Supporting Information

Cu(I)-containing MOF as efficient catalyst for the reactions of carbon dioxide and propargylic alcohols to carbonates at room temperature

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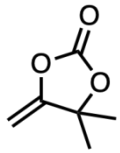
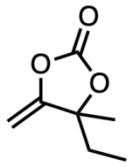
Content

1. NMR data of products



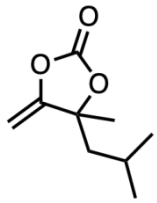
4,4-Dimethyl-5-methylene-[1,3]dioxolan-2-one.

^{1}H NMR (400 MHz, Chloroform-*d*) δ 4.76 (s, 1H), 4.30 (s, 1H), 1.61 (s, 6H).^{13}C NMR (101 MHz, Chloroform-*d*) δ 158.75, 151.29, 85.31, 84.64, 27.59.



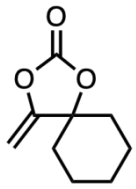
4-Ethyl-4-methyl-5-methylene-[1,3]dioxolan-2-one.

^{1}H NMR (400 MHz, Chloroform-*d*) δ 4.78 (d, *J* = 3.9 Hz, 1H), 4.25 (d, *J* = 3.9 Hz, 1H), 1.88 (dq, *J* = 14.7, 7.4 Hz, 1H), 1.73 (dq, *J* = 14.7, 7.4 Hz, 1H), 1.55 (s, 3H), 0.95 (t, *J* = 7.4 Hz, 3H). ^{13}C NMR (101 MHz, Chloroform-*d*) δ 157.38, 151.56, 87.63, 85.61, 33.36, 25.94, 7.31.



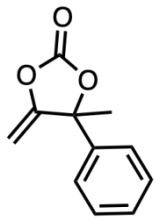
4-Isobutyl-4-methyl-5-methylene-[1,3]dioxolan-2-one.

^{1}H NMR (400 MHz, Chloroform-*d*) δ 4.75 (d, *J* = 4.0 Hz, 1H), 4.25 (d, *J* = 3.9 Hz, 1H), 1.87–1.73 (m, 2H), 1.68–1.57 (m, 1H), 1.54 (s, 3H), 0.93 (dd, *J* = 6.5, 2.6 Hz, 6H). ^{13}C NMR (101 MHz, Chloroform-*d*) δ 158.26, 151.46, 87.36, 85.60, 48.46, 26.96, 24.27, 23.94, 23.64.



4-Methylene-1,3-dioxa-spiro[4.5]decan-2-one.

^{1}H NMR (400 MHz, Chloroform-*d*) δ 4.76 (d, *J* = 3.9 Hz, 1H), 4.33 (d, *J* = 3.9 Hz, 1H), 2.07–1.95 (m, 2H), 1.75–1.61 (m, 7H), 1.42–1.18 (m, 1H). ^{13}C NMR (101 MHz, Chloroform-*d*) δ 158.63, 151.45, 86.42, 85.51, 36.40, 24.25, 21.57.



4-Methyl-5-methylidene-4-phenyl-[1,3]dioxolan-2-one.

^{1}H NMR (400 MHz, Chloroform-*d*) δ 7.10–6.94 (m, 5H), 4.50 (d, *J* = 4.1 Hz, 1H), 4.06 (d, *J* = 4.1 Hz, 1H), 1.52 (s, 3H). ^{13}C NMR (101 MHz, Chloroform-*d*) δ 157.41, 151.25, 139.34, 129.23, 128.98, 124.73, 88.29, 87.25, 27.38.

2. Figure S1

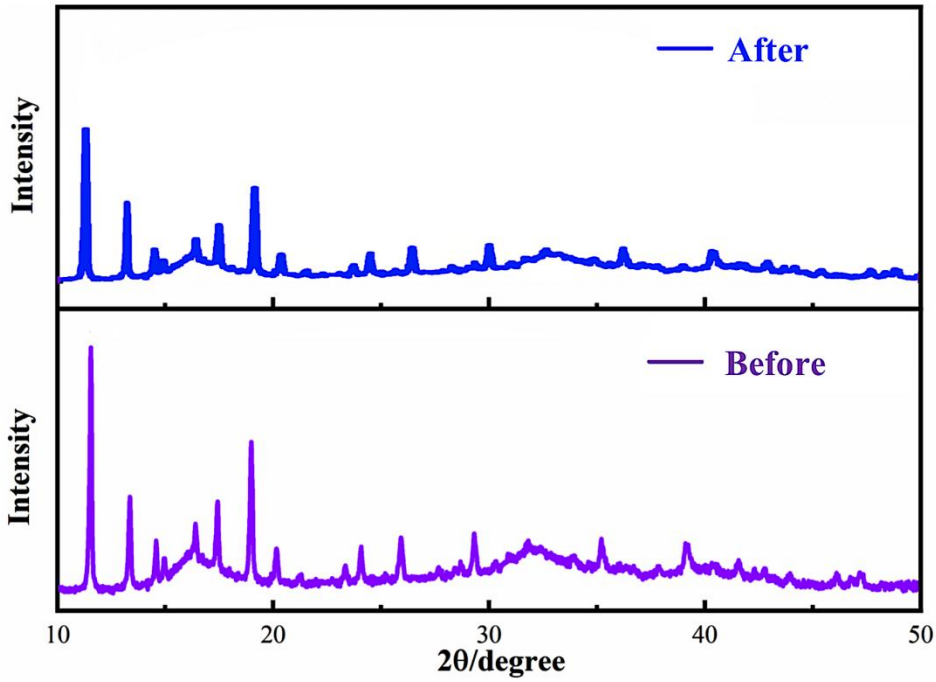


Figure S1 The XRD spectrum of [Cu^{I}]-Cu-BTC before and after the catalytic reaction.

3. Table S1

Table S1 A comparison of the catalytic activity [Cu^{I}]-Cu-BTC in this work and reported Cu(I)-MOFs.

Entry	Cu(I)-MOFs/co-catalyst	P (MPa)	T (°C)	*t* (h)	Solvent	Yield (%)	Ref.
1	^{BP}DPrCuCl/CsF	2.0	r.t.	24	CH_3CN	92	1
2	Cu(I)-CN-BPY/TEA	0.5	50	24	CH_3CN	96	2
3	$[Cu^{I}(bib)]_4\{V^{V}_4O_{12}\}$/DBU	0.4	r.t.	12	CH_3CN	99	3
4	$\{(NH_2C_2H_6)_{0.75}[Cu_4I_4\cdot(L)_3\cdot(In)_{0.75}]\cdot DMF\cdot H_2O\}$/TEA	0.5	50	10	--	99	4
5	[Cu^{I}]-Cu-BTC/[Emim][OAc]	1.0	r.t.	12	--	91	This work

References

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