Estimation of Cells Growth and Substrate Oxidation in Initial Stages of Adaptation of *Acidithiobacillus ferrooxidans* to High Concentrations of Ferric Ions

Elitza Petrova[1], Plamena Zlateva[2]
[1] Institute of Mechanics, Bulgarian Academy of Sciences, 1113 Sofia, Bulgaria
ely@imbm.bas.bg
[2] Institute of System Engineering and Robotics,Bulgarian Academy of Sciences, 1113 Sofia, Bulgaria
plamzlateva@abv.bg

Acidithiobacillus ferrooxidans is among the few microorganisms which take energy from the oxidation of the ferrous ions in acidic medium. That hemolitoautotrophic bacterium is well known and successfully used in the wastewater treatment of and in all aspects of microbial mediated extraction of metals from minerals or solid wastes and acid mine drainages. The use of bacteria in environmentally friendly technologies may fall in areas with high concentrations of iron and lead, and this is toxic for the strain. In order to avoid inhibition of the bacterial action, it is necessary to adapt *Acidithiobacillus ferrooxidans* to high initial concentrations of iron ions. The aim of present work is to estimate the processes of substrate oxidation and cells growth in exponential phase of batch cultivation of the strain, loaded higher initial concentration of ferric ions. It was established that there is no influence of initial substrate concentrations on the strain in the beginning stages of its adaptation to high concentrations of ferrous ions.