Synthesis and Characterization of Silver Nanoparticles

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Researchers in the laboratory of Dr. Ashutosh Chilkoti have been working on the synthesis of citrate-stabilized silver nanoparticles, which are typically difficult to synthesize with a narrow size dispersity. The Chilkoti Lab has been able to size-separate small particles from a polydisperse sample by centrifugation (Figure 1). The narrower dispersity is reflected in the narrower UV-VIS peak of the small particles as compared to the original sample. Alternatively, adding tannic acid during synthesis produces much more monodisperse particles (Figure 2).

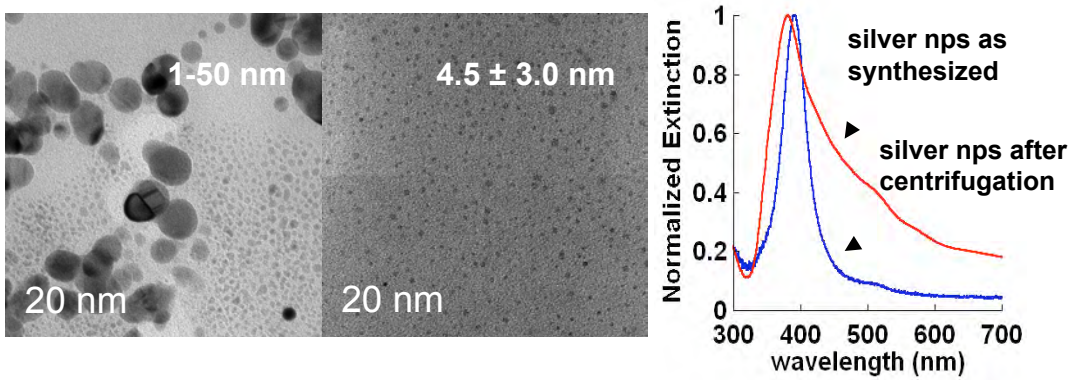

Figure 1. TEM images and UV-VIS spectra of citrate-stabilized silver nanoparticles before and after size-separation.

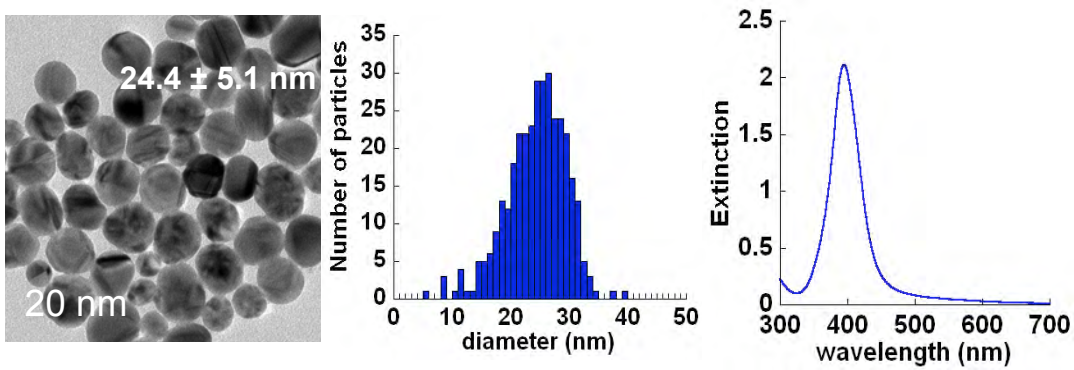

Figure 2. TEM image, size histogram, and UV-VIS spectrum of citrate/tannic acid-stabilized silver nanoparticles.

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