**ZIF Filled PDMS Mixed Matrix Membranes for Separation of Solvent Vapors from Nitrogen**

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**SUPPORTING INFORMATION**

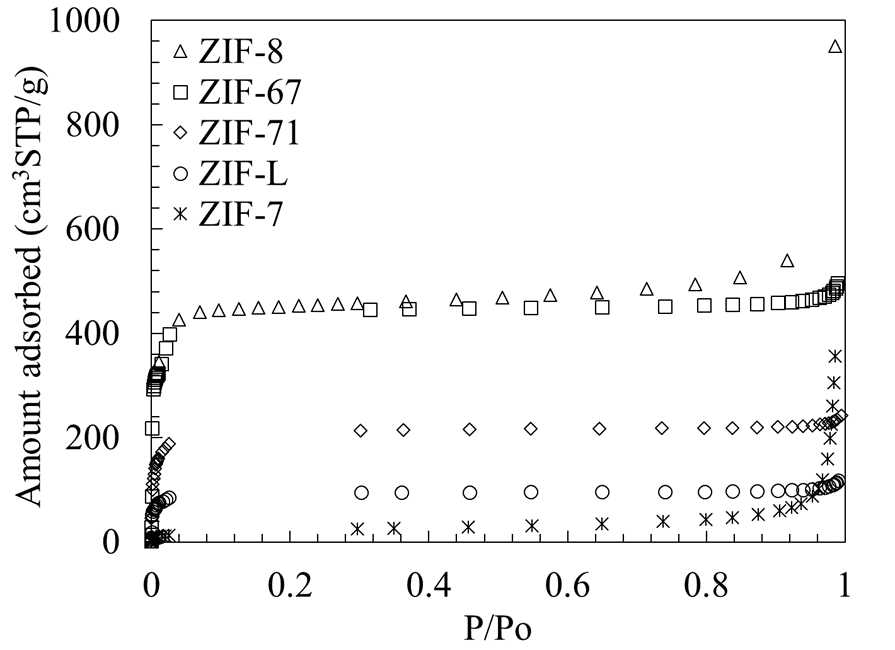
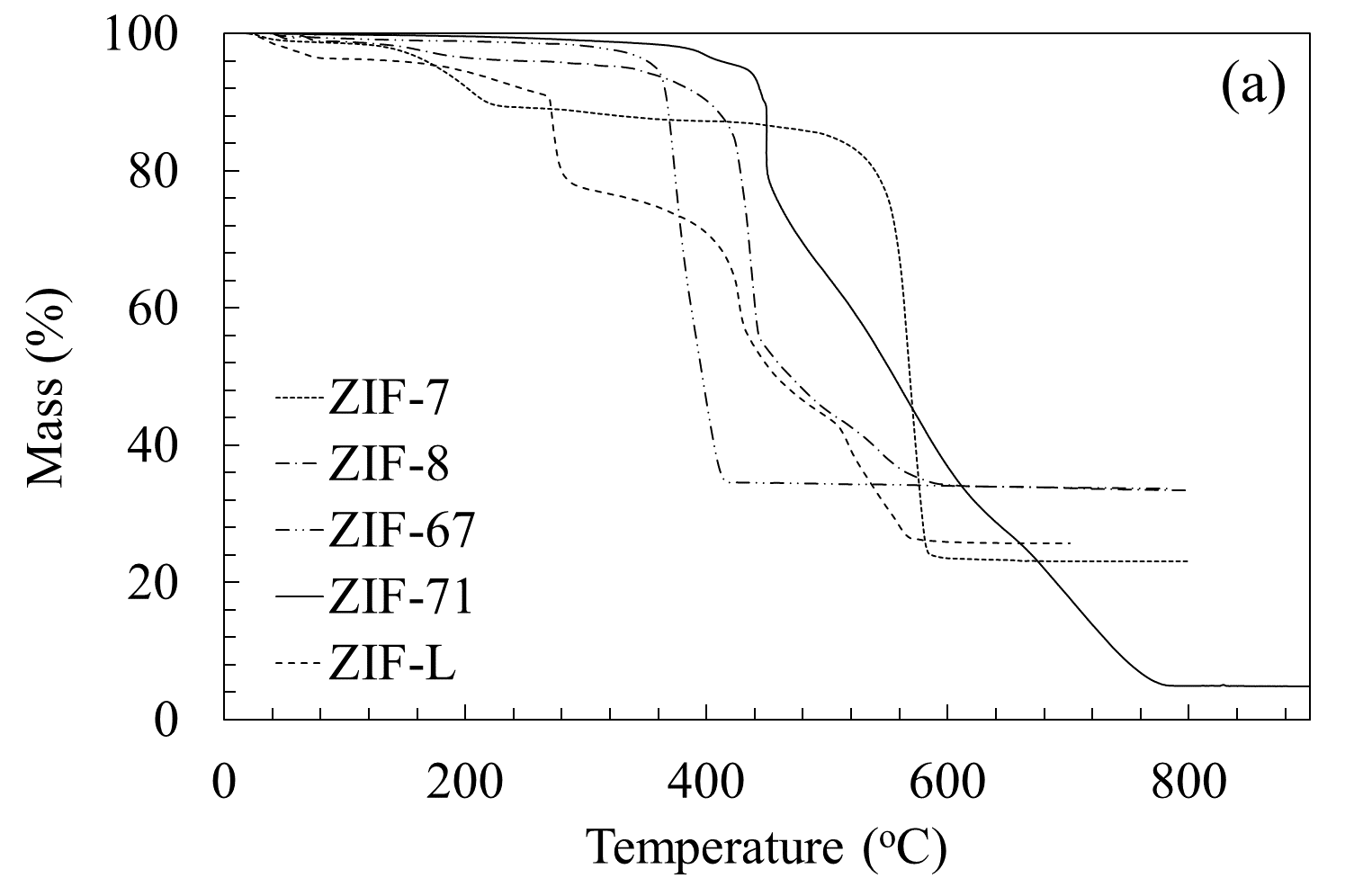


Fig. S1. N2 adsorption isotherms of ZIFs at 77 K



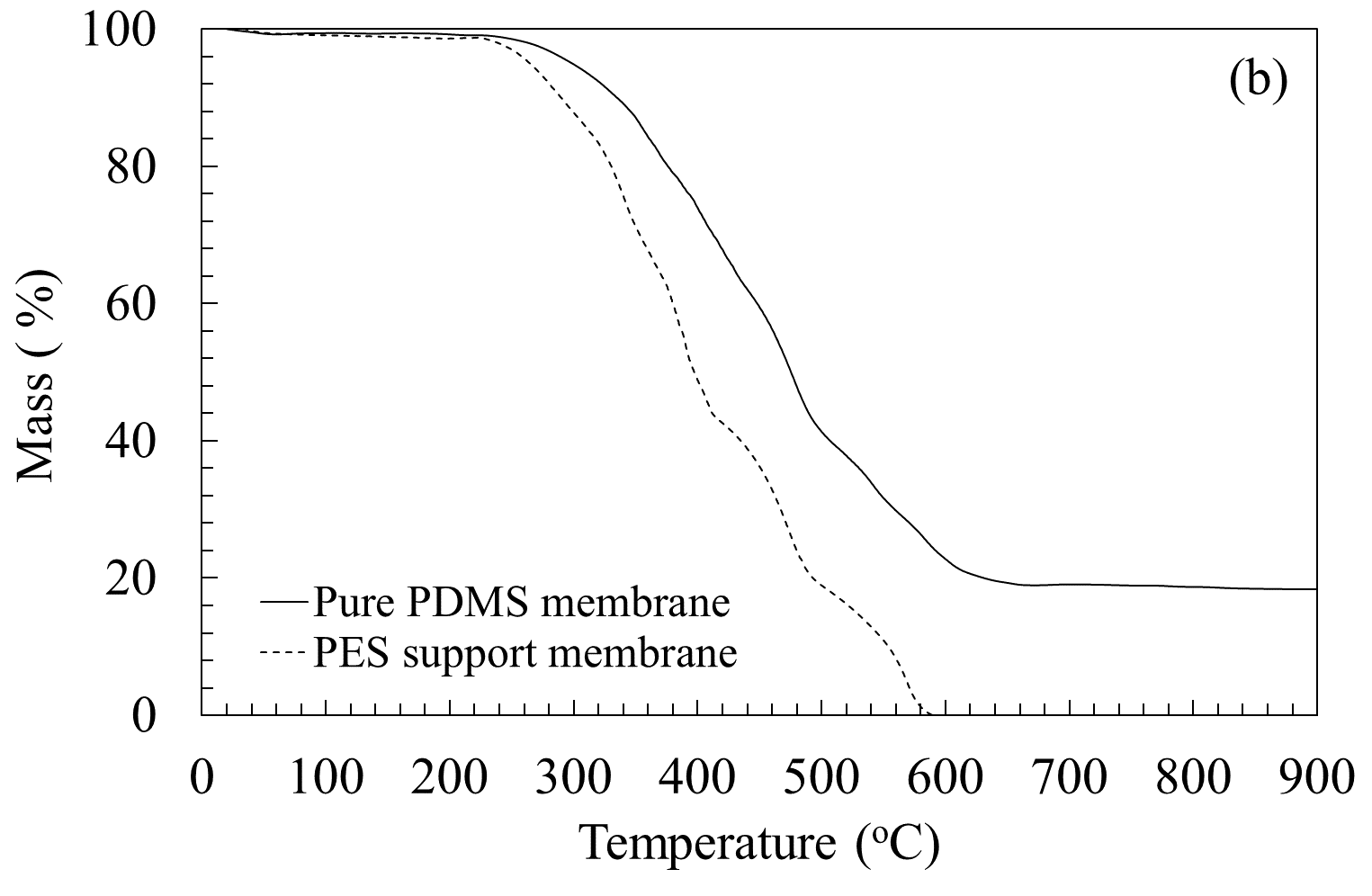
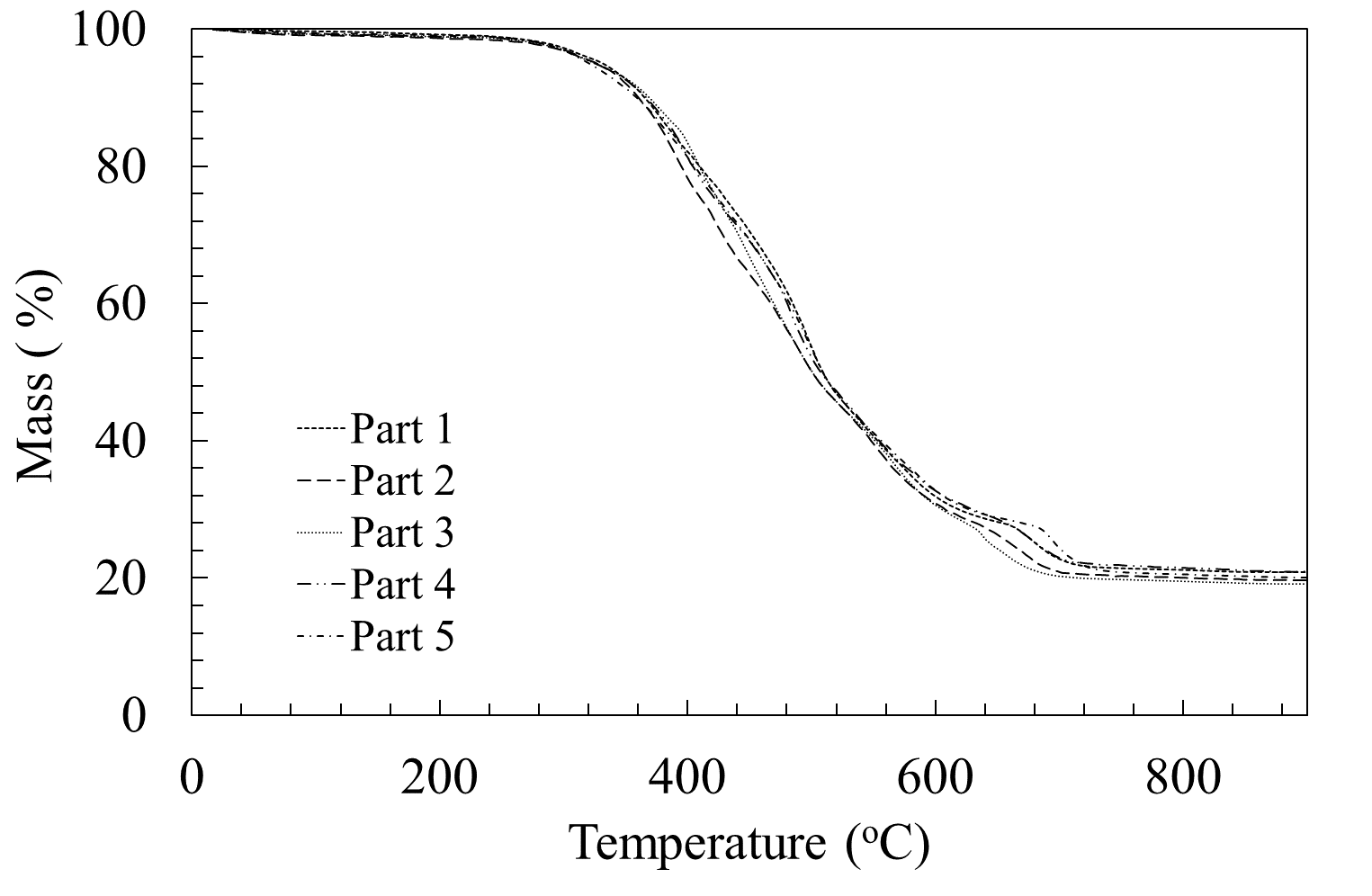


Fig.S2. TGA curves of (a) ZIFs (b) Pure PDMS and PES support membrane



1

4

3

2

5

Fig. S3. TGA curves of pieces of a 20 % ZIF-L/PDMS membrane. The location of membrane pieces analyzed by TGA is schematically shown in the insert.

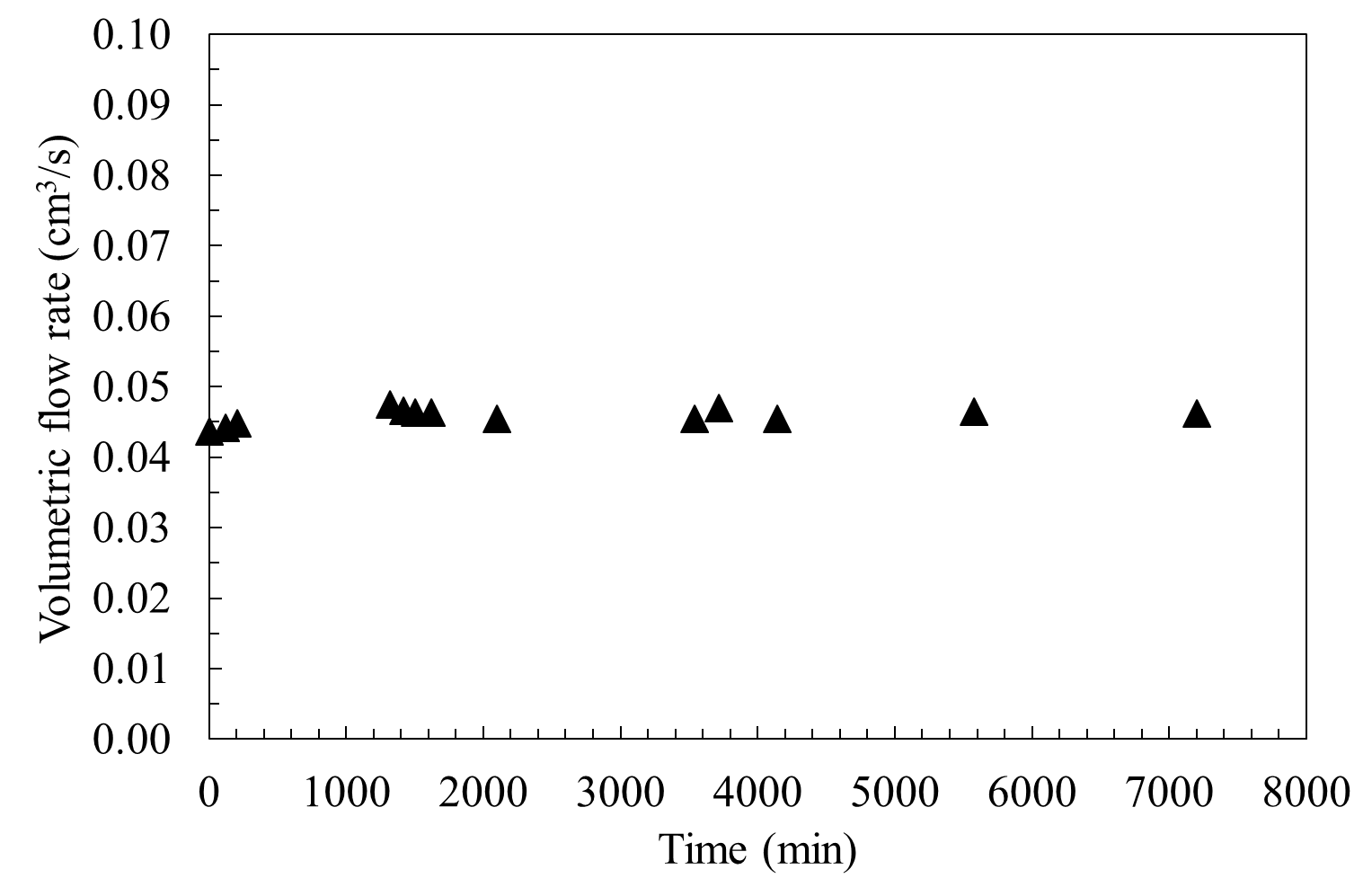
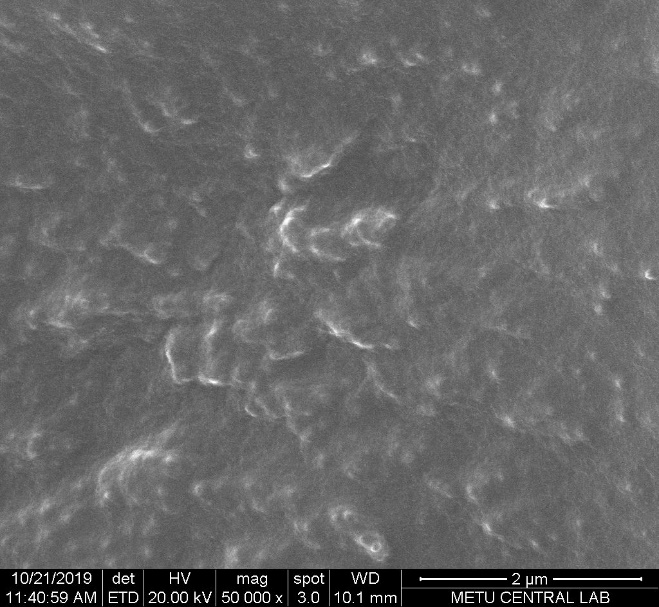
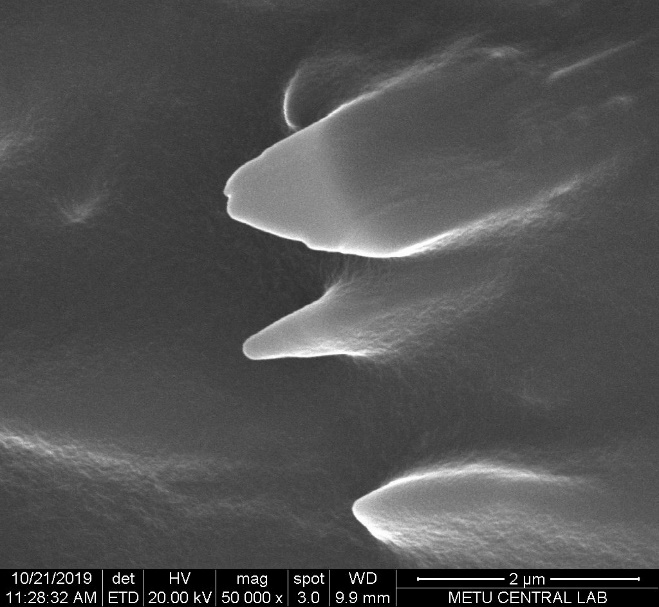


Figure S4. VOCs flux of PES support membrane

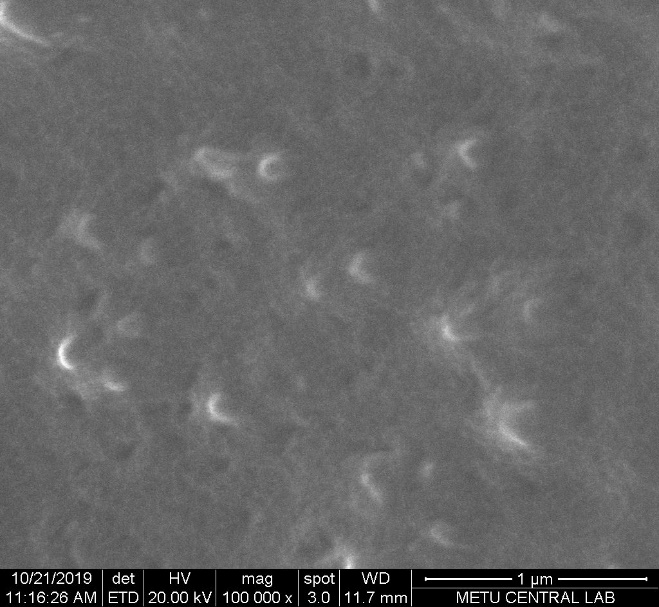
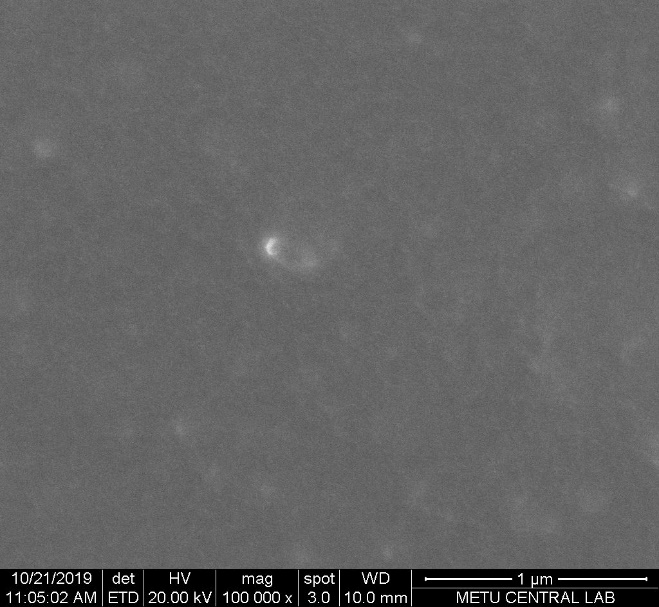
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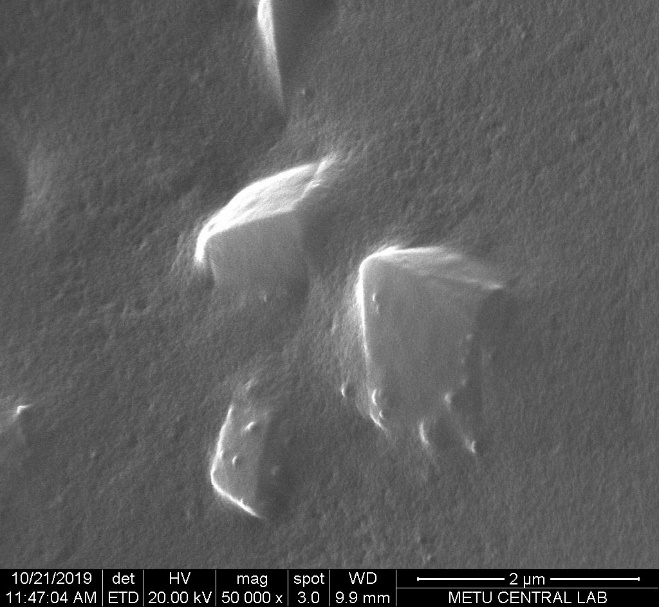
(d)

(c)

(b)

(a)



(e)

Figure S5. SEM image of (a) 20 % ZIF-8/PDMS, (b) 20 % ZIF-L/PDMS, (c) 20 % ZIF-

67/PDMS, (d) 20 % ZIF-7/PDMS, (e) 20 % ZIF-71 PDMS MMMs

Table S1. Solubility Parameter (δ) values of solvents

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Solvent | δD (Mpa 0.5) | δP (Mpa 0.5) | δH (Mpa 0.5) | δ (Mpa 0.5) |
| MeOH | 14.7 | 12.3 | 22.3 | 29 |
| EtOH | 15.8 | 8.8 | 19.4 | 27 |
| 1-propanol | 16 | 6.8 | 17.4 | 25 |
| IPA | 15.8 | 6.1 | 16.4 | 24 |
| EtAc | 15.8 | 5.3 | 7.2 | 18 |

Eqn S1.

δD , δP and δH values of solvents of taken from literature (M. Charles, Hansen Solubility Parameters: A User’s Handbook, CRC Press LLC, America, 2000).

Table S2. The measured flux of mixed matrix membrane

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | Molar Composition VOCs : N2 = 980 : 20 | |
|  | Thickness (μm) | Pure N2 (GPU) | N2 (GPU) | VOCs (GPU) |
| Pure PDMS Membrane | 15.2 ± 1.1 | 17 ± 1.8 | 19 ± 2.9 | 406 ± 36.0 |
| 20 % ZIF-8 PDMS MMMs | 27.7 ± 0.9 | 10 ± 0.8 | 11 ± 0.7 | 221 ± 14.0 |
| 20 % ZIF-L PDMS MMMs | 58.5 ± 1.2 | 2 ± 0.2 | 3 ± 0.1 | 169 ± 20.2 |
| 20 % ZIF-67 PDMS MMMs | 59.2 ± 1.2 | 4 ± 0.8 | 5 ± 0.4 | 93 ± 5.1 |
| 20 % ZIF-7 PDMS MMMs | 47.0 ± 0.8 | 3 ± 0.5 | 5 ± 0.5 | 149 ± 20.5 |
| 20 % ZIF-71 PDMS MMMs | 50.3 ± 0.8 | 7 ± 1.3 | 6 ± 0.2 | 151 ± 20.6 |