

Effect of gold ions on UCST of Polyethylenimine/(Phenylthio)acetic acid conjugate before and after reduction

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Polyethylenimine(PEI) and (Phenylthio)acetic acid(PTA) could be self-assembled when the molar ratio of the amino group of PEI to the carboxylic group of PTA is 3:7. And the self-assembly also showed the upper critical solution temperature (UCST) around 37°C which is Closed to body temperature. Various amounts of Gold(III) chloride trihydrate solution was added into PEI/PTA conjugate solution to investigate the effect of gold ions on the UCST behavior of it. From the UV spectrum we could know that the gold ions were automatically reduced to gold nanoparticles(GNP) in the PEI/PTA solution after 24h mixed rolling. We could also see the formation of GNP from an X-ray photoelectron spectroscopy(XPS). Moreover, the gold ions and GNP showed different effect on the UCST behavior of PEI/PTA assembly. What's more, the release property of PEI/PTA showed the highest value when the concentration of gold ions was 1mM.