Choma, J., Dziura, A., Jamiola, D., Nyga, P., Jaroniec, M. Synthesis of Gold Nanoparticles on the Surface of Colloidal Silica. *Ochrona Srodowiska* 2010, Vol. 32, No. 3, pp. 3–6.

Abstract: The past few years have witnessed a growing interest in nanomaterials, and these include silica-gold nanostructures, consisting of siliceous cores covered with gold nanoparticles. Such interest is attributable to the unique properties of these nanostructures when used in spectroscopy, catalysis, adsorption, analysis and environmental pollution control. This work gives an account of recent reports on the application of the nanostructures in environment engineering, especially in water treatment. The main objective was to present an effective strategy for the synthesis of silica-gold nanostructures. The synthesis involves the surface modification of colloidal silica (600 nm) with aminopropyl groups, where deposition occurs of the gold being formed during the reduction of tetrachloroauric acid with formaldehyde. The degree of coverage of the colloidal silica surface with gold (which ranged from small-sized to complete) depended on the quantity of the tetrachloroauric acid used. The morphology of silica particles and the degree of surface coverage with gold nanoparticles were vizualized by scanning electron microscopy.

Keywords: Nanomaterials, core-shell nanoparticles, colloidal silica, silica-gold nanostructures, synthesis.