Supporting Information for

Application of Metal-Organic Frameworks and Covalent Organic Frameworks as (Photo)Active Material in Hybrid Photovoltaic Technologies

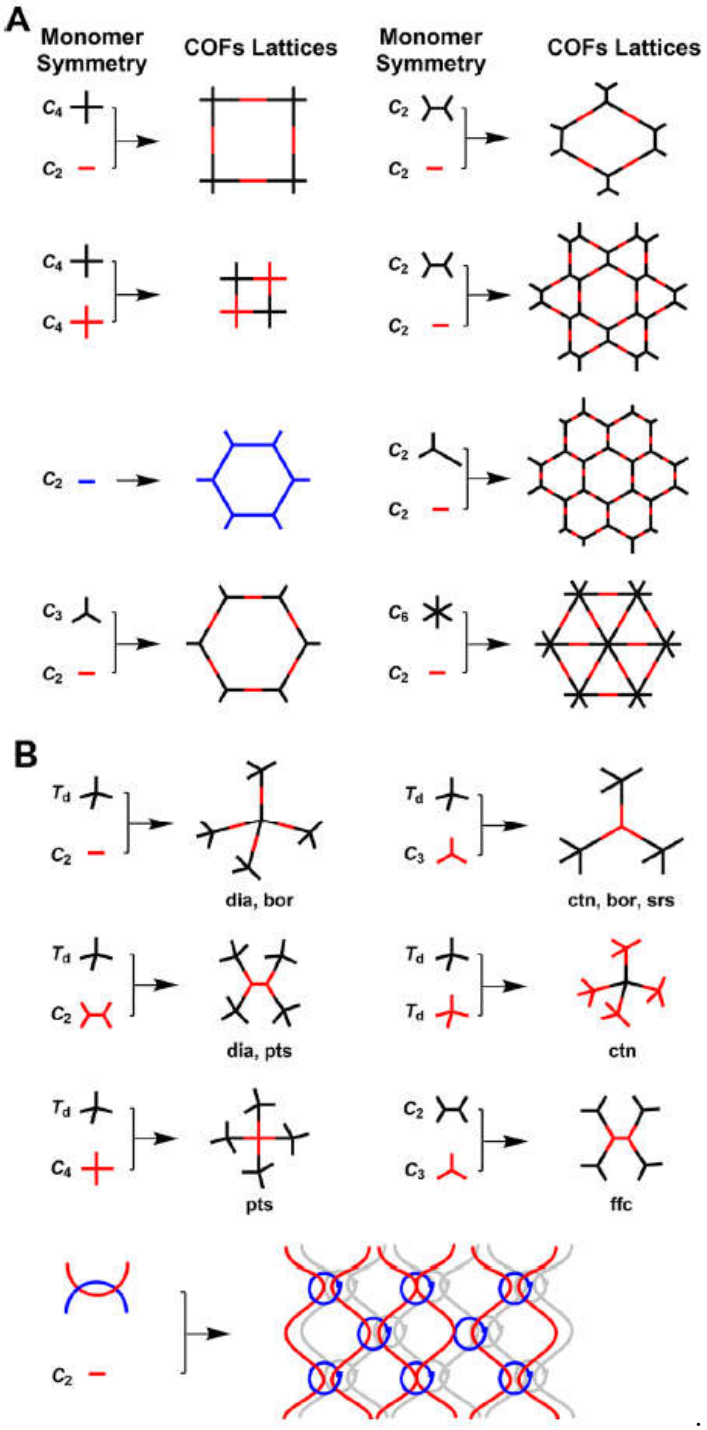

Figure S1. Basic topological diagrams for the design of 2D and 3D COFs. (Reproduced with permission from Chem. Rev. 2020, 120, 16, 8814–8933).

Table S1. Photovoltaic parameters of most efficient MOF- and COF-based devices.

Name	Role	J_{SC} [mA/cm$_2$]	V_{OC} [V]	FF (%)	PCE (%)	PCE vs ref (%)	Reference
ZIF8	PA	10.28	753	0.69	5.34	+0.23	[94]
Zn-based	PA	6.22	0.68	0.553	2.34	-0.74	[125]
MOF-5	PA	8.13 ± 0.12	663 ± 5	0.68 ± 0.01	3.67 ±0.04	n.a.	[126]
MIL-125(Ti)	PA	19.0	0.74	0.58	8.0	n.a	[120]
Cu-based	PA	n.a	n.a	n.a	n.a	+0.15	[93]
Cu-based	PA	0.33	0.48	0.39	0.04	n.a.	[87]
Cu-based	S	1.95	0.48	0.5	0.46	n.a.	[127]
Ru-based	S	2.56	0.63	0.63	1.22	n.a.	[89]
Ru-based	S	0.564 ± 0.129	0.482 ± 0.035	0.47 ± 0.04	0.125 ± 0.038	+0.91	[88]
Zn-based	S	4.20 ± 0.50	470 ± 2	2 41 ± 4	0.82 ± 0.05	+0.65	[128]
Cu-based	S	0.323	0.54	40.7	0.071	n.a.	[129]
In/K-based	S	17.79	0.74	0.61	8.07	+1.97	[144]
Zn-based	S	8.50 ± 0.99	515 ± 6.5	52.1 ± 0.66	0.0023 ± 0.0003	+0.0012	[140]
Co-based	S	4.92	0.67	0.57	2.10	n.a.	[148]
Eu-based	S	28.45	349	30.5	3.02	+1.35	[154]
NTU-9	S	23.19	486	28.5	3.20	+1.53	[155]
PIZA-1	CE	17.26 ± 0.10	0.76 ± 0.01	69.42 ± 1.05	9.11 ± 0.09	+1.07	[168]
ZIF-67	CE	16.9	0.73	0.66	8.20	+0.32	[170]
ZIF-67	CE	25.93 ± 0.14	0.778 ± 0.006	0.672 ± 0.006	13.55 ± 0.11	+1.29	[171]
ZIF-8	CE	26.11	0.633	0.547	9.05 ± 0.07	n.a.	[172]
ZIF-8	CE	15.29	0.811	72.8	9.03	+0.18	[173]
HKUST-1	CE	26.40	0.628	0.573	9.5	n.a.	[174]
ZIF-67	CE	16.00	0.710	0.67	7.58	+0.31	[178]
MOF-525	CE	16.14 ± 0.13	0.80 ± 0.00	0.70 ± 0.00	8.91 ± 0.02	+0.7	[179]
MOF-525	CE	12.95	0.69	61.39	5.48	+0.38	[167]

Ni/Co-based	CE	17.80 ± 0.09	780 ± 2	0.67 ± 0.01	9.30 ± 0.06	+1.26	[180]
MIL-125(Ti)	PAM	10.9	0.85	0.69	6.4	+3.4	[214]
MOF-525	PAM						[221]
ZIF-8	PAM	22.65 ± 0.17	1.01 ± 0.013	0.72 ± 0.01	16.47 ± 0.52	n.a.	[222]
In-based	PAM	21.03	1.01	0.74	15.8	+3	[225]
MIL-125(Ti)	HTM	23.16	1.081	0.742	18.58	n.a.	[227]
UiO-66	ETL	21.85	1.072	76.9	18.01	+2.22	[229]
MOF-808	ETL	21.01	1.062	79.8	17.81	+2.02	[229]
In-based	HTM	39.0	0.716	75.9	23	n.a.	[208]

*PA; photoanode, S; sensitizer, CE; counter electrode, PAM; photoactive material, HTM; hole transport material. ETL; electron transport layer.