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Study of optical properties of Ag ellipsoid nanostructures by discrete dipole approximation method

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Abstract

In this paper, we investigate optical properties of silver ellipsoid nanostructures (SENs) by means of discrete dipole approximation (DDA), when these nanoparticles are embedded into the water. Absorption, scattering and extinction cross-sections of the SENs were calculated by change of incident wavelength in visible and near infrared region. Moreover, height, wavelength and full width at half maximum (FWHM) of extinction cross-section peaks (due to plasmon resonances) were studied by change of nanostructure's size and dielectric constant of medium. Our results show that, there are only two peaks of transverse dipole and longitudinal dipole modes in this spectrum.

Keywords: Ag ellipsoid nanostructures, discrete dipole approximation, plasmon, cross-sections

For full article, refer to the Persian section