Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

A hydroxyl-functionalized microporous organic polymer for capture and catalytic conversion of CO_2

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Section A. Characterization of HF-MOP

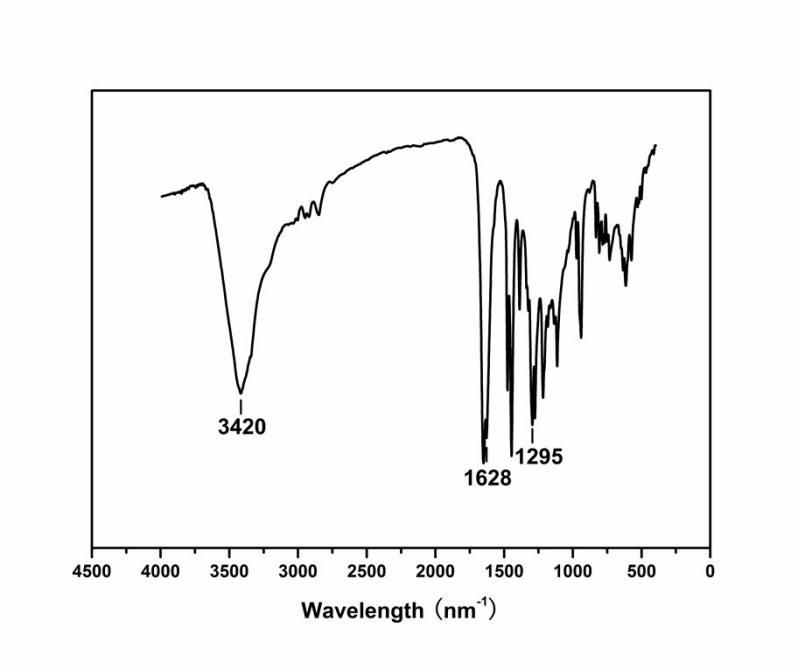


Figure S1 FT-IR spectra of HF-MOP

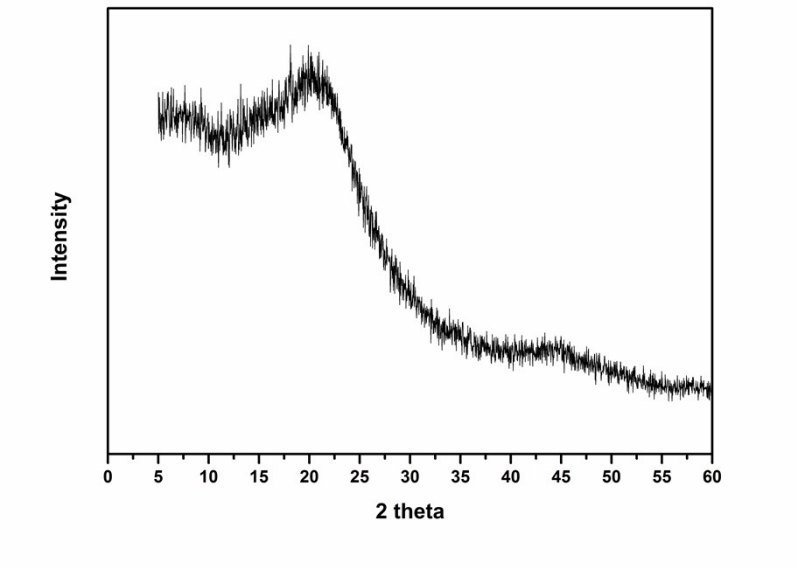


Figure S2 XRD pattern of HF-MOP

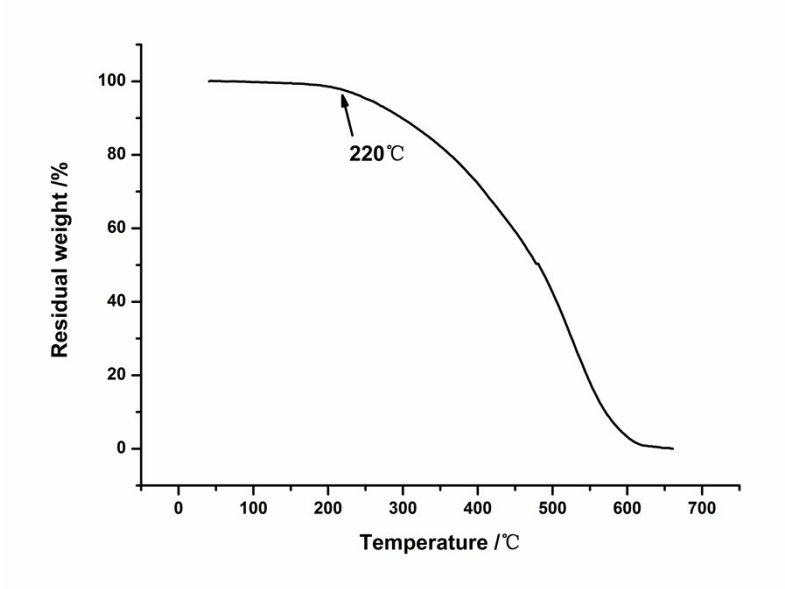


Figure S3. TGA of HF-MOP under air up to 700 °C at a ramping rate of 10 °C min^{-1}.

Section B. CO_2 absorption performance of HF-MOP

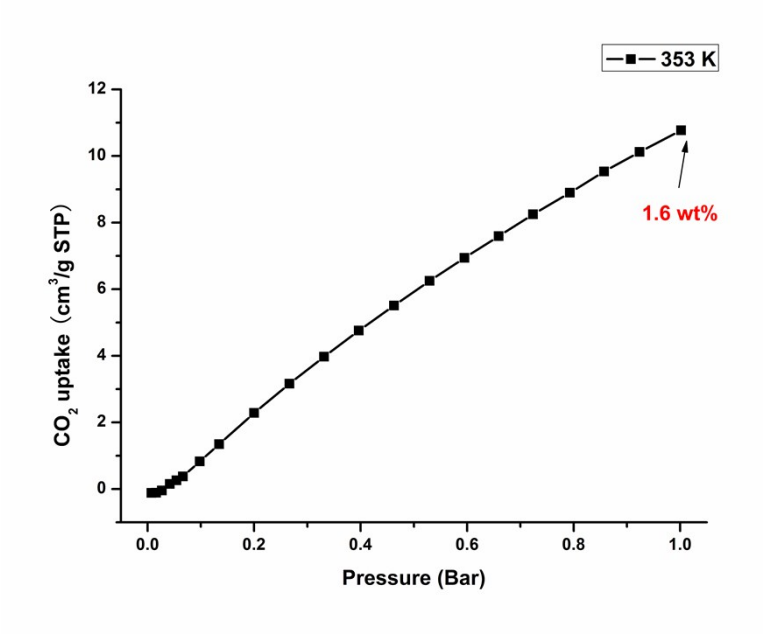


Figure S4. CO_2 absorption isotherm measured at 353 K for **HF-MOP**.

Section C. Stability of HF-MOP

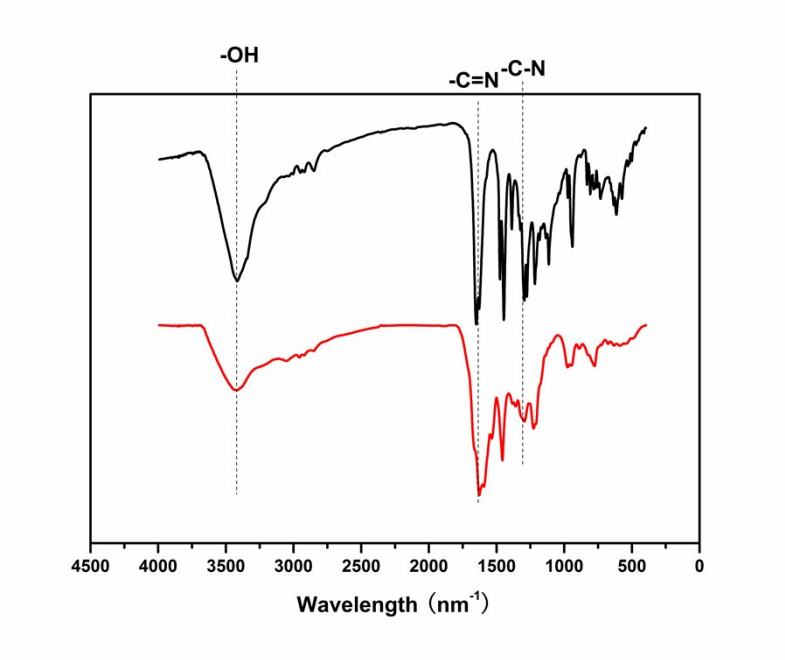
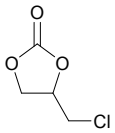


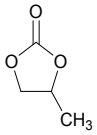
Fig. S5 FT-IR spectra of fresh **HF-MOP** (black) and **HF-MOP** after five catalytic runs (red)

Section D. Characterization (NMR) of the products (2a-2g).



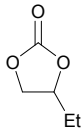
2a

^{1}H NMR (400 MHz, $CDCl_3$): δ 5.00-5.03 (m, 1H), 4.58 (t, *J*=8.6 Hz, 1H), 4.39 (dd, *J*=8.8 , 5.7 Hz, 1H), 3.74-3.81 (m, 2H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 154.60, 77.30, 66.99, 46.89.



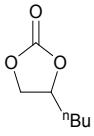
2b

^{1}H NMR (400 MHz, $CDCl_3$): δ 4.81-4.88 (m, 1H), 4.55 (t, *J*=8.0 Hz, 1H), 4.03 (t, *J*=7.6 Hz, 1H), 1.49-1.51 (d, *J*=6.3 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 155.13, 73.74, 70.67, 19.02.



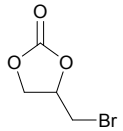
2c

^{1}H NMR (400 MHz, $CDCl_3$): δ 4.64 (t, *J*=6.8 Hz, 1H), 4.50 (t, *J*=8.2 Hz, 1H), 4.04 (t, *J*=7.7 Hz, 1H), 1.69-1.78 (m, 2H), 0.97 (t, *J*=10.1 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 155.16, 78.08, 69.02, 26.53, 8.15.



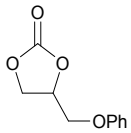
2d

^{1}H NMR (400 MHz, $CDCl_3$): δ 4.67 (m, 1H), 4.50 (t, *J*=8.1 Hz, 1H), 4.04 (t, *J*=7.8 Hz, 1H), 1.66 (m, 2H), 1.32-1.38 (m, 4H), 0.88-0.91 (t, *J*=6.9 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 155.12, 69.44, 33.59, 26.46, 22.28, 13.80.



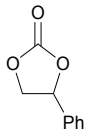
2e

^{1}H NMR (400 MHz, $CDCl_3$): δ 4.92 (m, 1H), 4.56 (t, *J*=8.8 Hz, 1H), 4.34 (dd, *J*=8.9, 5.9 Hz, 1H), 3.54-3.55 (m, 2H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 154.16, 74.03, 68.14, 31.42.



2f

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.29-7.33 (m, 2H), 7.02 (t, *J*=7.4 Hz, 1H), 6.92 (m, 2H), 5.01-5.04 (m, 1H), 4.60 (t, *J*=8.4 Hz, 1H), 4.23 (dd, *J*=8.5 Hz, 5.9, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 157.81, 154.70, 129.71, 122.01, 114.67, 74.18, 66.96, 66.25.



2g

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.26-7.46 (m, 5H), 5.68 (t, *J*=8.0 Hz, 1H), 4.80 (t, *J*=8.4 Hz, 1H), 4.35 (dd, *J*=8.6 Hz, 7.9, 1H). ^{13}C NMR (100 MHz, $CDCl_3$): δ 154.88, 135.85, 125.64, 78.01, 71.20.