

Supporting Information

Calcium-based sorbent carbonation at low temperature via reactive milling under CO₂

Seyed Morteza Taghavi Kouzehkanan¹, Ehsan Hassani², Farshad Feyzbar-Khalkhali-Nejad¹, and Tae-Sik Oh^{1*}

¹ Department of Chemical Engineering, Auburn University, Auburn, AL 36849, USA

² Manufacturing Excellence Division, International Paper, Prattville, AL 36067, USA

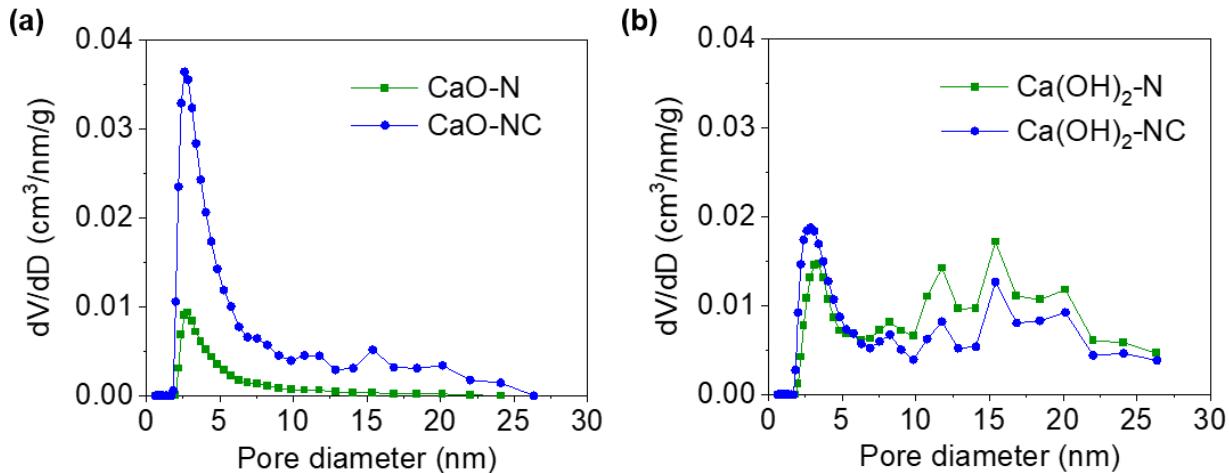


Figure S1. Pore diameter distributions of (a) CaO sorbents and (b) Ca(OH)₂ sorbents.

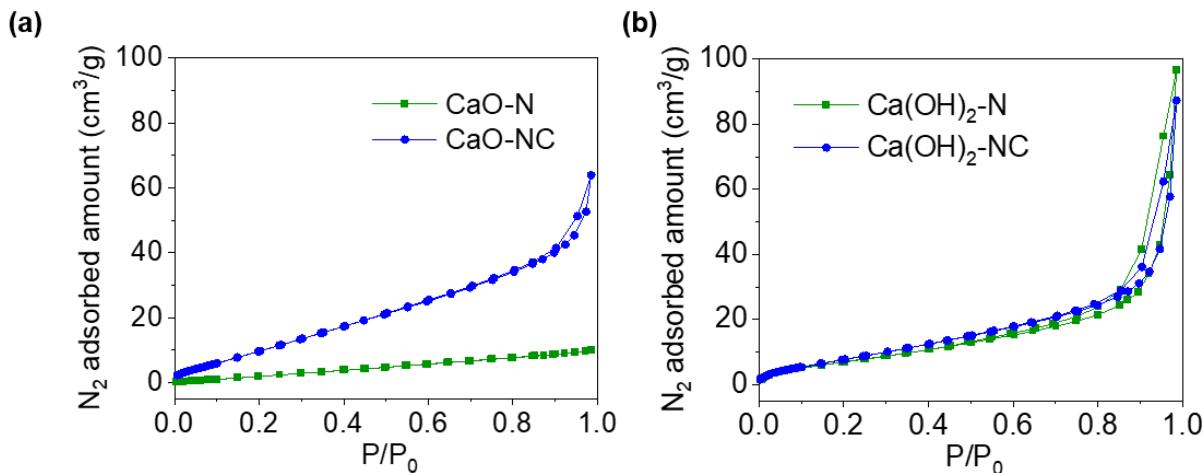
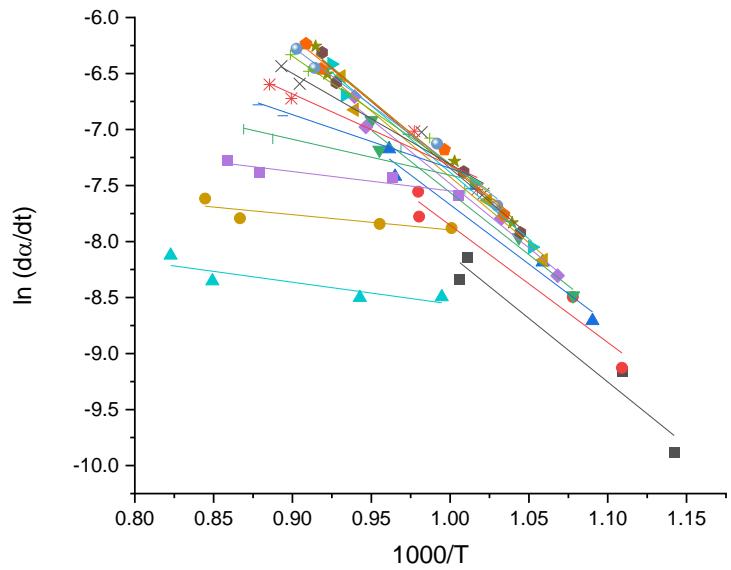


Figure S2. Nitrogen adsorption isotherms of (a) CaO sorbents and (b) Ca(OH)₂ sorbents.



| α | 0.1 | 0.15 | 0.2 | 0.25 | 0.3 | 0.35 | 0.4 | 0.45 | |
|------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| E_α (kJ/mol) | 86.98 | 88.12 | 92.29 | 95.29 | 97.76 | 98.92 | 98.94 | 97.53 | |
| R-squared | 0.9529 | 0.9732 | 0.9793 | 0.9856 | 0.9836 | 0.9856 | 0.9875 | 0.9865 | |
| α | 0.5 | 0.55 | 0.6 | 0.65 | 0.7 | 0.75 | 0.8 | 0.85 | 0.9 |
| E_α (kJ/mol) | 94.31 | 86.77 | 80.05 | 67.41 | 52.91 | 39.79 | 26.61 | 14.35 | 11.29 |
| R-squared | 0.9865 | 0.9884 | 0.983 | 0.9606 | 0.9253 | 0.857 | 0.8234 | 0.8499 | 0.7322 |

Figure S3. Friedman analysis.