

Supplementary Information

C=N linked covalent organic framework for efficient adsorption of iodine in vapor and solution

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1. Figures

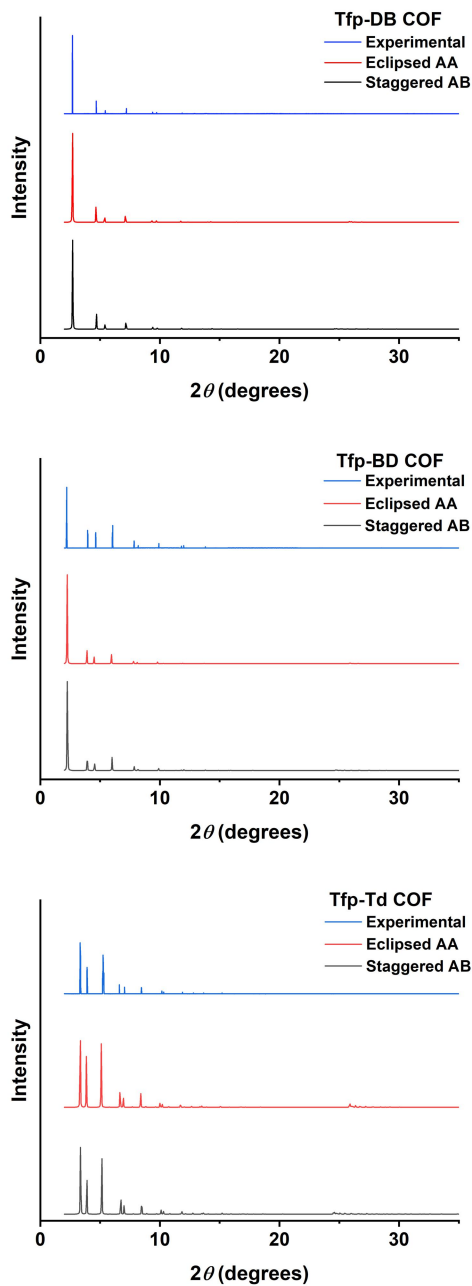


Fig. S1 PXRD patterns (blue, major reflections) and simulations (red and black) profiles of (a) Tfp-DB COF, (b) Tfp-BD COF, (c) Tfp-Td COF.

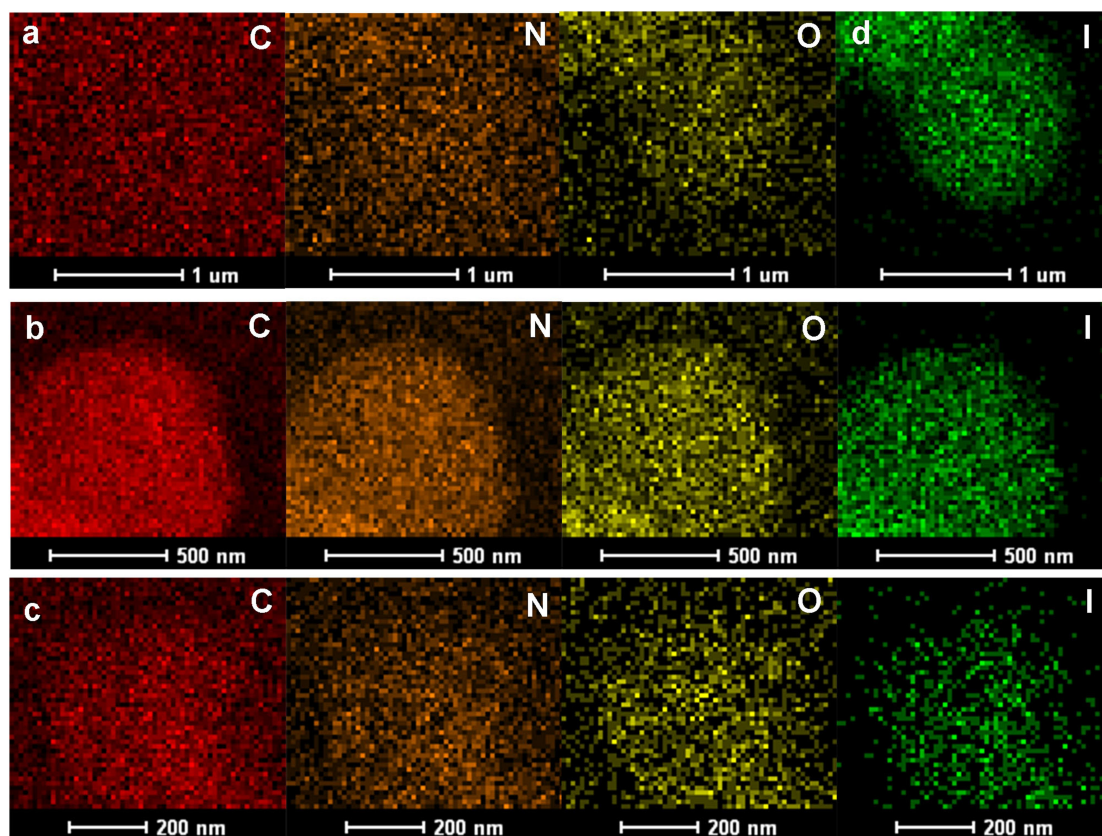


Fig. S2 TEM images of (a) elemental mapping images of iodine-laden Tfp-DB COF, C-K, N-K, O-K, I-K, from left to right respectively, (b) elemental mapping images of iodine-laden Tfp-BD COF, C-K, N-K, O-K, I-K, from left to right respectively, (c) elemental mapping images of iodine-laden Tfp-Td COF, C-K, N-K, O-K, I-K, from left to right respectively.

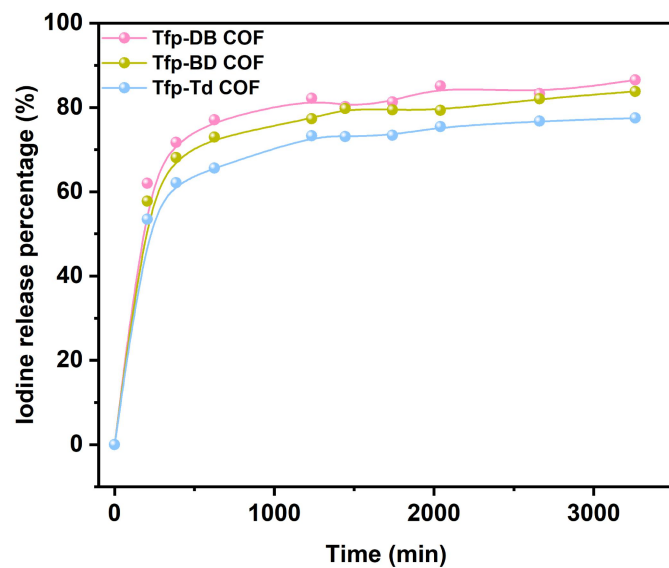


Fig. S3 Desorption isotherm of iodine versus contact time at 120 °C

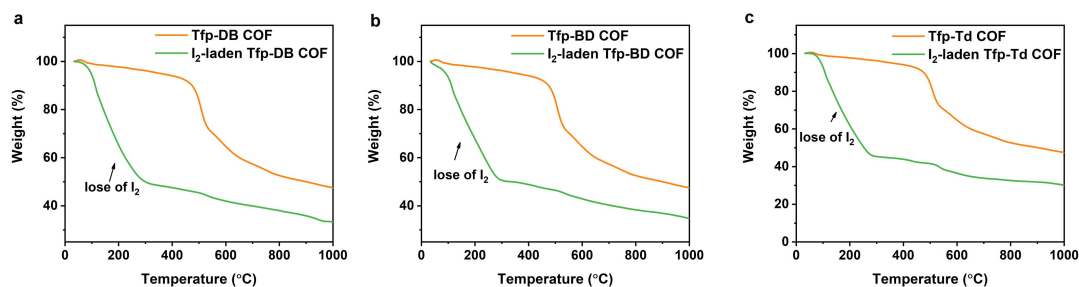


Fig. S4 Thermogravimetric analysis curves of COFs (a) Tfp-DB COF (orange), I₂-laden Tfp-DB COF (green), (b) Tfp-BD COF (orange), I₂-laden Tfp-BD COF (green), (c) Tfp-Td COF (orange), I₂-laden Tfp-Td COF (green).

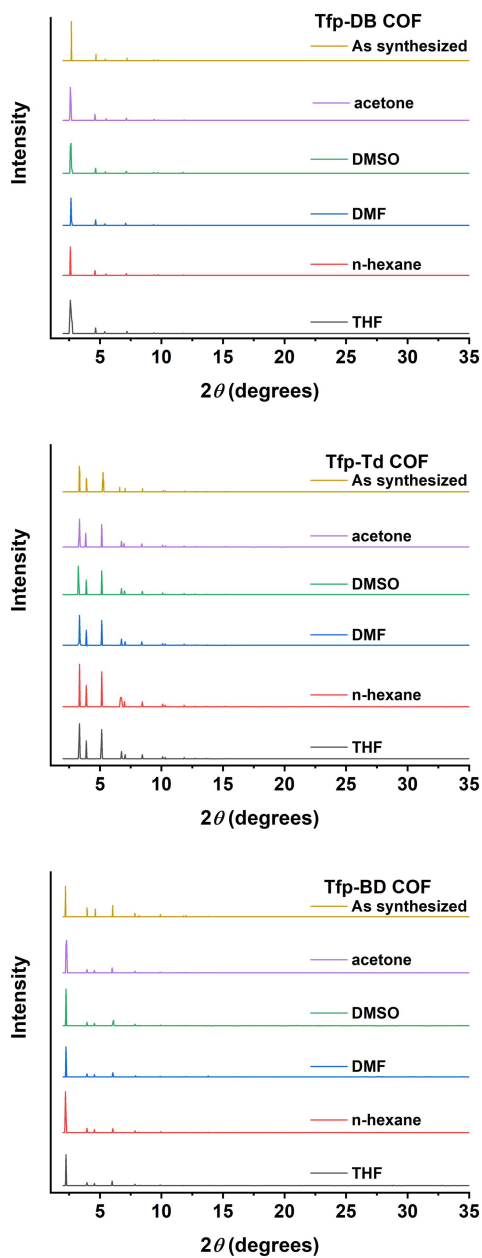


Fig. S5 PXRD patterns of COFs after the treatment in different organic solvents for 7 days. (a) Tfp-DB COF, (b) Tfp-BD COF, (c) Tfp-Td COF.

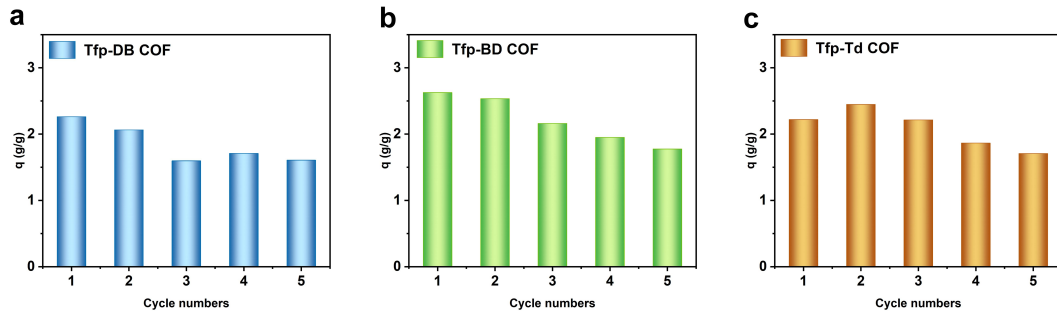


Fig. S6 Recyclability of COFs for I_2 adsorption at 75 °C in saturated iodine vapor. (a) Tfp-DB COF, (b) Tfp-BD COF, (c) Tfp-Td COF.

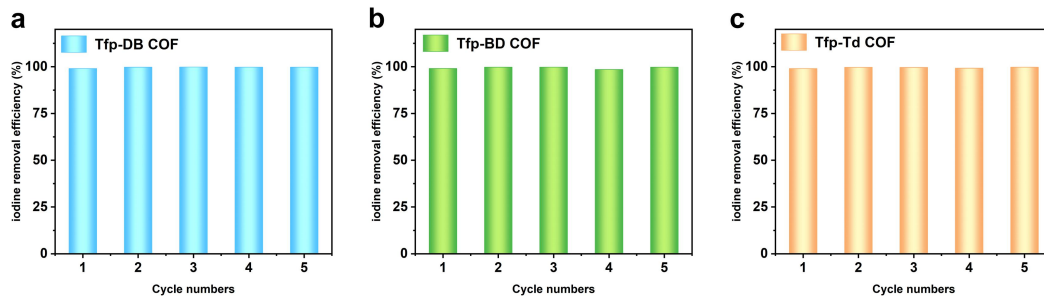


Fig. S7 Recyclability of COFs for I_2 adsorption in the n-hexane solution. (a) Tfp-DB COF, (b) Tfp-BD COF, (c) Tfp-Td COF.

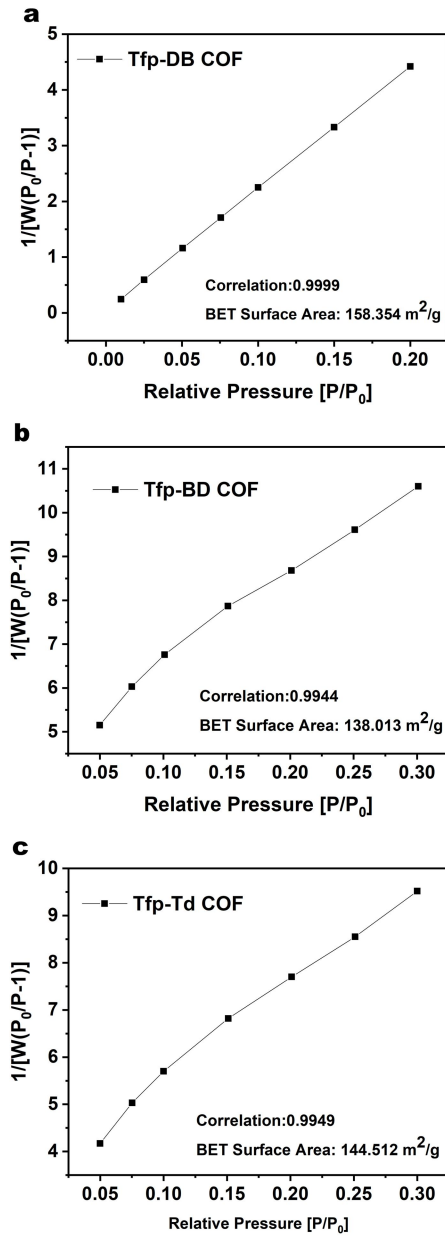


Fig. S8 BET surface area curves for COFs calculated from the N₂ adsorption and desorption. (a) Tfp-DB COF, (b) Tfp-BD COF, (c) Tfp-Td COF.

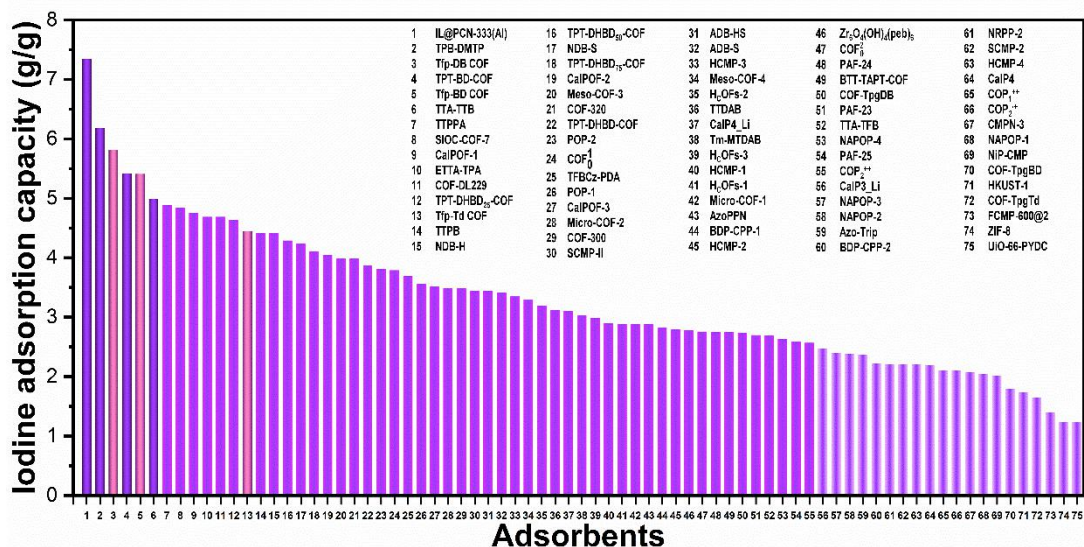


Fig. S9 Iodine adsorption capacities of different adsorbents.

Table S1 Iodine adsorption capacities of different adsorbents.

Materials	Iodine adsorption capacity (g/g)	Ref.	Materials	Iodine adsorption capacity (g/g)	Ref.
IL@PCN-333(Al) ¹	7.35	S1	H _c OFs-3 ²	3.00	S2
TPB-DMTP ³	6.20	S3	HCMP-1 ⁴	2.91	S4
Tfp-DB COF	5.82	this work	H _c OFs-1 ²	2.90	S2
TPT-BD-COF ⁵	5.43	S5	Micro-COF-1 ⁶	2.90	S6
Tfp-BD COF	5.42	this work	AzoPPN ⁷	2.90	S7
TTA-TTB ³	5.00	S3	BDP-CPP-1 ⁸	2.83	S8
TTPPA ⁹	4.90	S9	HCMP-2 ⁴	2.81	S4
SIOC-COF-7 ¹⁰	4.86	S10	Zr ₆ O ₄ (OH) ₄ (peb) ₆ ¹¹	2.79	S11
CaIPOF-1 ¹²	4.77	S12	COF ₀ ^{2 13}	2.77	S13
ETTA-TPA ³	4.70	S3	PAF-24 ¹⁴	2.76	S14
COF-DL229 ¹⁵	4.70	S15	BTT-TAPT-COF ¹⁶	2.76	S16
TPT-DHBD ₂₅ -COF ⁵	4.65	S5	COF-TpgDB ¹⁷	2.75	S17
Tfp-Td COF	4.45	this work	PAF-23 ¹⁴	2.71	S14
NDB-H ¹⁸	4.43	S18	TTA-TFB ³	2.70	S3
TTPB ¹⁹	4.43	S19	NAPOP-4 ²⁰	2.65	S20
TPT-DHBD ₅₀ -COF	4.30	S5	PAF-25 ¹⁴	2.60	S14

5					
NDB-S ¹⁸	4.25	S18	COP ₂ ⁺⁺¹³	2.58	S13
TPT-DHBD ₇₅ -COF	4.12	S5	CaIP ₃ _Li ²¹	2.48	S21
5					
CaIPOF-2 ¹²	4.06	S12	NAPOP-3 ²⁰	2.41	S20
Meso-COF-3 ⁶	4.00	S6	NAPOP-2 ²⁰	2.39	S20
COF-320 ⁶	4.00	S6	Azo-Trip ²²	2.38	S22
TPT-DHBD-COF ⁵	3.88	S5	BDP-CPP-2 ⁸	2.23	S8
POP-2 ²³	3.82	S23	NRPP-2 ²⁴	2.22	S24
COF ₀ ^{1 13}	3.80	S13	SCMP-2 ²⁰	2.22	S20
TFBCz-PDA ³	3.70	S3	HCMP-4 ⁴	2.22	S4
POP-1 ²³	3.57	S23	CaIP ₄ ²¹	2.20	S21
CaIPOF-3 ¹²	3.53	S12	COP ₁ ⁺⁺¹³	2.12	S13
Micro-COF-2 ⁶	3.50	S6	COP ₂ ^{·+13}	2.11	S13
COF-300 ⁶	3.50	S6	CMPN-3 ²⁵	2.08	S25
SCMP-II ²⁶	3.45	S26	NAPOP-1 ²⁰	2.06	S20
ADB-HS ¹⁸	3.45	S18	NiP-CMP ²⁷	2.02	S27
ADB-S ¹⁸	3.42	S18	COF-TpgBD ¹⁷	1.81	S17
HCMP-3 ⁴	3.36	S4	HKUST-1 ²⁸	1.75	S28
Meso-COF-4 ⁶	3.30	S6	COF-TpgTd ¹⁷	1.66	S17
H _c OFs-2 ²	3.20	S2	FCMP-600@2 ²⁹	1.41	S29
TTDAB ⁹	3.13	S9	ZIF-8 ³⁰	1.25	S30
CaIP ₄ _Li ²¹	3.12	S21	UiO-66-PYDC ³⁰	1.25	S30
Tm-MTDAB ⁹	3.04	S9			

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