

Choma, J., Jedynak, K., Fahrenholz, W., Ludwinowicz, J., Jaroniec, M. Development of Microporosity in Mesoporous Carbons. *Ochrona Srodowiska* 2013, Vol. 35, No. 1, pp. 3–10.

Abstract: Mesoporous carbons were obtained in the presence of hydrochloric and citric acids *via* soft-templating method. Resorcinol and formaldehyde were used as carbon precursors and triblock copolymer Pluronic F127 as a soft template. Tetraethyl orthosilicate was introduced to the system in order to develop microporosity and sodium hydroxide at the final stage to etch the silica. After silica dissolution the expected increase in microporosity was observed; interestingly, the mesoporosity was also improved. Post-synthesis activation with KOH at 700 °C was proposed as an alternative approach to develop additional microporosity. The treatment resulted in the increased microporosity; however, the mesoporosity significantly decreased (2 to 4 fold) in comparison to the initial values. Both methods were effective and led to the formation of additional microporosity. For instance, the sample obtained with addition of TEOS exhibited the BET specific surface area of 1300 m²/g and total pore volume of about 1.4 cm³/g. The post-synthesis activation resulted in the specific surface area over 2000 m²/g and total pore volume exceeding 1 cm³/g. Carbon materials obtained with both methods showed good adsorption properties, therefore, they are suitable for environmental applications such as water treatment and air purification.

Keywords: Nitrogen adsorption, micro-mesoporous carbon, soft-templating, TEOS, KOH activation, TG study, SEM image.