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## Nuclear and related analytical techniques for biotechnology

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Some results from applying nuclear and related analytical techniques in medical, environmental and industrial biotechnologies are presented. In the biomedical experiments biomass from the blue-green alga *Spirulina platensis* has been used as a matrix for the development of pharmaceutical substances containing such essential trace elements as selenium, chromium and iodine. The feasibility of target-oriented introduction of these elements into *Spirulina platensis* biocomplexes retaining its protein composition and natural beneficial properties was shown. The negative influence of mercury on growth dynamics of *Spirulina platensis* was observed. Detoxification of Cr and Hg by *Arthrobacter globiformis* 151B was demonstrated. Microbial synthesis of technologically important silver nanoparticles by the novel actinomycete strain *Streptomyces glaucus* 71 MD was characterized by a combined use of Transmission Electron Microscopy (TEM) and ENAA. It was established that the tested actinomycete *Streptomyces glaucus* 71 MD produces silver nanoparticles extracellularly when acted upon by the silver nitrate solution, which offers a great advantage over an intracellular process of synthesis from the point of view of applications. The synthesis of silver nanoparticles by *Spirulina platensis* proceeded differently under the short-term and long-term silver action. Our studies will help to develop a rational microbial nanoparticle synthesis procedure.

**Level (Hons, MSc, <br> &nbsp; PhD, other)?**

PhD

**Consider for a student <br> &nbsp; award (Yes / No)?**

No

**Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?**

No

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