

Intracellular synthesis of crystalline gold using live bacterium and its purification

Krishnamurthy Sneha¹, 박지영², S.Y. Lee¹, 윤영상^{1,2,*}

¹Dept. of Bioprocess Engineering, Chonbuk National Univ.; ²School of Semiconductor and Chemical Engineering, Chonbuk National Univ.
(ysyun@moak.chonbuk.ac.kr*)

The demand for development of environment friendly protocols for nanoparticle fabrication, has directed researches towards use of biological systems (bacteria, fungi, algae and plants) as enhancers for nanoparticle synthesis in the recent years. The present study focuses on the synthesis of nanoparticles using marine microbe *Jeotgalibacillus* sp. and purification of microbially synthesized nanoparticles. Biogenic nanoparticles were characterized by UV-Vis analysis, TEM and XRD analyses. pH optimization experiments showed that pH 3 was ideal for the formation of gold nanoparticles. Further, recovery of nanoparticles from bacterial biomass performed using sodium citrate, cetyl trimethylammonium bromide (CTAB) and sodium dodecyl sulfate (SDS). Analysis showed that Sodium citrate and SDS could recover prominent amount of Au nanoparticles with increasing concentration. The present method for nanoparticle synthesis using biomaterials and customized recovery at room temperature offers a new means to develop environmentally benign and biocompatible nanoparticles.