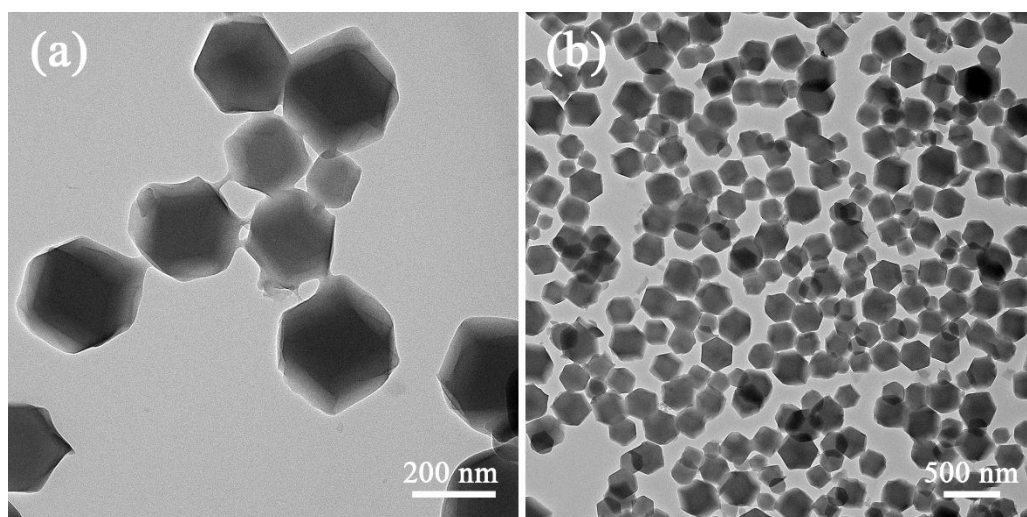* E-mail: yuanding@qdu.edu.cn (Ding Yuan); mingjinfa@qdu.edu.cn (Jinfa Ming)

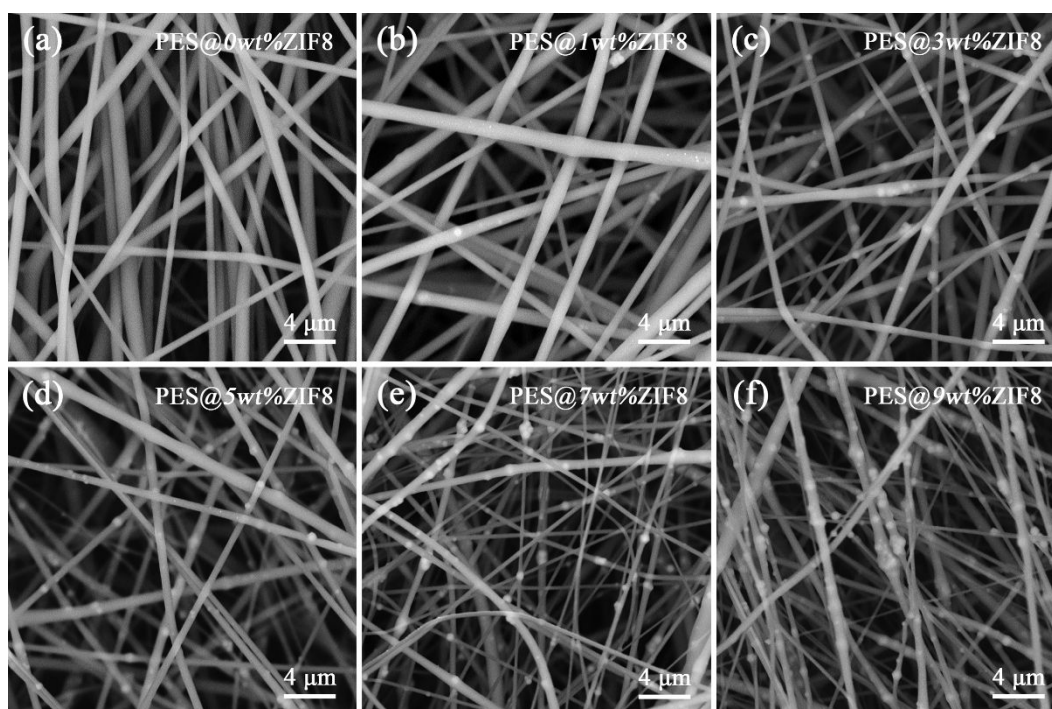**Figure S1.** (a, b) TEM images of ZIF8 NPs.

Figure S2. SEM images of the PES@*xwt%*ZIF8 membrane with ZIF8 NPs concentration of 0 wt% (a), 1 wt% (b), 3 wt% (c), 5 wt% (d), 7 wt% (e), and 9 wt% (f), respectively.
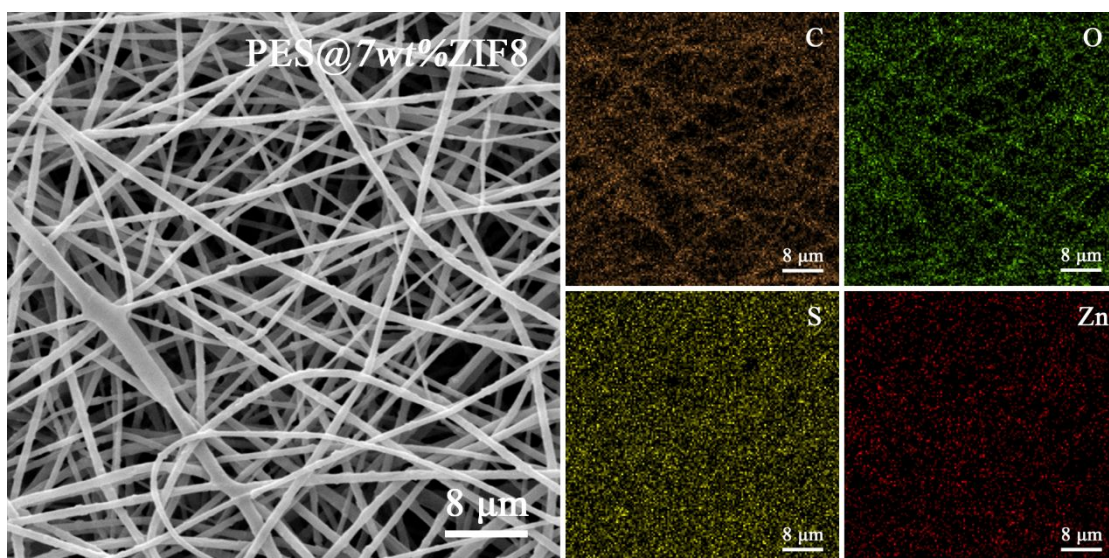
Figure S3. SEM and the corresponding element scanning images of PES@*7wt%*ZIF8 membrane, showing the distribution of C, O, S and Zn.

Table S1. Pressure drop and porosity of PES@*xwt%*ZIF8 membrane.

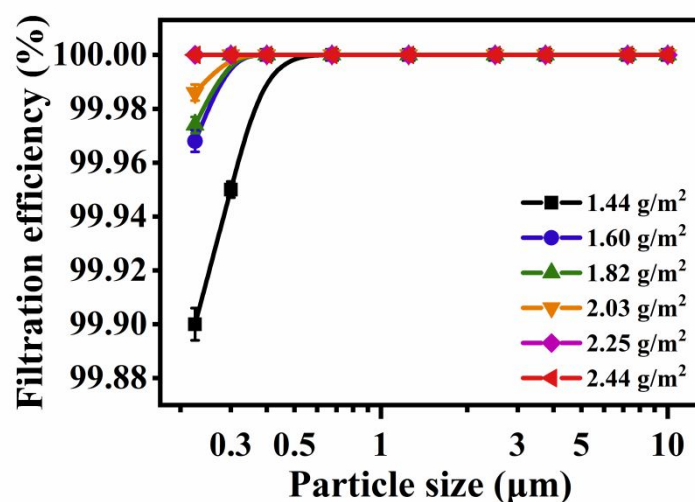| Sample	ZIF8 concentration (wt%)	Pressure drop (Pa)	Porosity (%)
	0	1	87.6 ± 0.7
	1	2	86.1 ± 1.3
PES@*xwt%*ZIF8	3	2	85.9 ± 1.6
	5	2	83.2 ± 2.1
	7	3	80.2 ± 1.4
	9	3	78.5 ± 1.7

Figure S4. Filtration efficiency curves of PES@*7wt%*ZIF8-PSA/PES filter with different basis weight for NaCl airborne particles with various sizes.
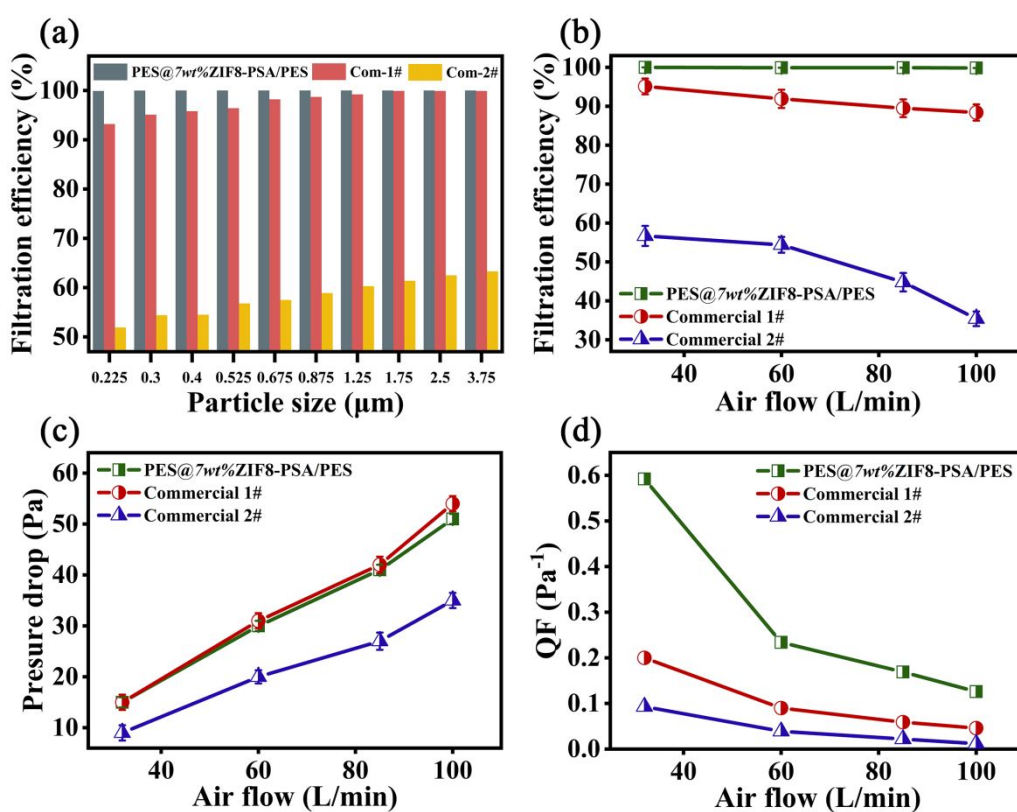

Figure S5. (a) Filtration efficiency of the PES@*7wt%*ZIF8-PSA/PES membranes and commercial filter materials for NaCl airborne particles with various sizes. (b)-(d) Filtration

performance of the PES@*7wt%*ZIF8-PSA/PES membrane and commercial filter materials for
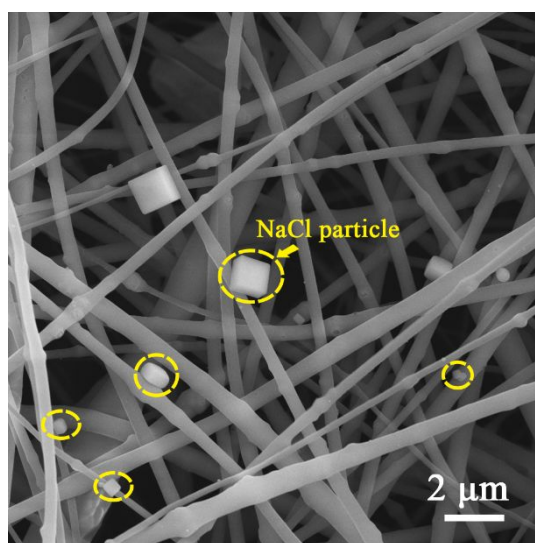
NaCl particles under different airflows.

Figure S6. SEM image of PES@*7wt%*ZIF8-PSA/PES membrane after filtration.
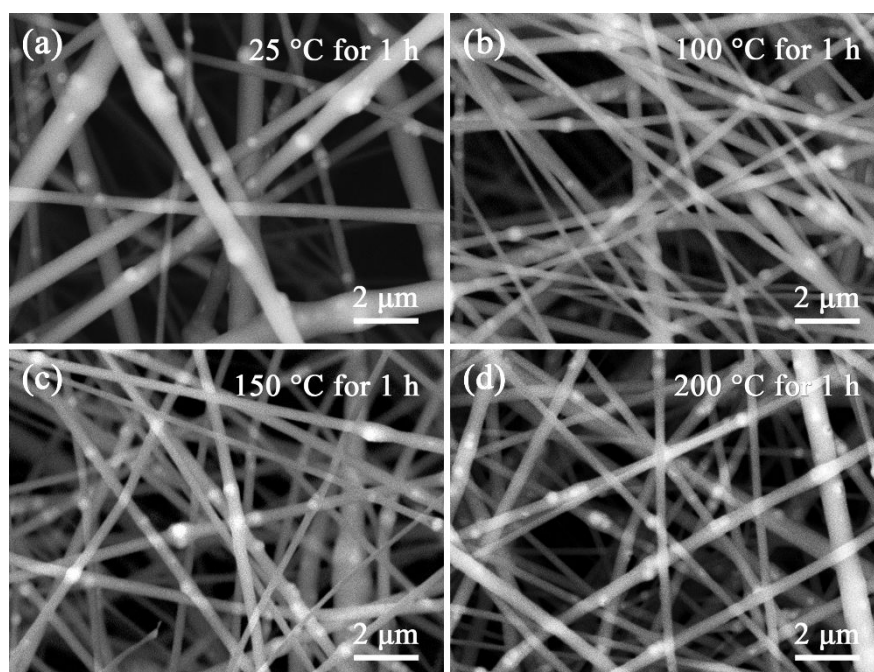

Figure S7. SEM images of PES@*7wt%*ZIF8-PSA/PES membrane treated at different

temperatures over 1 h.