

SO_x Adsorption Behaviors of Porous Carbon Materials Derived from Polystyrene Precursor

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SO_x is considered a high health hazard because it is corrosive to the skin, eyes, and lungs. Prolonged contact can cause permanent injury or death. In this work, porous carbons derived from polymeric precursor were prepared by a chemical activation method for the removal of SO_x gas. N₂ adsorption isotherms of the porous carbons were measured by using an ASAP 2010 at 77K. Specific surface areas were calculated by means of BET equation. Pore volumes and pore size distribution were calculated by DFT method. The surface properties were confirmed by wide angle X-ray diffraction and scanning electron microscope measurements. A SO_x adsorption capability was analyzed by a NDIR detector. From the results, the textural properties, including specific surface areas and pore volumes were developed with increasing the amount of an activation agent. SO_x removal capacity was proportion to the well-defined nanoporous structure of the basic carbon.