

Synthesis of Bimetallic Nanoparticle in Lipid bilayer Vesicle with Near-infrared Resonance

신용희, 황금래, 강태욱[†]
서강대학교 화공생명공학과
(twkang@sogang.ac.kr[†])

Gold-organic hybrid nanoparticles have attracted considerable interest in biomedical applications ranging from imaging to therapy owing to their advantages, including high selectivity, activity, and, chemical and physical stability. However, it is essential to achieve an absorption in near-infrared region for their in vivo applications. One of the effective methods for acquiring the near-infrared resonance is incorporating another metal (e.g., platinum and palladium). Here we report a strategy to prepare the bimetallic nanoparticle with near-infrared resonance in lipid bilayer vesicle containing a reducing agent as chemical reactor. This approach relies on the simultaneous diffusion of gold precursor and another precursor (i.e., platinum or palladium) into the vesicle, followed by the formation of bimetallic nanoparticle via reduction of the precursors in the vesicle. The formation of the bimetallic nanoparticle in vesicle is extensively characterized by high-resolution transmission electron microscope and energy dispersive spectrometer. The optical properties of the synthesized nanoparticles are systematically examined through UV-vis spectrophotometer and dark-field microscopy with changing the relative molar ratio between the metal precursors.