

**Electronic Supplementary Information (ESI)**

**Expanded graphite/phenolic resin-based carbon composite adsorbents for post-combustion CO<sub>2</sub> capture**

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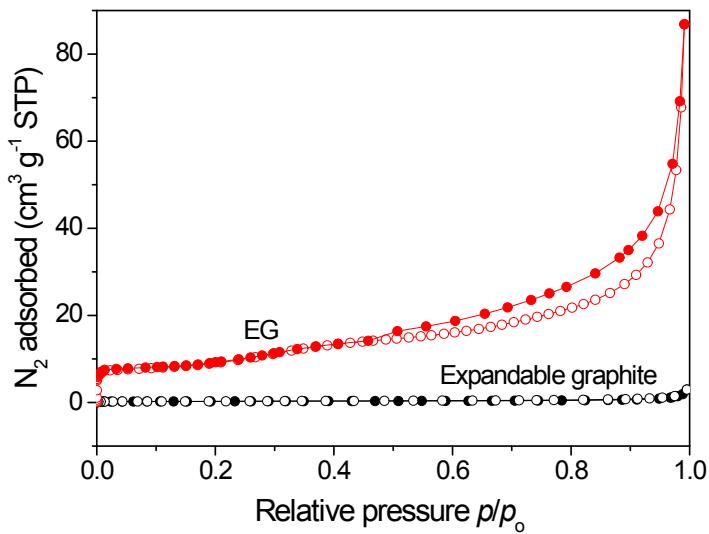
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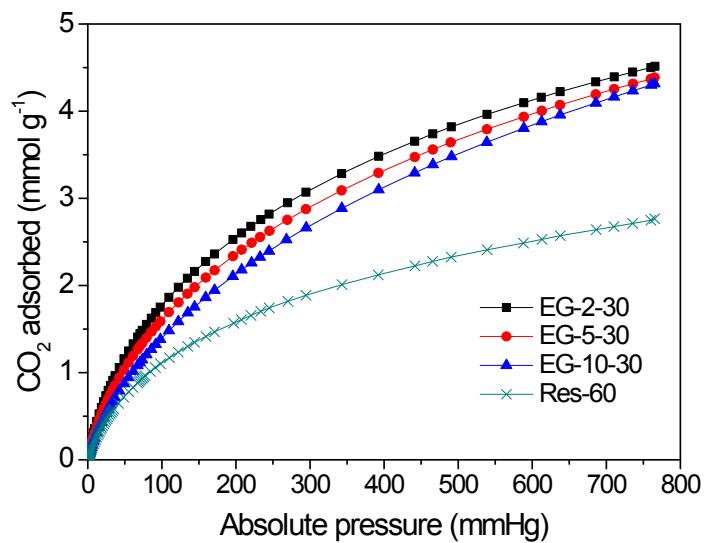
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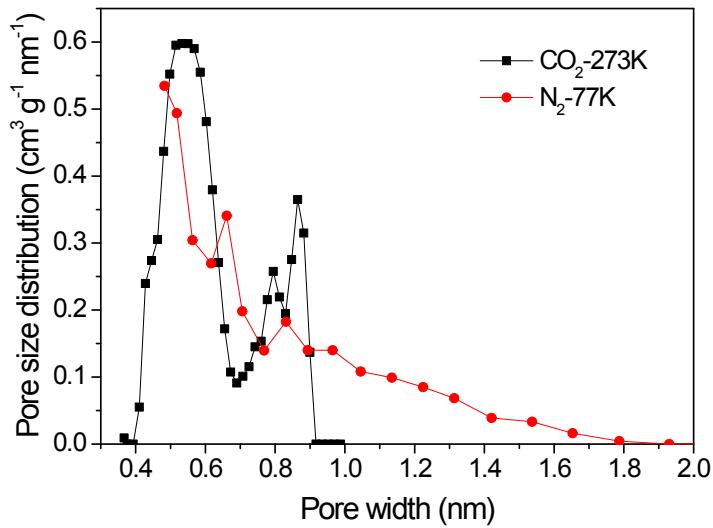
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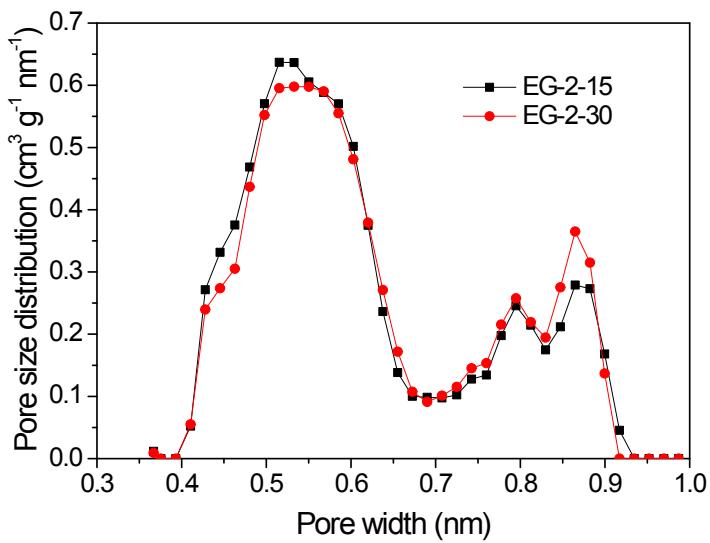
**Fig. S1**  $N_2$  sorption isotherms at 77K for expandable graphite and expanded graphite (EG).



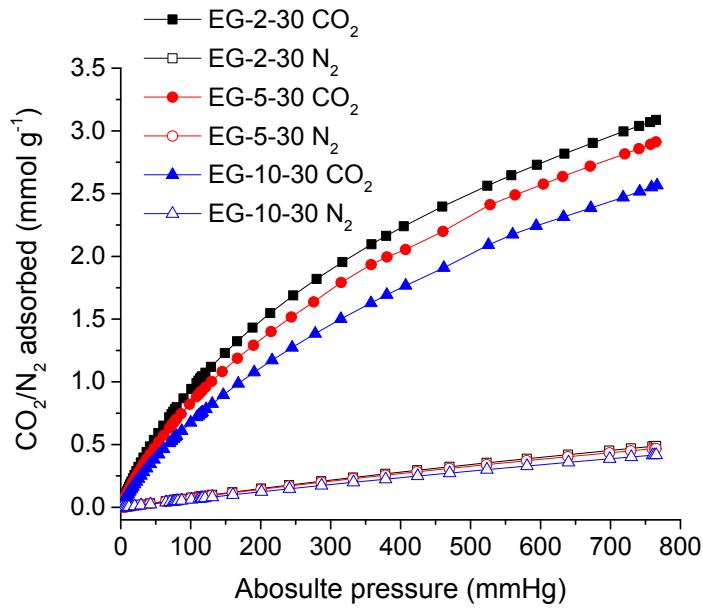
**Fig. S2**  $CO_2$  adsorption isotherms at 273 K for the activated phenolic resin (Res-60) and the EG composites activated for 30 min.



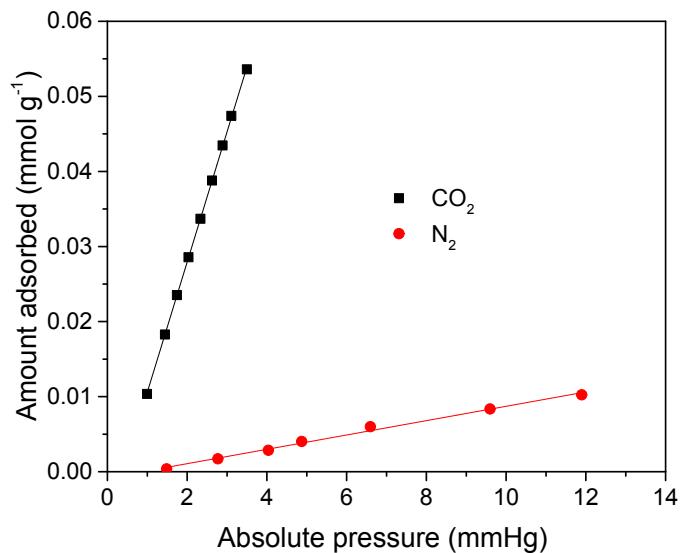
**Fig. S3** Comparison of narrow micropore (< 1 nm) size distributions of EG-2-30 obtained from  $\text{CO}_2$  adsorption at 273 K and  $\text{N}_2$  adsorption at 77 K.



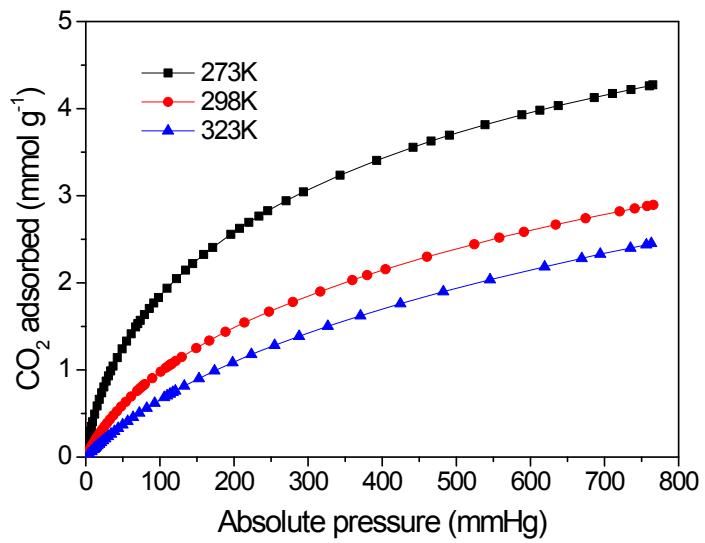
**Fig. S4** Comparison of narrow micropore (< 1 nm) size distributions of EG-2-30 and EG-2-15 obtained from  $\text{CO}_2$  adsorption at 273 K.



**Fig. S5** CO<sub>2</sub> and N<sub>2</sub> adsorption isotherms at 298 K for the EG composites activated for 30 min.



**Fig. S6** Fittings of initial adsorption isotherms at 298K of CO<sub>2</sub> and N<sub>2</sub> for EG-2-15 to obtain the Henry's law constants for estimation of CO<sub>2</sub>/N<sub>2</sub> selectivity.



**Fig. S7** CO<sub>2</sub> adsorption isotherms for EG-2-15 at 273, 298 and 323 K.