Electronic Supplementary Material (ESI) for Energy & Environmental Science

Supporting information

Synthesis of high-temperature CO_2 adsorbents from organo-layered double hydroxide with markedly improved CO_2 capture capacity

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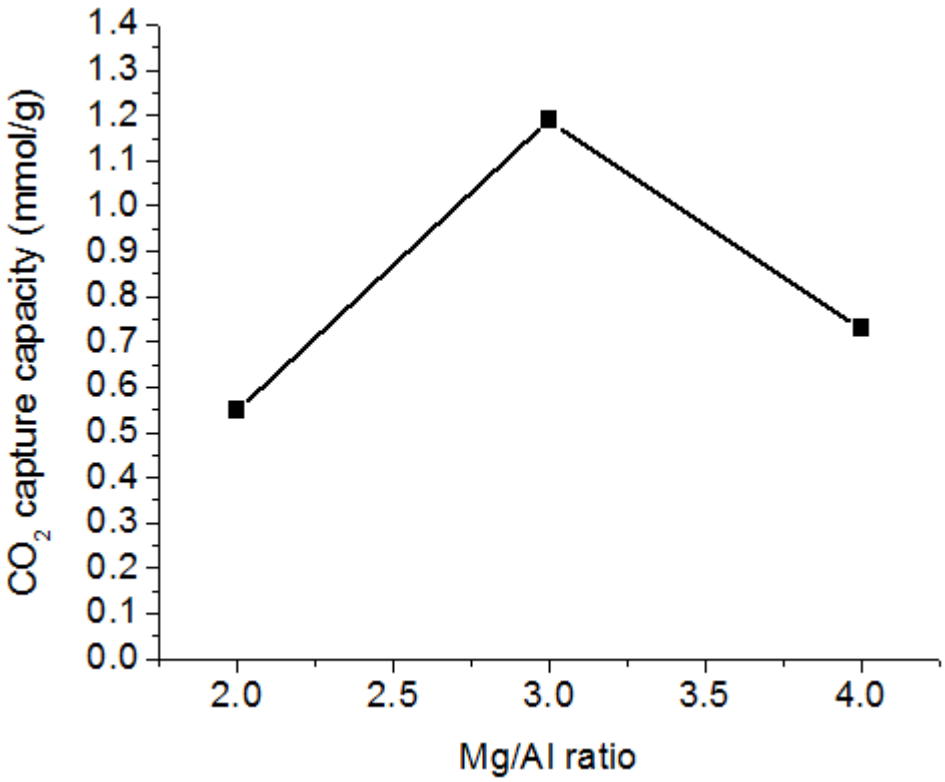

Figure S1. Effect of Mg/Al ratio on the CO_2 capture capacity of Mg_xAl_1-stearate (x = 2, 3 and 4) evaluated at 200 ^oC.

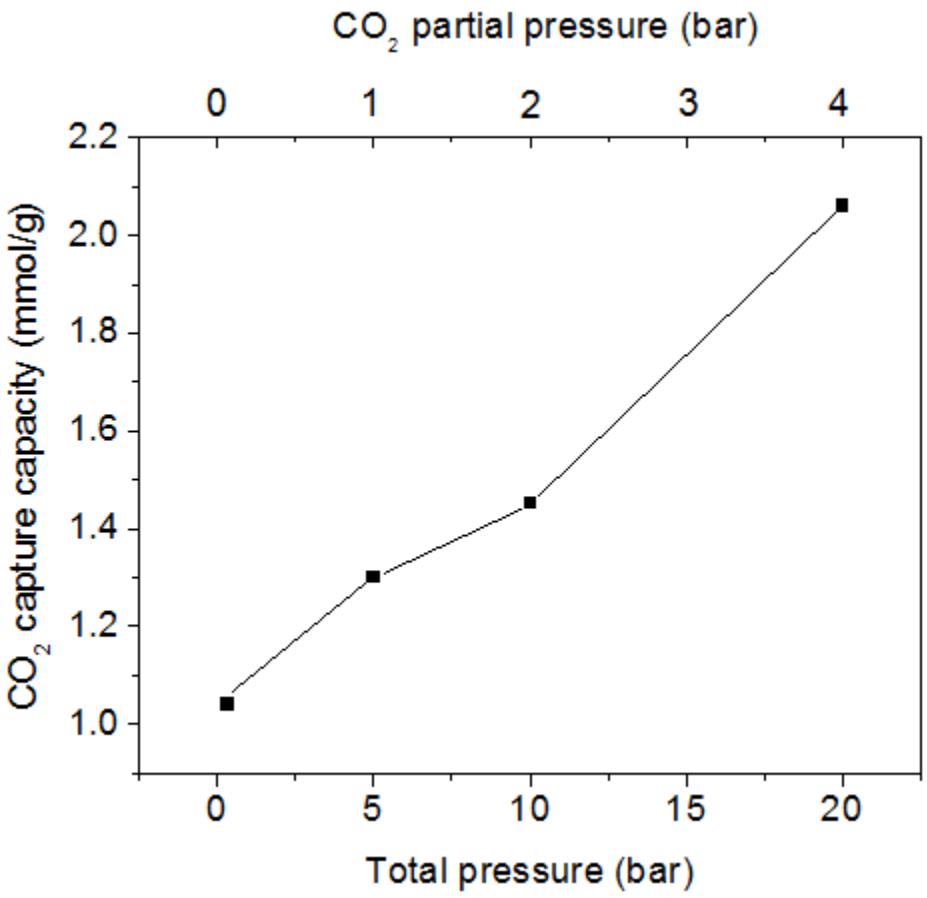

Figure S2. The effect of operating pressure (CO_2 partial pressure) on the CO_2 capture capacity of Mg_3Al_1-stearate derived adsorbent. Testing condition: 1.5 g adsorbent, 20% CO_2, 20 % Ar in N_2 (total flow rate 100 ml/min), 400 ^oC.

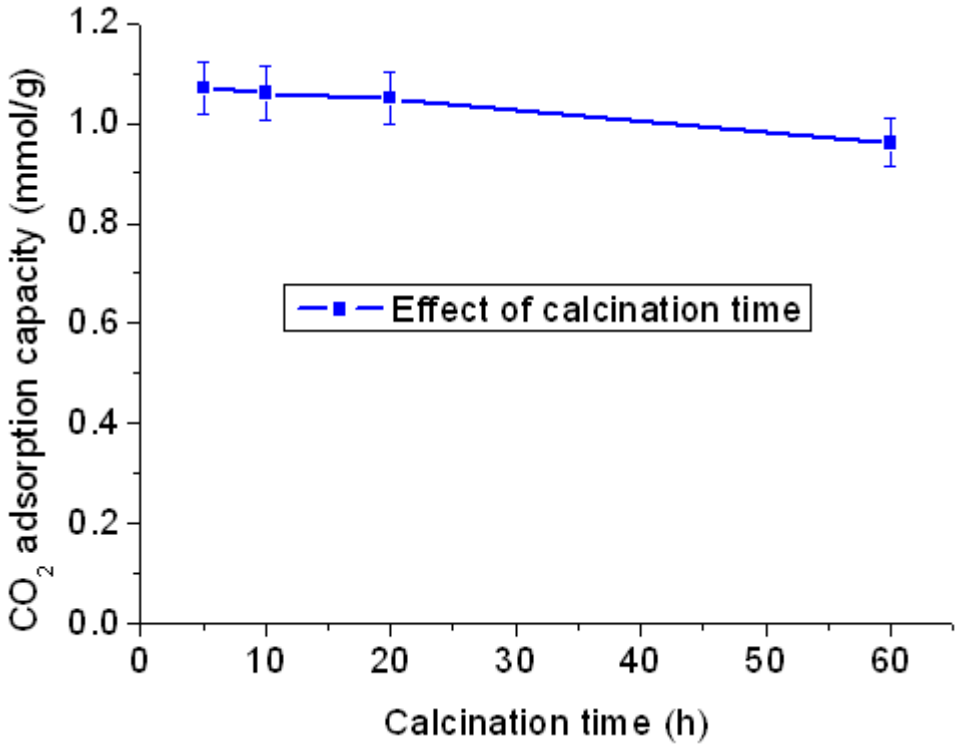

Figure S3. The effect of calcination time on the CO_2 capture capacity of the Mg_3Al_1-stearate derived mixed oxide. Calcination temperature: 400 ^oC, adsorption temperature: 400 ^oC.

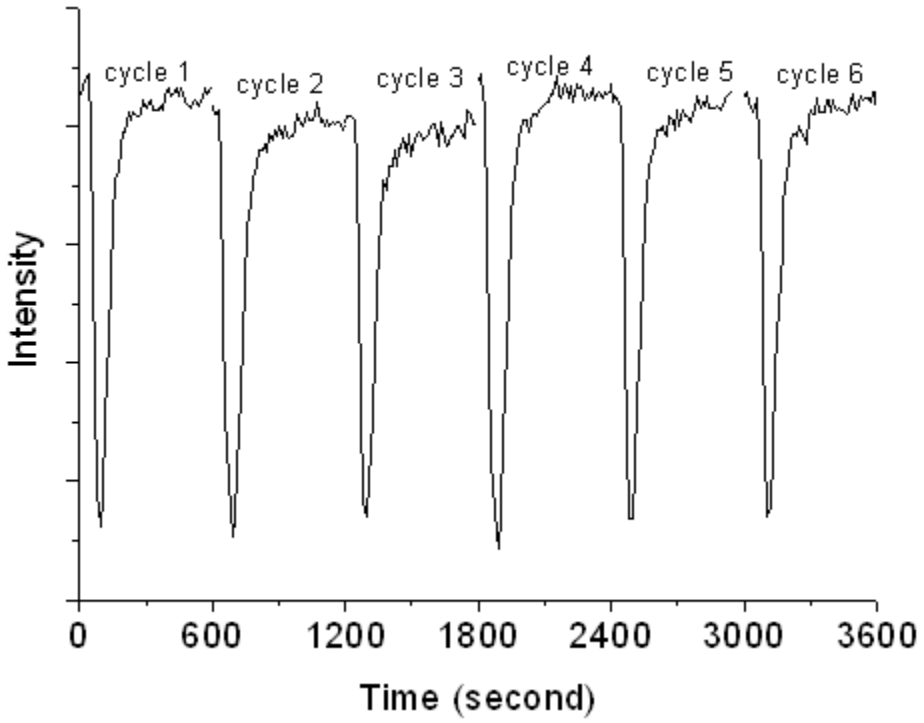

Figure S4. CO_2 adsorption/desorption cycling test for Mg_3Al_1-stearate derived mixed oxide. Adsorption temperature: 200 ^oC, desorption temperature 400 ^oC.

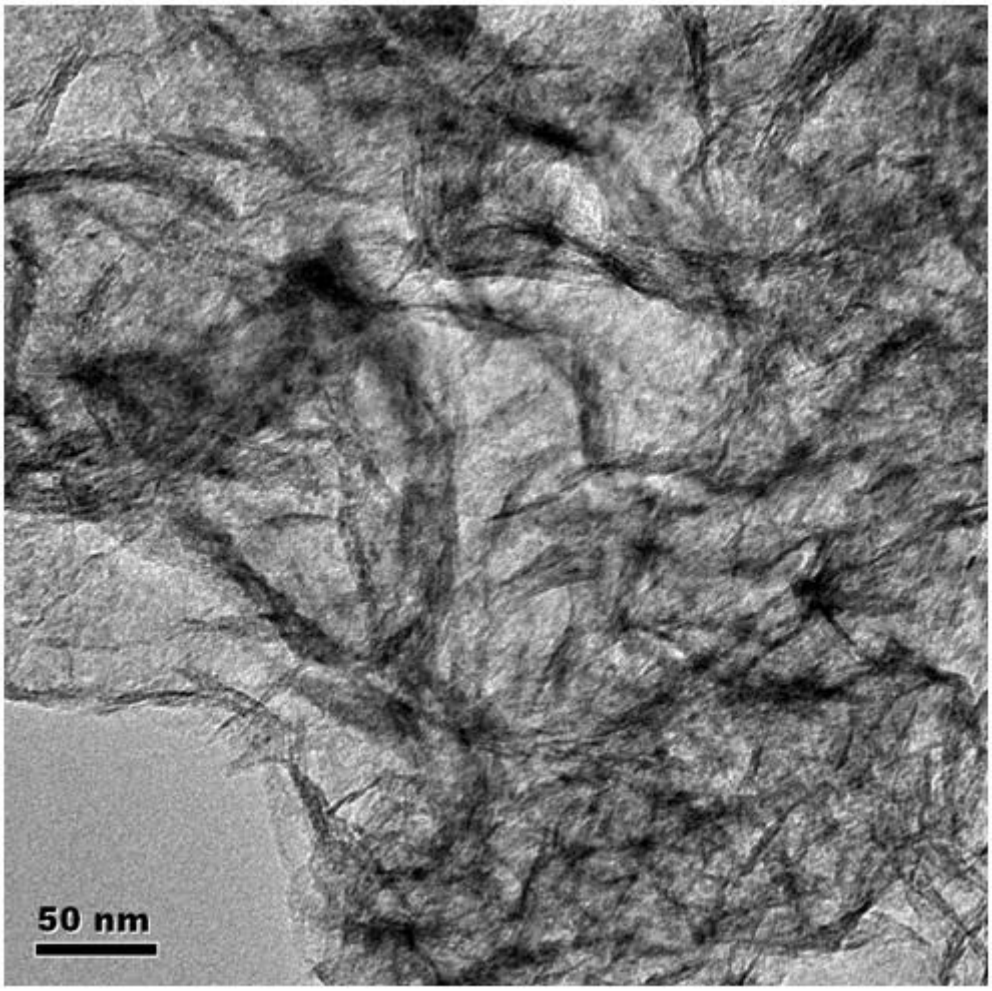

Figure S5. TEM image of the calcined Mg_3Al_1-stearate (400 ^{o}C, 5 h, in air).

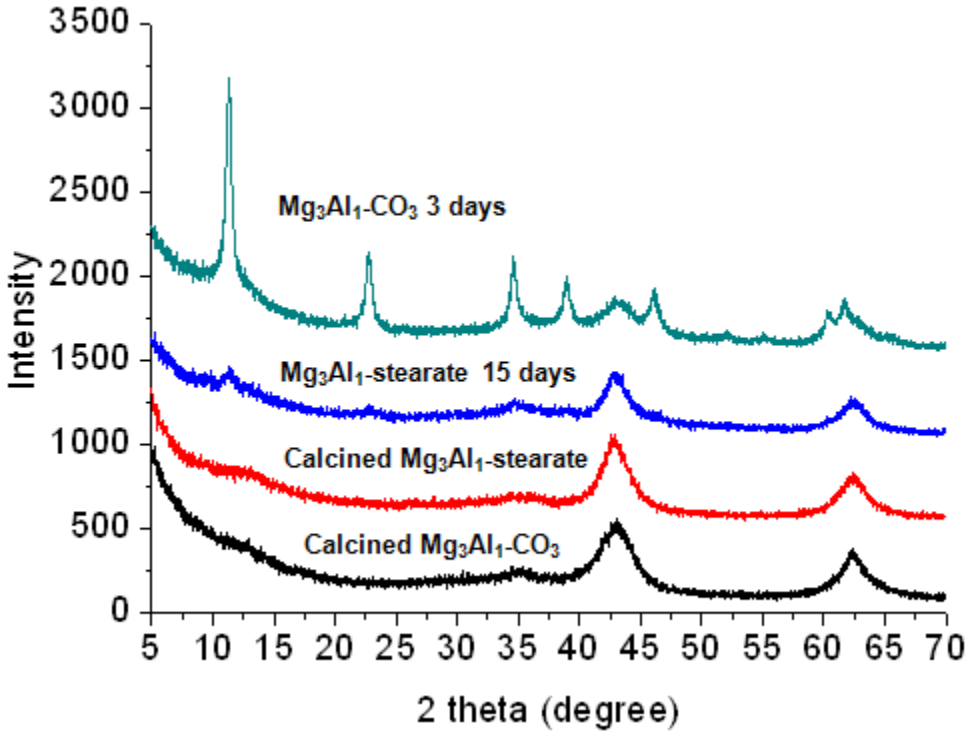

Figure S6. XRD patterns of the Mg_3Al_1-CO_3 and Mg_3Al_1-stearate after calcination at 400 ^oC and exposure to ambient atmosphere for several days.