

# Supplementary Materials

## Eutectic doped $\text{Li}_4\text{SiO}_4$ adsorbents using the optimal dopants for highly efficient $\text{CO}_2$ removal

Yuandong Yang<sup>1</sup>, Jixue Cao<sup>1</sup>, Yingchao Hu<sup>2</sup>, Jian Sun<sup>3</sup>, Shun Yao<sup>1</sup>, Qiuwan Li<sup>1</sup>, Zexin Li<sup>1</sup>, Shimeng Zhou<sup>1</sup>,

Wenqiang Liu<sup>1,\*</sup>

1. State Key Laboratory of Coal Combustion, School of Energy and Power Engineering, Huazhong University of Science and Technology, Wuhan, 430074, China

2. School of Energy Science and Engineering, Central South University, Changsha, 410083, China

3. Jiangsu Provincial Key Laboratory of Materials Cycling and Pollution Control, School of Energy and Mechanical Engineering, Nanjing Normal University, Nanjing, 210042, China

\*Corresponding author: Tel: +86 27 87542417-8503; Fax: +86 27 87545526;

E-mail: [wenqiang.liu@hust.edu.cn](mailto:wenqiang.liu@hust.edu.cn)

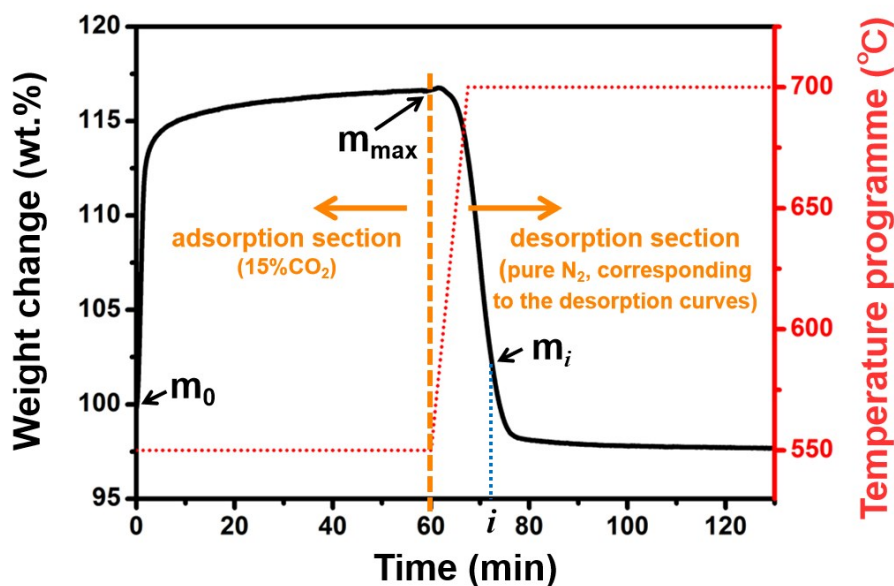
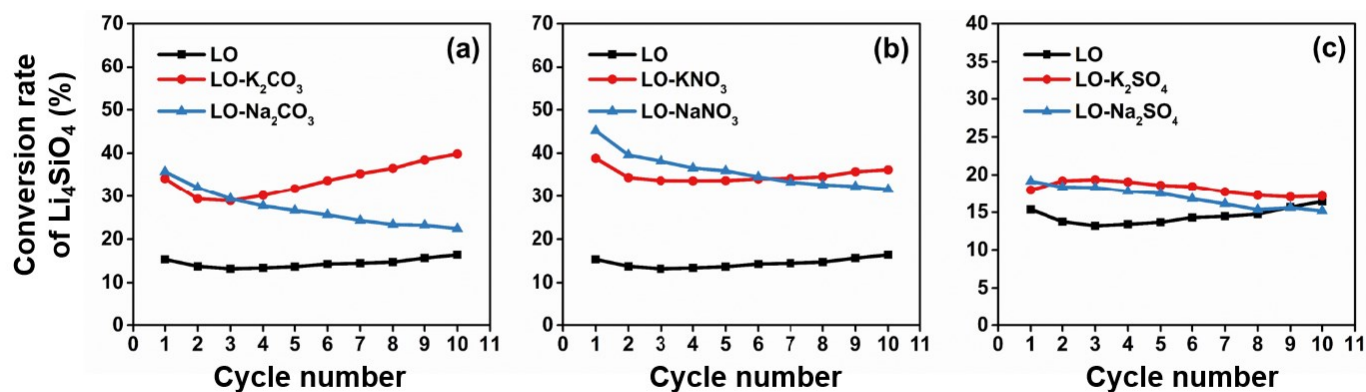


Fig. S1. Schematic sketch of the desorption test and the calculation of desorption curves involved in this work.

**Table S1.** BET specific surface area and average pore diameter of doped adsorbents

Samples	BET surface area (m <sup>2</sup> /g)	Average pore diameter (Å)
L-Raw	0.336	95.958
L-NaBr	0.313	98.863
L-KBr	0.316	93.199
L-NaCl	0.268	99.205
L-KCl	0.245	86.355
L-NaF	0.326	93.027
L-KF	0.353	96.005
L-Na <sub>2</sub> SO <sub>4</sub>	0.342	96.828
L-K <sub>2</sub> SO <sub>4</sub>	0.333	98.222
L-Na <sub>2</sub> CO <sub>3</sub>	0.369	86.728
L-K <sub>2</sub> CO <sub>3</sub>	0.342	87.536
L-NaNO <sub>3</sub>	0.240	86.936
L-KNO <sub>3</sub>	0.231	87.527
average value	0.309	92.799
standard error	0.045	4.900

**Fig. S2.** Comparisons of the cyclic stability in (a) carbonate-doped adsorbents, (b) nitrate-doped adsorbents and (c) sulfate-doped adsorbents.