Electronic supplementary information

Table S1 Elemental composition (wt%) of freshly calcined CO_2 sorbents as determined by X-ray fluorescence analyzer (XRF-1800, Shimadzu, Japan)

Material	CaO	MgO	Fe_2O_3	MnO	SiO_2	Al_2O_3	Others
1M-0.5h-1:10	90.7	4.9	1.4	1.2	0.4	0.2	1.2
1M-2h-1:10	90.1	6.2	1.1	1.3	0.1	0.1	1.1
2M-0.5h-1:5	89.8	5.5	1.9	1.3	0.2	0.2	1.1
2M-2h-1:5	89.1	6.3	1.8	1.3	0.1	0.1	1.3
3M-2h-1:10	69.1	7.3	8.4	1.3	5.0	6.2	2.7
5M-2h-1:10	64.2	9.8	8.1	1.3	7.1	7.2	2.3

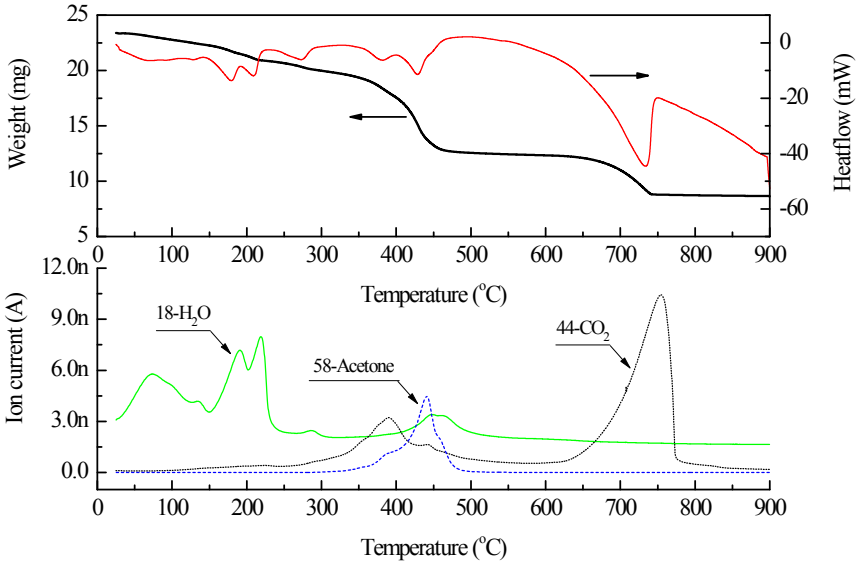

Fig. S1 N_2-TPD profile with simultaneous heatflow and MS signal of freshly dried material 3M-2h-1:10.

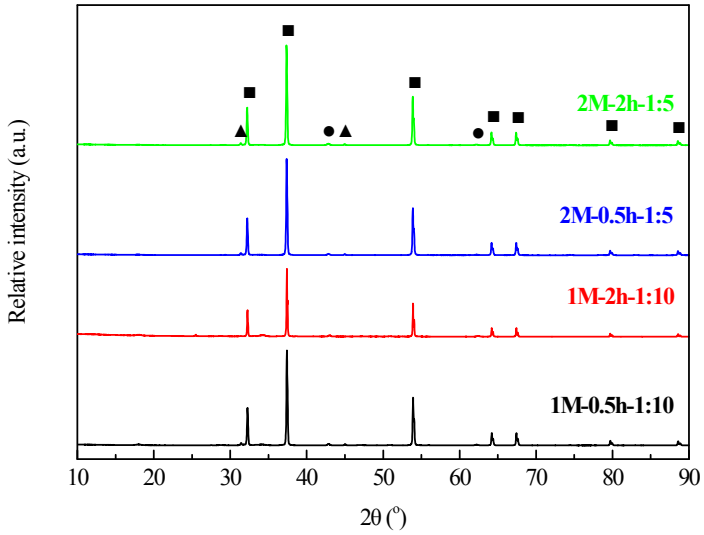

Fig. S2 XRD patterns of freshly calcined CaO-based CO_2 sorbents derived under the same (low) mass ratio of acetic acid to steel slag. The following phases were identified: (■) lime, CaO; (●) periclase, MgO; (▲) calcium sulphide, CaS.