STUDY OF SILVER IONS EFFECT IN THE SILVER NANOPARTICLES PHOTOCONVERSION PROCESS: AN APPROACH TO UNDERSTAND THE MECHANISM

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Noble metal nanoparticles are of great interest because of their unique physical and chemical properties. The localized surface plasmon resonance exhibited by these particles allows their potential application as sensors, optoelectronic materials, catalysts and active substrates for surface-enhanced Raman spectroscopy. This resonance highly depends on the particle size and shape. Silver nanoparticles undergo morphological changes by different mechanisms that can be roughly divided in three: photoinduced, thermal and chemical mechanisms. However, since the first silver nanoparticles photoconversion process was reported in 2001 by Mirkin, a lot of related articles have been published, but only few of them are focused in the study of how the photoconversion works and which factors are the most important. In order to better understand the mechanism of silver nanoparticles photoconversion process, we report a study based on the effect of silver ions during this process. We found that silver ions are critical for the process and their concentration influence the speed of photoconversion.

Keywords: Silver nanoparticles, Photoconversion, Mechanism

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