

The effects of functional group and surface coverage on the morphology of gold nanoparticle

김경학, 한정우[†]
서울시립대학교
(jwhan@uos.ac.kr[†])

Many studies for nanocrystals have been conducted due to their unique properties and a wide range of applications such as electronics, catalysis, chemical sensing, and biology, and so on. Owing to the high potential, the interest in the synthesis of metal nanoparticles (NPs) also has been steadily growing. Caffeic acid (CA) is known for its strong adsorption on metal or metal oxide surfaces, and it can be a good reducing agent for the synthesis of gold nanoparticles due to the catecholic functional group. Our previous results showed that the concentration of CA changes the size and morphology of AuNPs¹. However, the detailed adsorption configurations and the effects of functional groups for molecular adsorption have not been clarified yet. In this study, we reported that the adsorption strengths and configurations of the adsorbates are changed by the surface coverage and binding functional groups. Our results provide not only fundamental information for the adsorption behaviors of CA on Au surfaces, but also insights for its application to the customized synthesis of nanoparticle.

1. H-S. Kim, Y. S. Seo, K. Kim, J. W. Han, Y. Park and S. Cho, *Nanoscale Res. Lett.*, in revision (2016)