

Prediction of Optical Properties of Gold Nanostar and Defective Nanospheres by Discrete Dipole Approximation

이태경, 곽상규*
울산과학기술대학교
(skkwak@unist.ac.kr*)

Optical properties of gold nanoparticles, which show localized surface plasmon resonance (LSPR), are investigated by using discrete dipole approximation. Shape and size of nanoparticles are main reasons for huge change of properties of LSPR, yet effects of surface morphologies have not been studied extensively. Thus, we aim to understand effects of different surface morphologies in this work. The spherical shape of nanoparticle is chosen for its simplicity and popularity. To alter its surface, regular, irregular types of defects (i.e. vacancies), and protruding tips are introduced due to introducing both concave and convex nature of defects. For the comparison of optical properties, extinction efficiency (Q_{ext}), absorption efficiency (Q_{abs}), and scattering efficiency (Q_{sca}) are calculated to obtain subtle variations of spectra.