

## **Biosynthesis of silver nanoparticles by *Aspergillus oryzae* and *Penicillium chrysogenum***

**Sara Fernandes**, Manuel Mota and Nelson Lima

IBB-Institute for Biotechnology and Bioengineering, Centre of Biological Engineering, Universidade do Minho, Campus de Gualtar, 4710-057, Braga, Portugal

[sara.fernandes@deb.uminho.pt](mailto:sara.fernandes@deb.uminho.pt)

Development of reliable and eco-friendly processes for synthesis of metallic nanoparticles is an important step in the field of application of nanotechnology. Also the importance of bactericidal nanomaterials study due to the increase in new resistant strains of bacteria and fungi against most potent antibiotics has promoted research in the well known activity of silver ions and silver-based compounds, including silver nanoparticles. For this reason, there is an essential need to develop environmentally benign procedures for synthesis of silver nanoparticles for commercialization purposes. In relation to other microorganisms fungi present key characteristics such as tolerance and metal bioaccumulation abilities that are advantageous for production of nanoparticles.

In this study, silver nanoparticles were synthesised extracellularly from silver nitrate using the fungi *Aspergillus oryzae* MUM 97.19 and *Penicillium chrysogenum* MUM 03.22, supplied by Micoteca da Universidade do Minho (MUM) fungal culture collection, and the morphology of the nanoparticles was characterised by Scanning Electron Microscopy (SEM). In addition, the potential to manipulate key parameters, which control growth and other cellular activities, to achieve an optimised production of nanoparticles were investigated. A complete screening of different pH, temperature and salinity conditions was conducted. The main results obtained will be presented and discussed.