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Nuclear and related analytical techniques for biotechnology

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<p>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,
   PhD, other)?

PhD

Consider for a student
   award (Yes / No)?

No

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

No

Primary author: Dr FRONTASYEVA, Marina (Joint Institute for Nuclear Research)

Presenter: Dr FRONTASYEVA, Marina (Joint Institute for Nuclear Research)

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