

Fabrication of Various Core-shell Nanoparticles with Dielectric Interlayers for Broadband Light Absorption

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Core-shell Nanoparticles continue to attract strong interest on account of their fascinating properties and potential applications in optical sensing, optoelectronics, biomedicine, imaging and catalysis applications. Especially, Ag, Au, Pt and Pd nanoparticles have been widely used as light absorbers with specific wavelength regions due to their remarkable surface plasmon characteristics. The incorporation of two different metals in a core-shell nanoparticle has been widely synthesized for various applications. However, the direct contact between core and shell metal component leads to the incorporation two plasmonic scattering, resulting in a single absorption characteristic peak. Herein, we have conducted the facile fabrication method of various core-shell nanoparticles with dielectric interlayers. Our strategy using silica interlayers can enables to obtain core-shell nanoparticles showing the two different absorption peaks together, which can pave the way for plasmonic application requiring the broad light absorption.