

## Supplementary data

### **Superhydrophobic and highly moisture-resistant PVA@EC composite membrane for air purification**

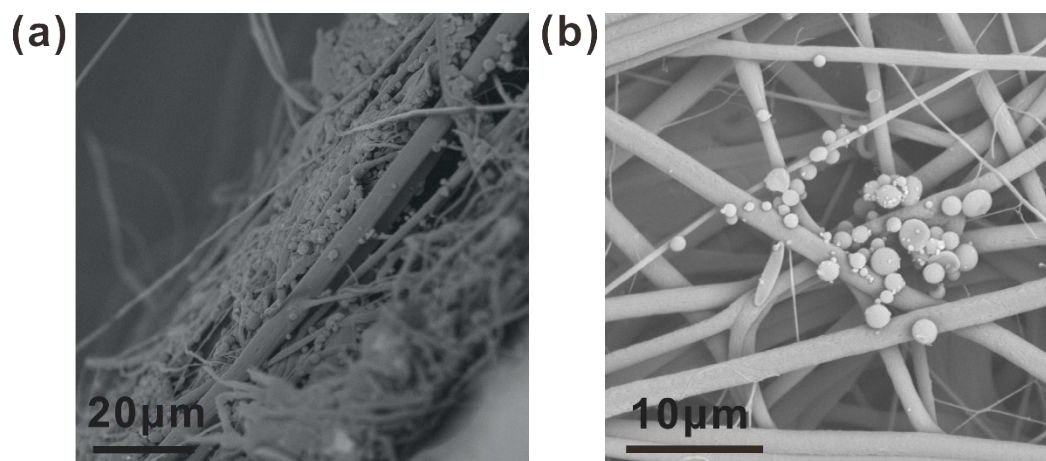
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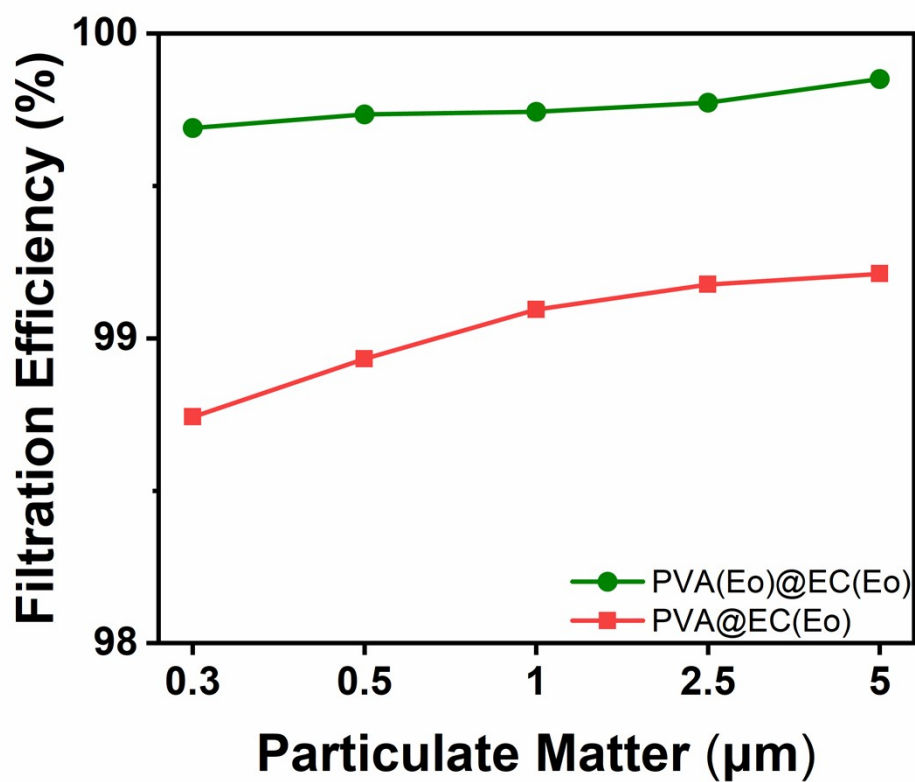
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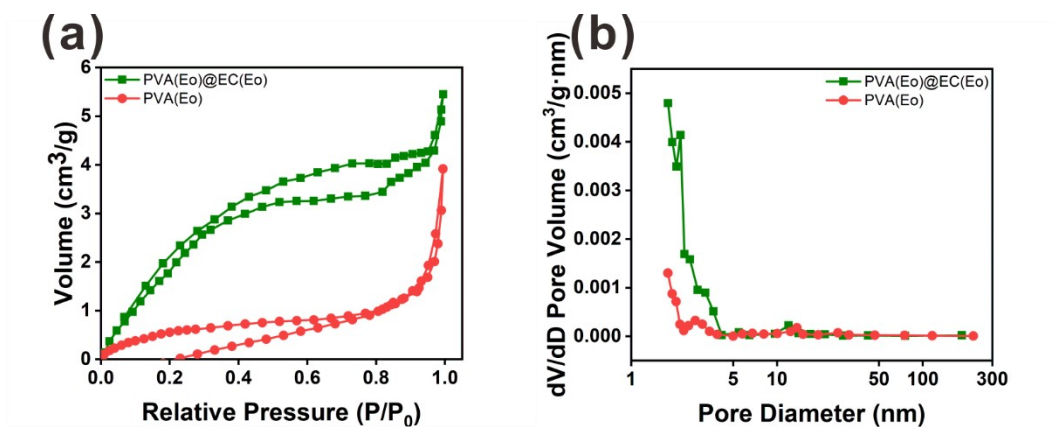
(Xinquan Liang)



**Figure S1.** (a) SEM images of cross section of the composite air filtration membrane at 3000 magnification; (b) SEM images of the composite air filtration membrane after filtration at 8000 magnification.



**Figure S2.** Filtration efficiency of PVA(Eo)@EC(Eo) and PVA@EC(Eo) composite membranes for different particle sizes of PM.



**Figure S3.** Analysis of the structure and pore size of filters: (a) N<sub>2</sub> adsorption-desorption isothermal line and specific surface area of the filter; (b) Microscopic aperture distribution of filters.

| Sample         | Surface area (m <sup>2</sup> /g) | Pore volume (cm <sup>3</sup> /g) | Pore diameter (nm) |
|----------------|----------------------------------|----------------------------------|--------------------|
| PVA(Eo)@EC(Eo) | 11.6860                          | 0.008426                         | 3.8640             |
| PVA(Eo)        | 2.4700                           | 0.006061                         | 12.8392            |

**Table S1.** Physical properties of PVA(Eo)@EC(Eo) and PVA(Eo) nanofibers.