Poster

OBTAINING AG NANOPARTICLES USING MICROBIAL STRAINS.

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Use of microorganisms for biosorption and intracellular/ extracellular accumulation of metal ions represents a progress of applied microbiology and bionanotechnology. Using special methods we activate the metabolic processes that determine nanostructuring of metallic ions of newly formed environmental niches; these newly created environments increase the nutritional pressure on the bacterial populations.

Adapting of microorganisms to a culture with a high concentration of Ag may be:

1. intracellular transport of nutrients through the synthesis of large amounts of transport protein as a result of induction or depression of alternative metabolic paths,
2. reducing the speed of using excess nutrients,
3. reducing speed growth through modulation of the synthesis of substances with plastic role,
4. use of alternative metabolic paths that ensures the maintenance of microorganisms in a latent form till the concentration of nutrients redresses.

There is a wide range of investigative techniques to obtain information about the structure of nanoidal and coloidal materials.

At this ultra fine structure level of materials, traditional characterization such as transmission electronic microscopy (TEM), diffraction of X-rays are necessary for understanding the structure of nanocrystalline materials.

On the other hand, the need for microchemical analysis on fine scale led to develop instruments capable for a good resolution to this scale, which would provide the necessary information. Among these instruments include scaling transmission microscopes and ionic field microscopy.

Direct and precise highlighting the structure of the border regions is difficult to obtain. It would be necessary the investigation of the same material obtained by the same method but using different methods of investigation of the structure interface.

Nanoidal materials can be characterized by various techniques, each providing important information's for understanding the various properties.

The used characterization techniques are:

1. X-ray diffraction (XRD),
2. scanning electron microscopy (SEM),
3. transmission electronic microscopy (TEM).

The analyses and determinations made using diffraction of X radiation, transmission electron microscopy TEM, the scanning electronic microscopy SEM, EDAX analysis could have been put in evidence the following:

1. There have been put in evidence nanoidal and coloidal silver particles deposits;
2. Identified deposits are separated particles;
3. The identified particles generally present a protein envelope from microorganisms;
4. Identified microorganisms present large coloidal and nanoidal silver deposits on the surface and in the immediate neighbourhood;

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