Electronic Supplementary Material (ESI) for Journal of Materials Chemistry

Supporting Information

Electrospinning Technology Applied in Zeolitic Imidazolate Framework Membrane Synthesis

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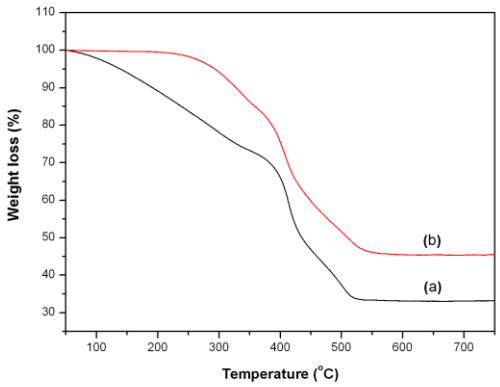

Figure S1. Overlay of TGA curves of as-synthesized ZIF-8 membrane (a) and ZIF-8 membrane activated at 150°C under N_2 flow (b).

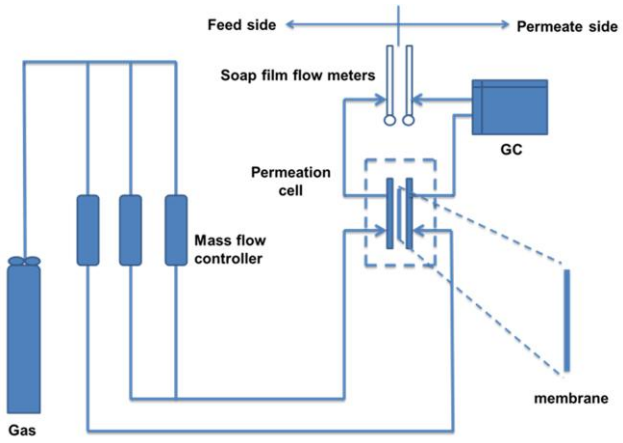

Figure S2. Schematic illustration of experimental setup for gas-separation measurements with the ZIF-8 membrane set in a stainless steel cell at room temperature and standard atmospheric pressure. One side of the membrane was exposed to single gas or gas mixtures while the permeating gas was swept by argon on the other side. Soap film flow meters are used to measure the flux of the gas and the volume ratio of the testing mixture gas is 1:1.

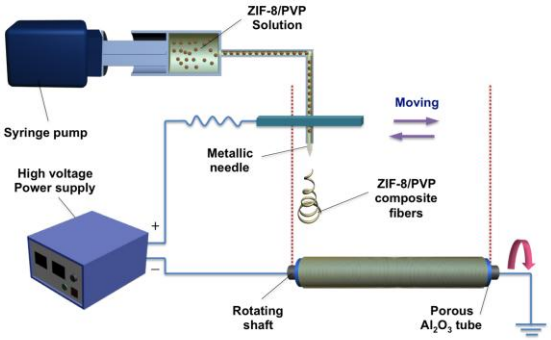

Figure S3. Schematic diagram of the electrospinning process for support (porous Al_2O_3 tube) seeding.

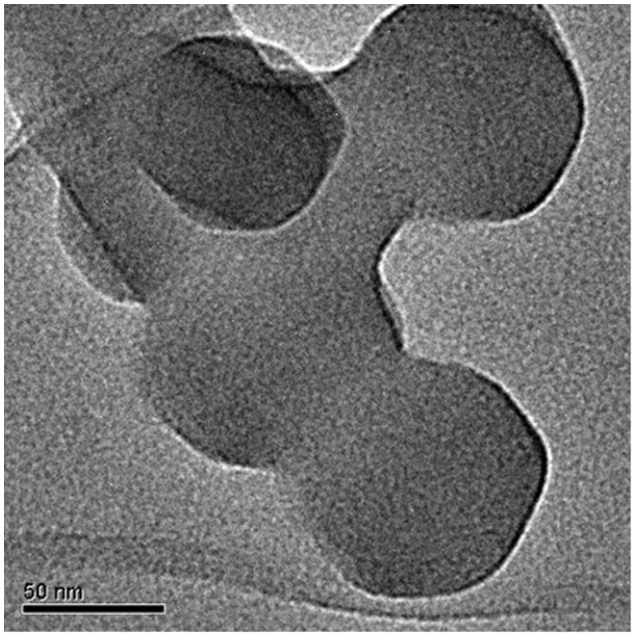

Figure S4. TEM picture of synthesized ZIF-8 nanoparticles.

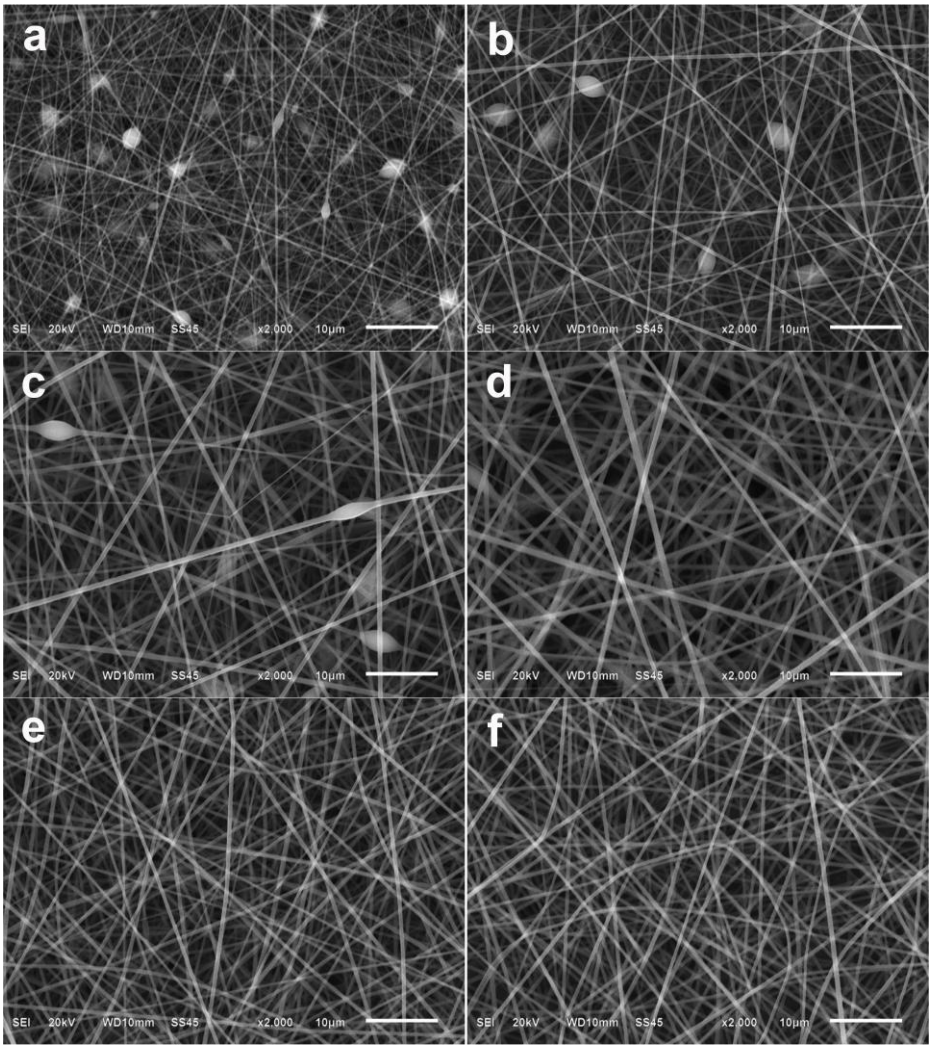

Figure S5. SEM images of the electrospun PVP fibers from different concentration of solutions: (a) 8%, (b) 9%, (c) 10%, (d) 11%, (e) 12%, and (f) 13%.

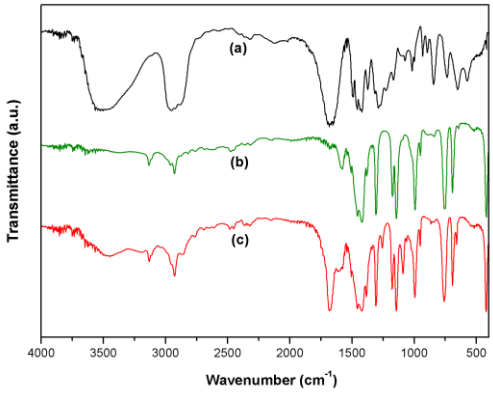

Figure S6. FTIR spectra of (a) PVP powder, (b) ZIF-8 crystals, (c) ZIF-8 membrane.

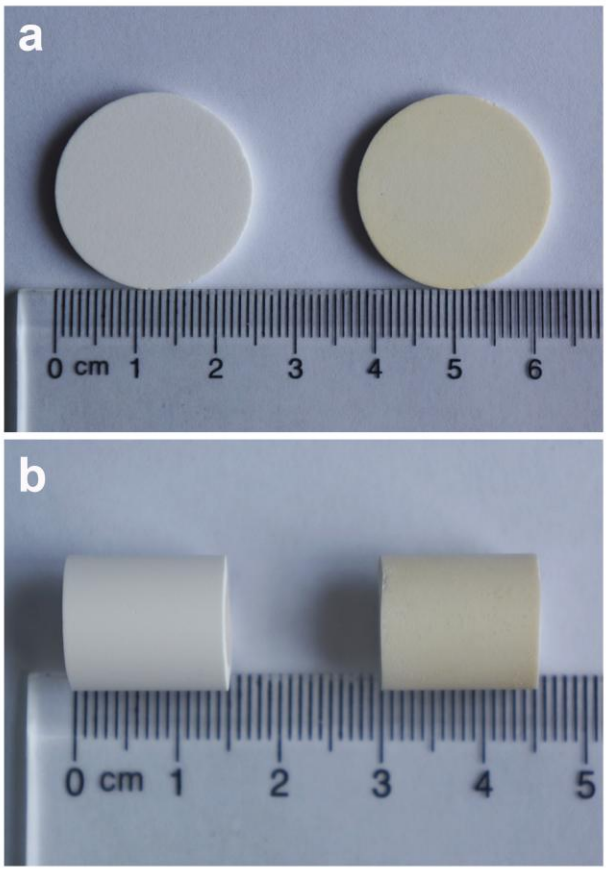

Figure S7. Digital images of (a) macroporous SiO_2 wafer (left) and ZIF-8 membrane grown on its top (right), (b) porous Al_2O_3 tube (left) and ZIF-8 membrane grown on its outer surface.

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Table S1 Single gas permeance (mol m^{-2} s^{-1} Pa^{-1}) and ideal separation factors (H_2 versus other gases) of the ZIF-8 membrane at 298 K and 1 atmospheric pressure.

Gas	**H_2**	**N_2**	**H_2**	**CO_2**	**H_2**	**CH_4**
Single gas permeance ($\times 10^{-8}$)	70.6	14.7	70.6	9.56	70.6	11.7
Ideal separation factor	4.80		7.38		6.03	