

Au/Ag核-壳结构复合纳米粒子形成机制的研究

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摘要 在已制备好的Au纳米粒子表面,通过化学还原的方法沉积生长Ag包覆层,通过控制Au,Ag的比列,制备了粒度均匀且粒径可控的Au/Ag核-壳结构纳米粒子。利用UV-vis吸收光谱和透射电子显微镜(TEM)对SAu,Ag摩尔比为1:10的复合纳米粒子的光学性质和形态进行随时监测,直接观察了核-

壳结构纳米粒子的生长过程:一部分Ag⁺在Au核表面还原生长,

溶液中其余Ag⁺还原形成银的纳米团簇向粒子表面的继续沉积生长,壳层增厚。

关键词 [金](#) [银](#) [纳米相材料](#) [紫外分光光度法](#) [透射电子显微术](#) [光学性质](#)

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Formation Mechanism of Core-Shell Au/Ag Nanoparticles

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Abstract Core-shell Au/Ag nanoparticles were prepared by deposition of Ag through chemical reduction in the presence of preformed Au nanoparticles. By changing the molar ratio of Ag to Au, the thickness of the shell and thus the size of bimetallic particles could be controlled in convenient way. In this work, uniformly-sized core-shell Au/Ag nanoparticles were prepared with large amounts of depositing metals until the molar ratio of Ag to Au reaches 1:10. The formation mechanism of the "core-shell" type nanoparticles was studied by UV-vis spectra, transmission electron microscopy (TEM), etc. A small moiety of silver ions on the surface of gold seeds is reduced. The remaining silver ions in solution are reduced to form nanoclusters. The clusters are deposited on the surface of the particles and the thickness of silver shells increased.

Key words [GOLD](#) [SILVER](#) [NANOPHASE MATERIALS](#) [UV](#) [TEM](#) [OPTICAL PROPERTIES](#)

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