Ammonia activated porous carbons derived from carbohydrates and their application for carbon capture

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Porous carbon materials have been prepared using carbohydrates such as cellulose, chitosan and alginic acid as precursors by pyrolysis under N_2 atmosphere. The specific surface areas and pore volumes of pristine carbons were measured as up to 258.2 $m^2 g^{-1}$ and 0.15 $cm^3 g^{-1}$, respectively. The surface areas and pore volumes of prepared carbons were further increased up to 1032.0 $m^2 g^{-1}$ and 0.65 $cm^3 g^{-1}$, respectively, after the heat treatment of pristine carbons under NH_3 gas atmosphere. The CO_2 adsorption capacity of ammonia activated carbon derived from alginic acid was measured as up to 2.20 mmol g^{-1}.