

**Choma, J., Jedynak, K., Gorka, J., Marszewski, M., Jaroniec, M. Synthesis and Properties of Mesoporous Carbons with Gold Particles. *Ochrona Srodowiska* 2011, Vol. 33, No. 3, pp. 3–8.**

**Abstract:** The materials under study were mesoporous polymer and carbon composites with gold particles, obtained by soft templating under acidic conditions, with resorcinol and formaldehyde as carbon precursors, Lutrol F127 as a soft template, and tetrachloroauric acid as a gold source. Two different, relatively large (10 and 20 wt.%) portions of gold were embedded into the carbon matrix. Although the presence of nonporous gold particles of a large mass deteriorates the adsorption properties of mesoporous polymer-gold and carbon-gold composites, it has been found that the deterioration was not drastic, as can be inferred from the range of changes in surface area (from 300 to 800 m<sup>2</sup>/g), pore volume (from approx. 0.4 to more than 0.7 cm<sup>3</sup>/g) and average pore width (from approx. 7 to 9 nm). Wide-angle powder X-ray diffraction (XRD) patterns have confirmed the presence of gold particles in polymer and carbon composites. Scanning electron microscopy (SEM) images have revealed noticeable differences in the size and shape of the gold particles. The well-developed porous structure of the polymer-gold and carbon-gold composites studied offers opportunities for the application of those materials to specific adsorption and catalytic processes used in environmental engineering.

**Keywords:** Mesoporous composite materials, synthesis, soft-template, block copolymer, gold particles, adsorption, XRD, SEM.