

A facile method for synthesis of yolk structure of gold/hollow mesoporous silica nanoparticles

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Over the last few decades, various researches about gold nanoparticles (GNPs) have widely caught the attention because of their interesting optical properties such as size and shape dependent localized surface plasmon resonance (LSPR). Recently, coating GNPs with metal oxide shell (e.g. silica (SiO₂), titania (TiO₂), etc.) has attracted with application in bioscience, photoharvesting devices. In this study, we introduce a facile method for fabricating gold/hollow mesoporous SiO₂ (m-SiO₂) shell. In our method, we used GNPs, zinc acetate (ZnAc) aqueous solution and tetraethyl orthosilicate (TEOS) without other alcohol and alkali additions. GNPs were coated with zinc-silicon mixed oxide shell through sol gel process. By removing zinc oxide (ZnO), we could get the hollow m-SiO₂ shell simply and quickly.