Supporting information

Synthesis of ordered Ca- and Li-doped mesoporous silicas for H\textsubscript{2} and CO\textsubscript{2} adsorption at ambient temperature and pressure

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Figure Caption

**Fig. S1** Wide angle XRD data of all MCM-41 type Ca-doped silica samples. Spectra of the samples (a) CHMS-1, (b) CHMS-2, (c) CHMS-3, and (d) CHMS-5.

**Fig. S2** Wide angle XRD data of all Li-MCM type samples named (a) LHMS-1, (b) LHMS-2, (c) LHMS-3, and (d) LHMS-5.

**Fig. S3** Selective gas uptake of CO\textsubscript{2} calibrated by subtracting N\textsubscript{2} gas uptake for the samples at temperature 120 °C. (a) All CHMS and (b) All LHMS samples.

**Fig. S4** (a) CO\textsubscript{2} and (b) H\textsubscript{2} uptake for CHMS-5 samples depending on temperature up to 900 °C.

**Fig. S5** Reversible H\textsubscript{2} uptake for CHMS-5 sample up to 9 cycles at ambient temperature.
Fig. S1
Fig. S2

(a) 

(b) 

(c) 

(d)
Fig. S3

(a) CO₂ Adsorption (mmol/g) vs. Time (min) for CHMS-1, CHMS-2, and CHMS-5.

(b) CO₂ Desorption (mmol/g) vs. Time (min) for LHMS-1, LHMS-2, and LHMS-5.
Fig. S4