

CO₂ Capture on Primary Amine Groups Coated AC at Room Temperature

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For purposes of selective CO₂ uptake under ambient conditions, a few number of primary amine groups are selected, including aminoclay(H₂N-CL), 3-aminopropyltriethoxysilane (APTES), and dopamine hydrochloride(DA). Coatings of both H₂N-CL into activated carbon (AC) show enhanced CO₂ adsorption capacity at 273 and 298K and 1 atm, resulting in 3.069/1.950mmol/g, compared to 2.872/1.824mmol/g of pristine AC. However, APTES and DA coated AC at 273 and 298K and 1 atm are reduced to 2.433/1.762 and 0.429/0.389 mmol/g. Particularly, the coating of H₂N-CL nanoparticles into AC exhibits enhanced selectivity of 8.8/18.7, compared to 7.6/15.9 in pristine AC for CO₂/N₂ at 273 and 298K at 1 atm.