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Supporting information for

Facile synthesis of continuous thin $Cu(bipy)_2(SiF_6)$ membrane with selectivity towards hydrogen

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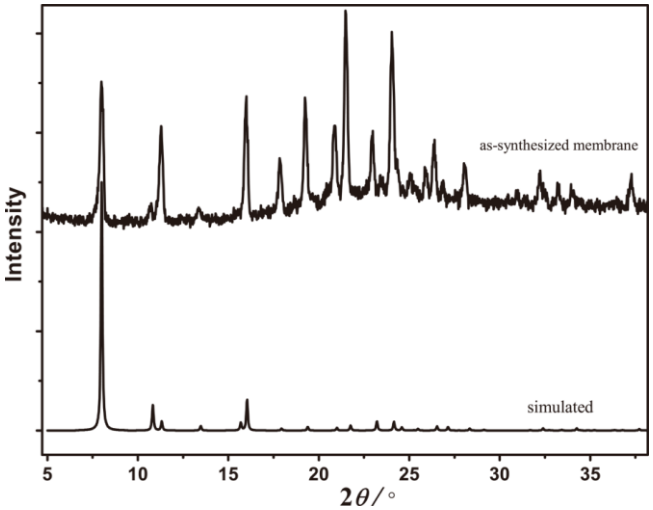

Fig. S1 PXRD patterns of the as-synthesized membrane (up) and simulated from the structure (below).

Table S1 Single and binary gas permeances (mol·m^{-2}·s^{-1}·Pa^{-1}) and separation factors for the $Cu(bpy)_2(SiF_6)$ membrane at 293 K and 1 bar. The volume ratio for binary gas systems is 1:1.

Gas(i/j)	Knudsen constant	Performances of the $Cu(bpy)_2(SiF_6)$ membrane					
		Single gas			Binary gas		
		Permeances (i) (mol·m^{-2}·s^{-1}·Pa^{-1})	Permeances (j) (mol·m^{-2}·s^{-1}·Pa^{-1})	Ideal separation factor	Permeances (H_2) (mol·m^{-2}·s^{-1}·Pa^{-1})	Permeances (j) (mol·m^{-2}·s^{-1}·Pa^{-1})	Separation factor
H_2/CH_4	2.8	3.00×10^{-7}	4.29×10^{-8}	7.0	2.70×10^{-7}	3.60×10^{-8}	7.5
H_2/N_2	3.7	3.00×10^{-7}	4.40×10^{-8}	6.8	2.70×10^{-7}	4.00×10^{-8}	6.8
H_2/CO_2	4.7	3.00×10^{-7}	3.85×10^{-8}	7.8	2.80×10^{-7}	3.50×10^{-8}	8.0
CO_2/CH_4	0.6	3.85×10^{-8}	4.29×10^{-8}	0.90	/	/	/
CO_2/N_2	0.8	3.85×10^{-8}	4.40×10^{-8}	0.88	/	/	/

Table S2 Single and binary gas permeances (mol·m^{-2}·s^{-1}·Pa^{-1}) and separation factors for the $Cu(bpy)_2(SiF_6)$ membrane at 1 bar and different temperatures. The volume ratio for binary gas systems is 1:1.

Gas(H_2/j)	Temperature (K)	Single gas			Binary gas		
		Permeances (H_2) (mol·m^{-2}·s^{-1}·Pa^{-1})	Permeances (j) (mol·m^{-2}·s^{-1}·Pa^{-1})	Ideal separation factor	Permeances (H_2) (mol·m^{-2}·s^{-1}·Pa^{-1})	Permeances (j) (mol·m^{-2}·s^{-1}·Pa^{-1})	Separation factor
H_2/CO_2	313	5.22×10^{-7}	1.00×10^{-7}	5.2	4.30×10^{-7}	9.00×10^{-8}	4.8
	343	5.50×10^{-7}	1.10×10^{-7}	5.0	4.40×10^{-7}	1.00×10^{-7}	4.4
H_2/CH_4	313	5.22×10^{-7}	1.09×10^{-7}	4.8	4.54×10^{-7}	1.10×10^{-7}	4.1
	343	5.50×10^{-7}	1.26×10^{-7}	4.4	5.00×10^{-7}	1.23×10^{-7}	4.1
H_2/N_2	313	5.25×10^{-7}	9.48×10^{-8}	5.5	3.40×10^{-7}	6.00×10^{-8}	5.7
	343	5.50×10^{-7}	1.30×10^{-7}	4.2	4.80×10^{-7}	1.16×10^{-7}	4.1