

Garnuszek, M., Szczepanik, B., Gawinkowski, S., Slomkiewicz, P.M., Witkiewicz, Z., Jedynak, K. Spectral Characterization of Mesoporous Carbons Modified by Ag, Au, TiO₂ and Fe₃O₄ Nanoparticles. *Ochrona Srodowiska* 2012, Vol. 34, No. 4, pp. 17–22.

Abstract: The structural properties of mesoporous carbons modified by Ag, Au, TiO₂ and Fe₃O₄ nanoparticles were studied using IR, FT-IR and Raman spectroscopy. The carbon materials were prepared by the soft-templating method in an acidic medium, with resorcinol and formaldehyde as the carbon precursors and triblock copolymer Lutrol F127 as a soft template. Spectral analysis has revealed that these carbons are characterized by a repeatable structure. The modification of the carbon surface by the nanoparticles examined has caused some noticeable changes in the Raman, FT-IR and IR spectra of the carbon composites, and most of the influence on the modification of the surface comes from metal oxides. The spectra have also shown that the carbon materials tested contain some ordered fragments of graphene structures similar to those occurring in carbon nanotubes.

Keywords: Ordered mesoporous carbon, modification, nanoparticles, IR spectrum, FT-IR spectrum, Raman spectrum.