

Supporting Information

for

**ZIF@MOF core-shell functional structure synthesized via controlled ligand-exchange for
enhanced CO₂ separation in mixed matrix-membranes**

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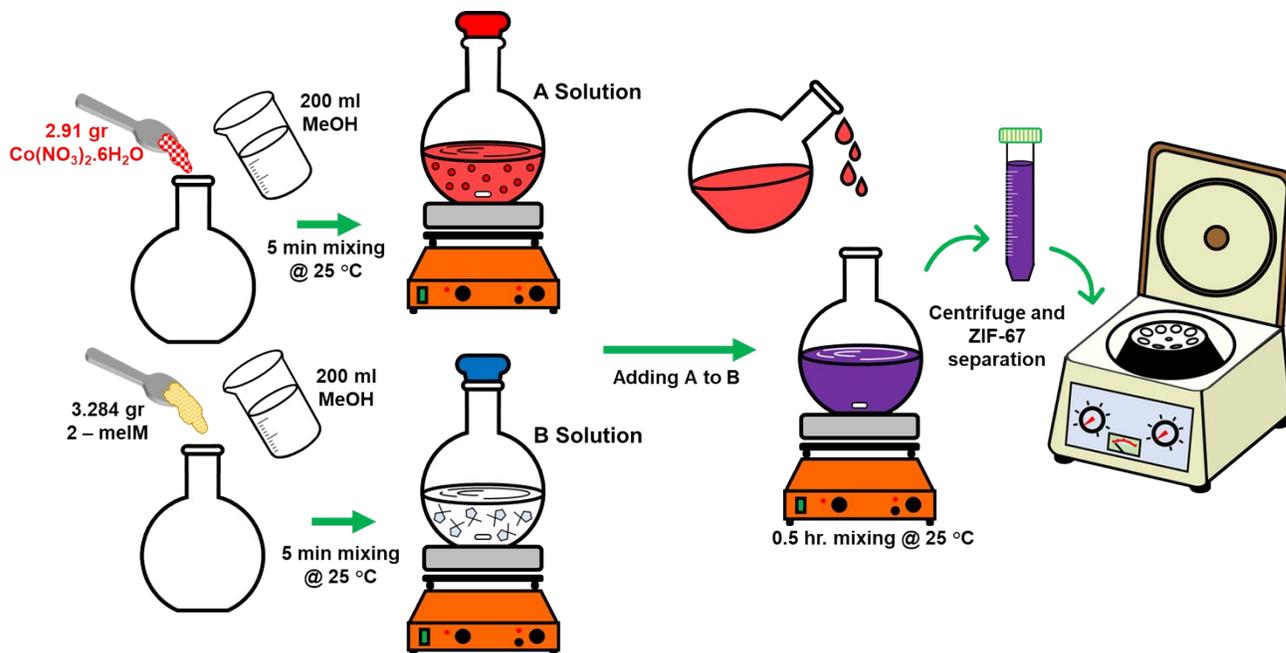


Fig. S1: Schematic of ZIF-67 synthesis steps by solvothermal method.

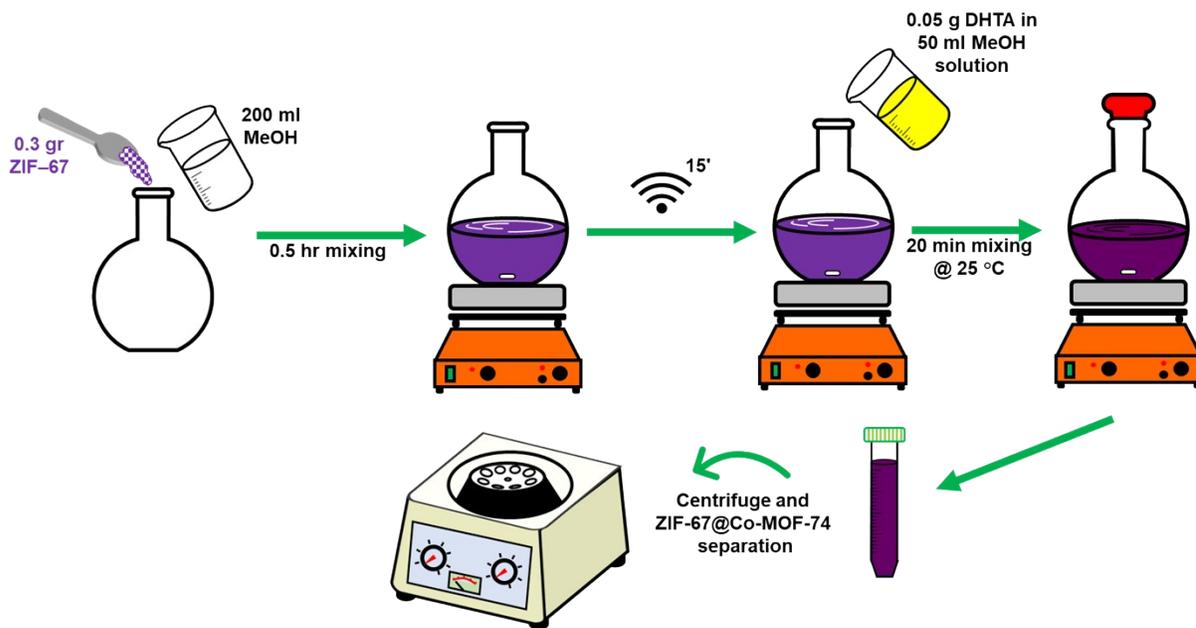


Fig. S2: Schematic of ZIF-67@Co-MOF-74 synthesis steps by ligand exchange method.

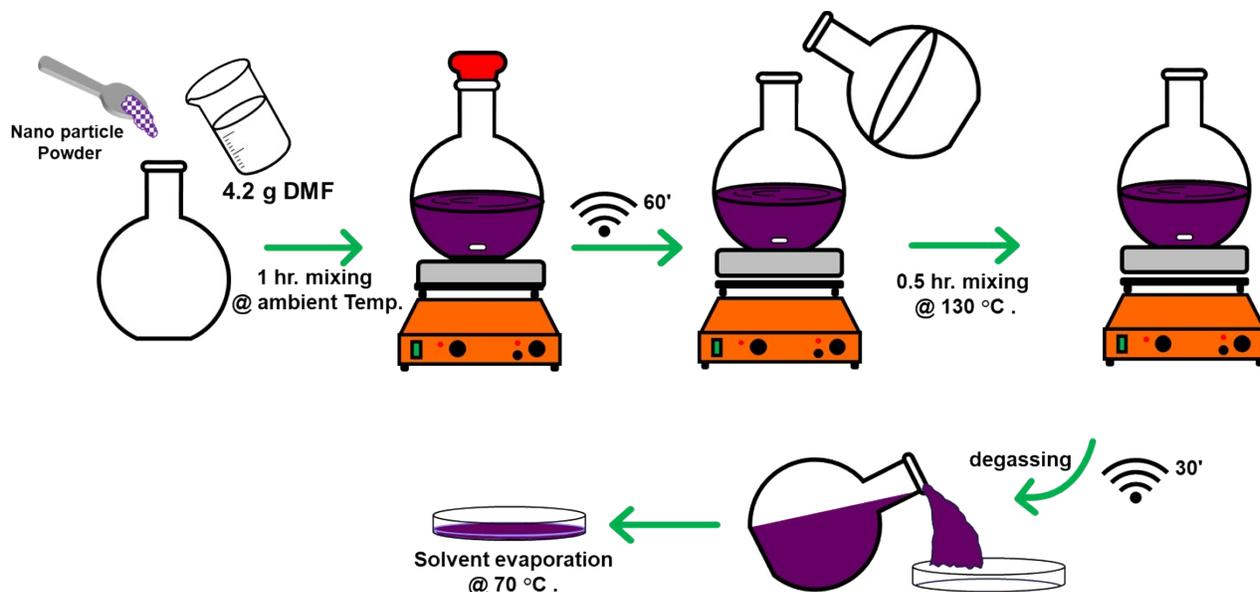


Fig. S3: Schematic of mixed matrix membranes preparation procedure.

Table S1: Comparison of the separation performance of various Pebax-based MMMs containing core-shell fillers.

Membrane	P_{CO_2} (Barrer)	α_{CO_2/N_2}	α_{CO_2/CH_4}	T (°C)	p (bar)	Ref.
Pebax-1657/GO@Co-Zn-ZIF-67	110	162	-	30	12	1
Pebax-1657/ZIF-8@GO	136.2	77.9	-	25	3	2
Pebax-1657/ZIF-L(Zn)@ZIF-67	72.9	102.9	-	25	4	3
Pebax-1657/GO-ZIF-8@ZIF-67	173.2	61.9	17.5	35	4	4
Pebax-1657/ZIF-L(Zn-Co)@CNT	161.3	51.4	18.5	35	4	5
Pebax-1657/ZrAC@UiO-66-(COOH) ₂ @CuBDC@MgAC	407.77	87.46	-	50	5	6
Pebax-1657/ZIF-8@AC	620	-	40	25	2	7
Pebax-1657/ZIF-67@Co-MOF-74	130	117	-	25	10	This work

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