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Solution Phase Behavior of Gold Nanoparticles in Colloidal Solution HAO YAN, AMITABHA CHAKRABARTI, CHRISTOPHER SORENSEN, Kansas State University — Gold nanoparticles in colloidal solution can aggregate to form gold nanocrystal superlattices. To explore and understand the solution phase behavior of nanoparticles, the gold nanoparticles ligated with dodecanthiol in a mixture of 4-tert-butyltoluene and butanone were studied by UV-vis spectroscopy, static light scattering and dynamic light scattering. The results showed that there is a reversible dissolution-aggregation process. The phase diagram was obtained by measuring the size of the nanoparticles with dynamic light scattering and the scattered light intensity. The UV-vis spectroscopy also proved the existence of a phase transition.

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