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Research note

Fabrication and size control of Ag nanoparticles

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Abstract
The objective of this research was to fabricate Ag nanoparticles and control their sizes. Colloidal Ag nanoparticles with particle size of 30 nm were prepared by dissolving $AgNO_3$ in ethanol and through the chemical reduction of Ag^+ in alcohol solution. To control the nanoparticle size, different samples were fabricated by changing the $AgNO_3$ and stabilizer concentrations and the effects of different factors on the shape and size of nanoparticles were investigated. The samples were characterized using SEM and EDX analysis. The results showed that by increasing the $AgNO_3$ concentration, the average size of nanoparticles increases and nanoparticles lose their spherical shape. Also, we found that by using the stabilizer, it is possible to produce stable nanoparticles but increasing the stabilizer concentration caused an increase in size of nanoparticles. Fabrication of nanoparticles without using stabilizer was achieved but the results showed the nanoparticles size had a growth of 125 nm/h in the alcoholic media.

Keywords: Ag nanoparticles, chemical reduction, stabilizer

For full article, refer to the Persian section