Choma, J., Osuchowski, L., Dziura, A., Kwiatkowska-Wojcik, W., Jaroniec, M. Adsorption Properties of Active Carbons Obtained from Kevlar® Fibers. *Ochrona Srodowiska* 2014, Vol. 36, No. 4, pp. 3–8.

Abstract: A series of four microporous carbons was obtained from Kevlar® fibers by carbonization followed by KOH activation. The resulting powdered activated carbons possessed a well-developed porous structure. Their maximum specific surface area was 2660 m^2/g while the total pore volume was of 1.54 cm^3/g. The controlled process of carbonization and activation led to a significant ultramicropore and micropore development, the volume of which reached 0.54 cm^3/g and 1.35 cm^3/g, respectively. Measurements of physical adsorption of different substances demonstrated the following adsorption efficacy: CO_2 – 4.47 mmol/g (0°C, 800 mmHg) and 2.68 mmol/g (25°C, 850 mmHg), H_2 – 21.4 mg/g (–196°C, 850 mmHg), CH_4 – 1.21 mmol/g (20°C, 750 mmHg) and C_6H_6 – 17.3 mmol/g (20°C, $p/p_o \approx 1.0$). Very good adsorption properties of microporous carbons obtained from Kevlar® fibers indicated that they might be successfully used in environmental engineering for adsorption and storage of carbon dioxide as well as volatile organic compounds. Other applications are associated with storage and usage of the energy of adsorbed hydrogen.

Keywords: PPTA polymer, carbonization, KOH activation, microporous carbon, N_2, CO_2, H_2, CH_4, C_6H_6 adsorption.