

Preparation of porous carbons from sugars and their application for carbon capture

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Mesoporous carbon materials derived from sugars (D-fructose, D-glucose, or sucrose) have been prepared using silica aerogel as a template. The silica aerogels were prepared by mixing sugar aqueous solution with the pre hydrolyzed TMOS aqueous solution. The porosity of prepared carbon could be controlled by varying the amount of TMOS, and the specific surface areas were measured as high as $180 \text{ m}^2\text{g}^{-1}$ with microporosity. With the small amount of TMOS, the surface areas of prepared carbons derived from glucose were further increased up to $312.2 \text{ m}^2\text{g}^{-1}$ with some mesoporosity. Moreover, the CO_2 adsorption capacity also increased up to 3.73 mmol g^{-1} . However, with large amount of TMOS, the prepared carbon exhibited microporosity and low surface areas.