

Choma, J., Jaroniec, M., Zawislak, A., Jedynak, K. Adsorption Properties of Nanoporous Carbon Materials Synthesized Using Siliceous and Polymeric Templates. *Ochrona Srodowiska* 2009, Vol. 31, No. 3, pp. 17–24.

Abstract: This work reports a concise review of recent studies on the synthesis and characterization of the adsorption properties of mesoporous carbon materials and their post-synthesis activation in order to obtain micro-mesoporous carbons. The most important methods for the synthesis of carbons with ordered or uniform mesopores have been reviewed, especially those involving ordered mesoporous silicas, colloidal silica and block copolymers as templates. The first two types of templates are classified as hard templates, while the block copolymers are considered as soft templates. The adsorption properties of nanoporous carbons were characterized using nitrogen adsorption isotherms, especially for the evaluation of the pore size distribution. These isotherms were also used for the calculation of the specific surface area, total pore volume, the volumes of micropores and mesopores, and the pore sizes at the maxima of the pore size distributions. Adsorption studies have shown that the mesoporous carbons studied have a well developed mesoporosity, which can be easily supplemented by the micro-porosity obtained as a result of additional post-synthesis activation. It has been demonstrated that the micro-mesoporous carbons synthesized via this route are promising materials with a wide range of practical applications in adsorption, catalysis, and environmental pollution control.

Keywords: Adsorption, nanoporous carbon material, siliceous templates, polymeric templates.