

Plaza, G., Kowalska, E., Radomska, J., Czerwosz, E., Jangid, K., Gawior, K., Ulfig, K., Janda-Ulfig, K. Effect of Multiwalled Carbon Nanotubes on the Growth of Bacteria of the Genus *Bacillus* and on the Production of Biosurfactants. *Ochrona Srodowiska* 2009, Vol. 31, No. 1, pp. 21–24.

Abstract: Three bacterial strains of the genus *Bacillus* were tested in order to ascertain how the presence of nanotubes in the culture medium influenced their growth, as well as their ability to produce biosurfactants. It was found that the bacteria grew very well in the presence of the nanotubes, and that they were capable of producing biosurfactants. The biosurfactants synthesized by the bacteria accounted for the dispersion of the carbon nanotubes in liquid cultures. Although the multiwalled carbon nanotubes did not affect the morphology or the growth of the bacteria, they were found to stimulate endospore production. The objective of the study was also to assess the properties of the biosurfactants produced by the bacteria growing in the presence of the carbon nanotubes, *i.e.* surface tension, emulsification and foamability. The nanotubes examined were found to exert no influence on the surface activity of the biosurfactants produced by the bacteria. The biosurfactants reduced surface tension, showed emulsifying properties towards some hydrophobic substances/mixtures, and displayed foamabilities comparable to those of the control.

Keywords: Nanotechnology, carbon nanotubes, biosurfactant.