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Synthesis and spectroscopic studies of stable aqueous dispersion of silver nanoparticles

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ABSTRACT

A facile approach for the synthesis of stable aqueous dispersion of silver nanoparticles (AgNPs) using glucose as the reducing agent in water/micelles system, in which cetyltrimethylammonium bromide (CTAB) was used as capping agent (stabilizer) is described. The evolution of plasmon band of AgNPs was monitored under different conditions such as (a) concentration of sodium hydroxide, (b) concentration of glucose, (c) concentration of silver nitrate (d) concentration of CTAB, and (e) reaction time. AgNPs were characterized by UV–visible spectroscopy, transmission electron microscopy (TEM), fluorescence spectroscopy and FT-IR spectroscopy. The results revealed an easy and viable strategy for obtaining stable aqueous dispersion of AgNPs with well controlled shape and size below 30 nm in diameter.

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