Electronic Supplementary Material (ESI) for Energy & Environmental Science

Supporting Information

CO_2 capture and conversion using Mg-MOF-74 prepared by sonochemical method

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Table S1. Elemental analysis of Mg-MOF-74(S) after sequential washing/activation steps

	As syn.	After DMF washing	After 3 d solvent exchange* and evacuation**
N	7.1	6.7	0.0
H	4.3	4.2	1.0
C	41.1	42.1	51.5

* Methanol was used for solvent exchange, ** Evacuation at 523 K for 6 h under vacuum.

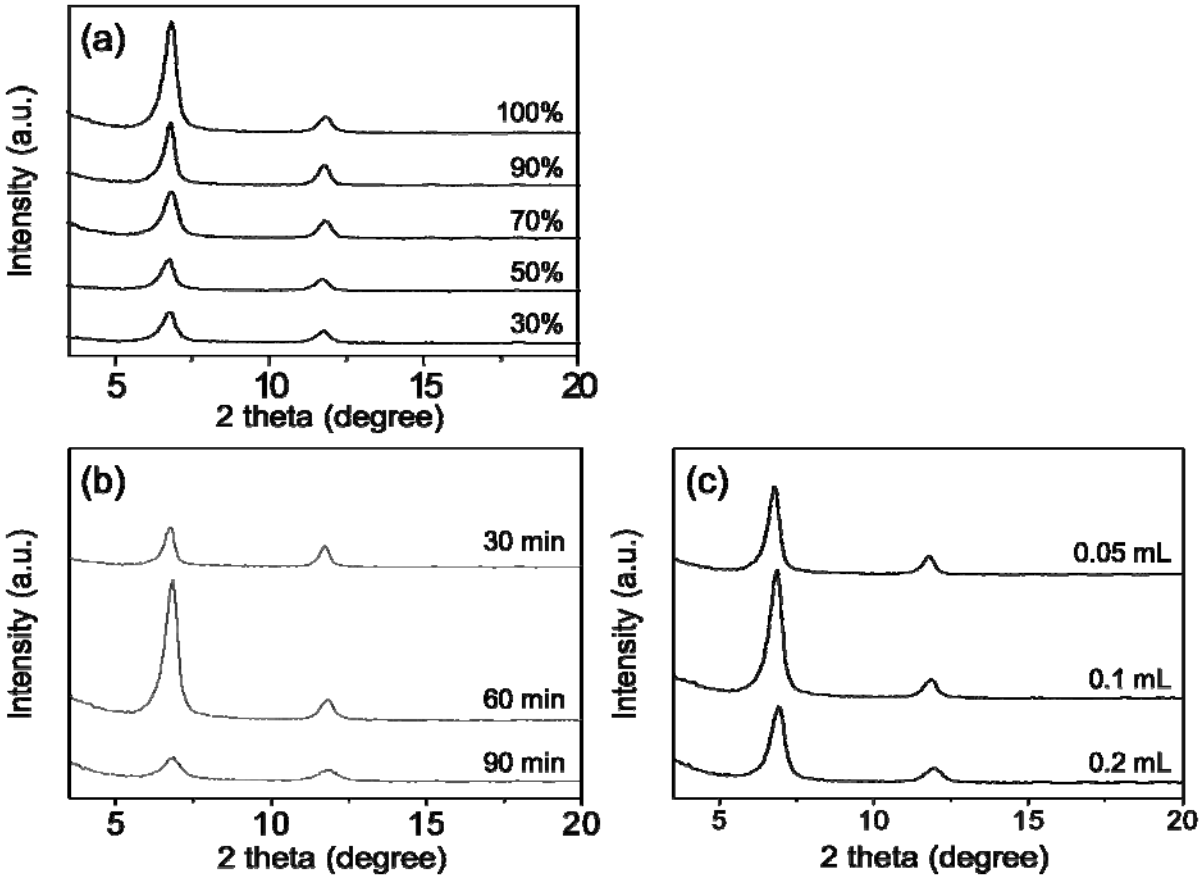

Fig. S1. Powder XRD patterns of the Mg-MOF-74 corresponding to the samples obtained at various (a) sonication power levels, (b) sonication times, and (c) amounts of TEA.

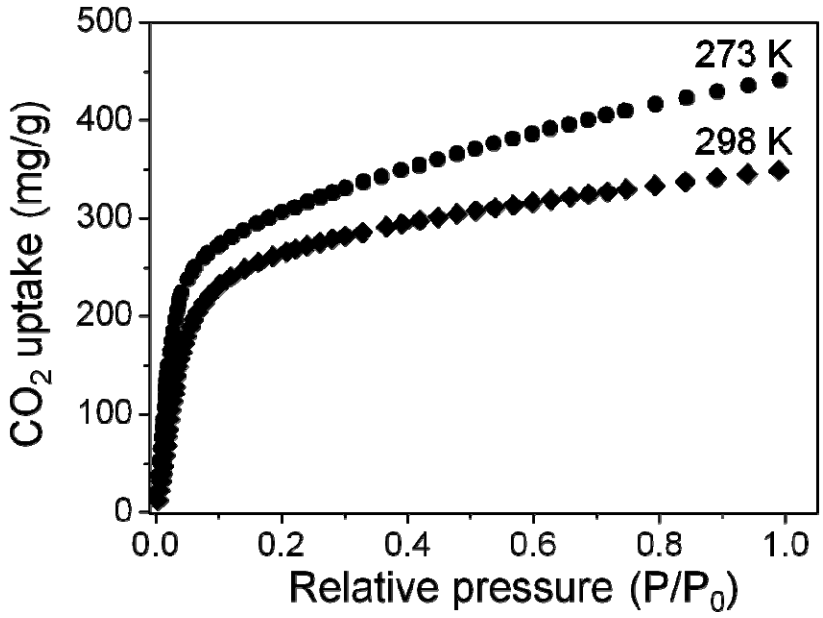

Fig. S2. CO_2 adsorption isotherms of Mg-MOF-74(C) at 273 and 298 K.

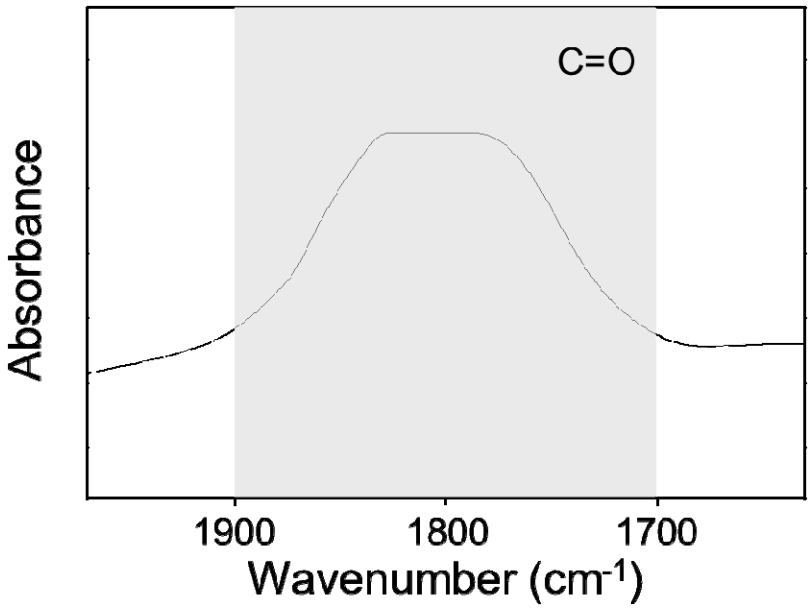

Fig. S3. FT-IR spectra of the cycloaddition product (4-phenyl-1,3-dioxolan-2-one).

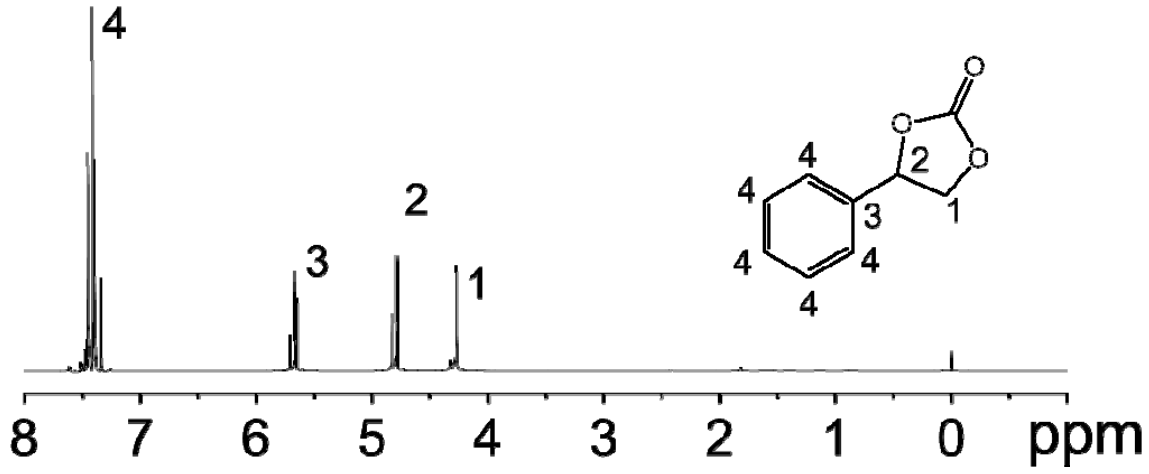

Fig. S4. ^{1}H NMR spectra of the product 4-phenyl-1,3-dioxolan-2-one [spectral characterizations were obtained as follows: $CDCl_3$, 400 MHz, δ (ppm) 4.34 (t, *J*=8.2 Hz, 1H). 4.80 (t, *J*=8.4 Hz, 1H), 5.68 (t, *J*=8.0 Hz, 1H), 7.35-7.45 (m, 5H)].

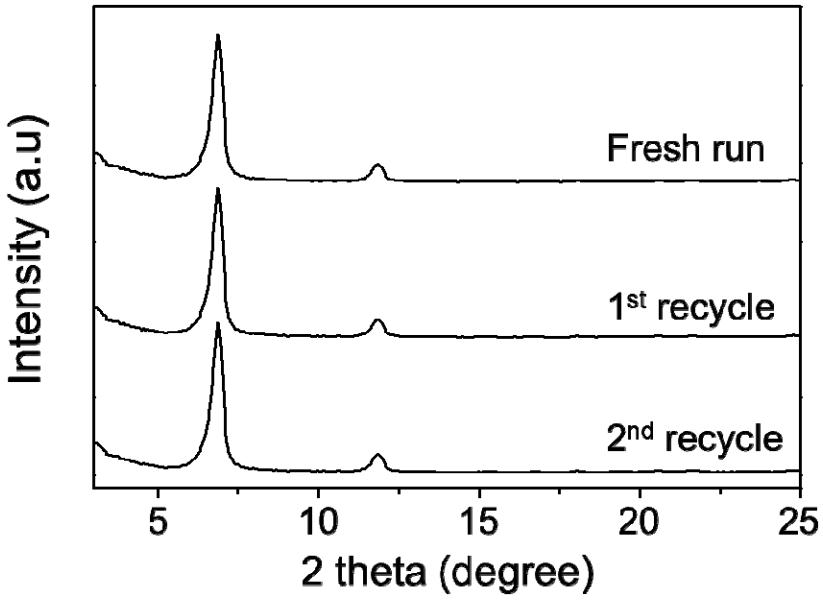

Fig. S5. X-ray powder diffraction patterns of Mg-MOF-74 after catalytic reuses.

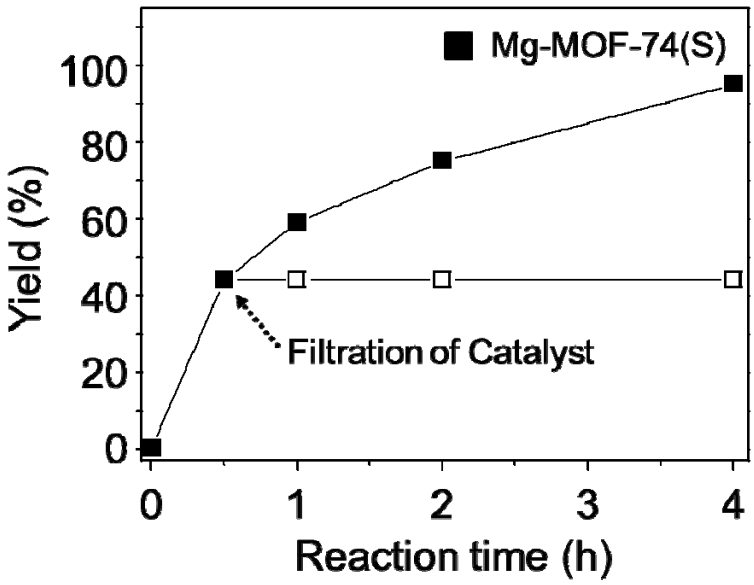

Fig. S6. Cycloaddition of CO_2 to styrene oxide over Mg-MOF-74(S): (■) with fresh Mg-MOF-74(S) and (□) filtrate (catalyst filtered-off after 0.5 h reaction).