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Supplementary Information

Fig. S1 FTIR of (a) HKUST-1, (b) Cu-MOF-2, (c) HKUST-1@Cu-MOF-2 and (d) Cu-MOF-2@HKUST-1



Fig. S2 PXRD of (a) HKUST-1, (b) Cu-MOF-2, (c) HKUST-1@Cu-MOF-2 and (d) Cu-MOF-2@HKUST-1

| Elements | Weight % | Atomic % | | |
|----------|----------|----------|--|--|
| С | 56.83 | 72.11 | | |
| 0 | 24.61 | 23.44 | | |
| Cu | 18.56 | 4.45 | | |
| Total | 100 | 100 | | |

Table S1 (a)

Elemental composition of HKUST-1

| Elements | Weight % | Atomic % | | |
|----------|----------|----------|--|--|
| С | 60.47 | 72.93 | | |
| 0 | 26.65 | 24.13 | | |
| Cu | 12.88 | 2.94 | | |
| Total | 100 | 100 | | |

Table S1 (b)

Elemental composition of Cu-MOF-2

| Elements | Weight % | Atomic % | | |
|----------|----------|----------|--|--|
| С | 59.13 | 72.19 | | |
| 0 | 26.80 | 24.56 | | |
| Cu | 14.07 | 3.25 | | |
| Total | 100 | 100 | | |

Table S1 (c)

Elemental composition of HKUST-1@Cu-MOF-2

| Elements | Weight % | Atomic % | | |
|----------|----------|----------|--|--|
| С | 59.29 | 71.43 | | |
| 0 | 28.51 | 25.79 | | |
| Cu | 12.20 | 2.78 | | |
| Total | 100 | 100 | | |

Table S1 (d)

Elemental composition of Cu-MOF-2@HKUST-1

| MOFs | C(1s) | | O(1s) | | Cu(2p) | |
|-----------|----------|--------|----------|--------|----------|--------|
| | Atomic % | B.E. | Atomic % | B.E. | Atomic % | B.E. |
| HKUST-1@ | 72.05 | 285.33 | 24.73 | 532.29 | 3.22 | 935.03 |
| Cu-MOF-2 | | | | | | |
| Cu-MOF-2@ | 66.34 | 284.34 | 28.31 | 532.34 | 5.36 | 935.20 |
| HKUST-1 | | | | | | |

Table S2XPS data of binding energy and atomic %



Fig. S3

N₂ sorption isotherm of (a) HKUST-1, (b) Cu-MOF-2, (c) HKUST-1@Cu-MOF-2 and (d) Cu-MOF-2@HKUST-1





BJH plot of (a) HKUST-1@Cu-MOF-2, (b) Cu-MOF-2@HKUST-1, (c) 10% PEG@HKUST-1@Cu-MOF-2, (d) 30% PEG@HKUST-1@Cu-MOF-2,
(e) 50% PEG@HKUST-1@Cu-MOF-2, (f) 10% PEG@Cu-MOF-2@HKUST-1,
(g) 30% PEG@Cu-MOF-2@HKUST-1 and (h) 50% PEG@Cu-MOF-2@HKUST-1



Fig. S5 TG & DTG of (a) HKUST-1, (b) Cu-MOF-2, (c) HKUST-1@Cu-MOF-2 and (d) Cu-MOF-2@HKUST-1