

Electronic Supplementary Information

A rapid, simple method for tuning the colour of silver nanoparticles.

Deirdre M. Ledwith, Aine M. Whelan and John M. Kelly

School of Chemistry, Trinity College, University of Dublin, Dublin 2, Ireland.

E-mail: jmkelly@tcd.ie

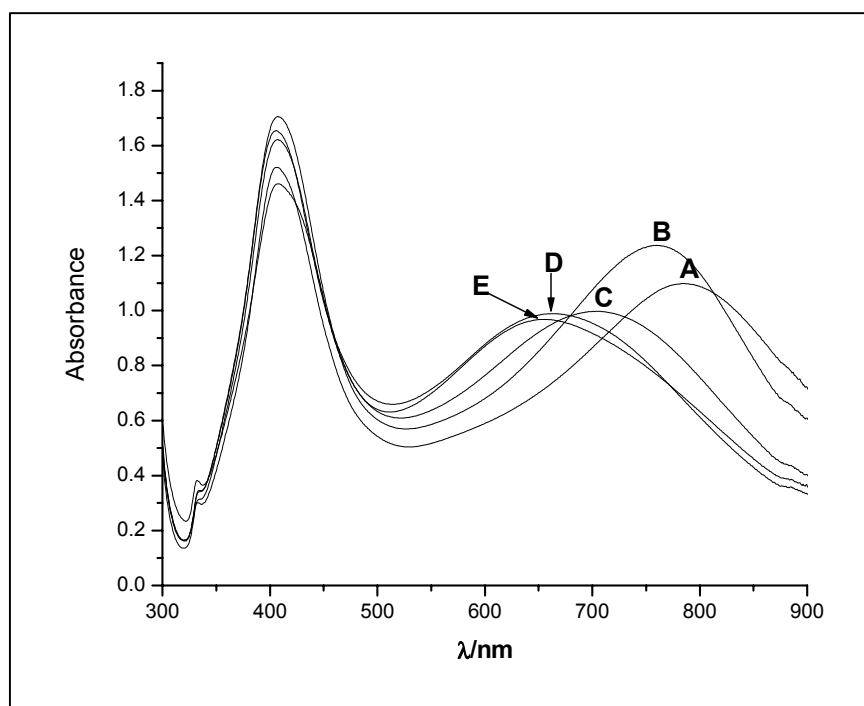


Figure S1: UV-vis spectra of sols prepared with A) 1wt% B) 0.5wt% C) 0.1wt% D) 0.05wt% E) no PVP. All other reaction conditions were unchanged.

Method

A two step seed mediated procedure is carried out. The typical procedure for the production of a green sol is given below.

Preparation of the Silver seeds.

A 20mL volume of aqueous solution containing AgNO_3 ($2.9 \times 10^{-4}\text{M}$) and TSC ($2.5 \times 10^{-4}\text{M}$) was prepared and cooled in an ice-bath. To this NaBH_4 (0.1M, 0.6mL) was added drop-wise with vigorous stirring. The solution became bright yellow immediately. The seeds were then stored in the dark and aged for 2 hours prior to use.

Growth of Silver Nanoplates from the seed solution.

Aqueous PVP (Xwt%, 10mL), seed solution (100 μL), TSC ($2.5 \times 10^{-2}\text{M}$, 300 μL) and ascorbic acid (0.1M, 50 μL) were combined. To this solution AgNO_3 (0.01M, 5 x 50 μL) was added slowly with vigorous stirring. A colour change from colourless to yellow, red and finally green was observed.

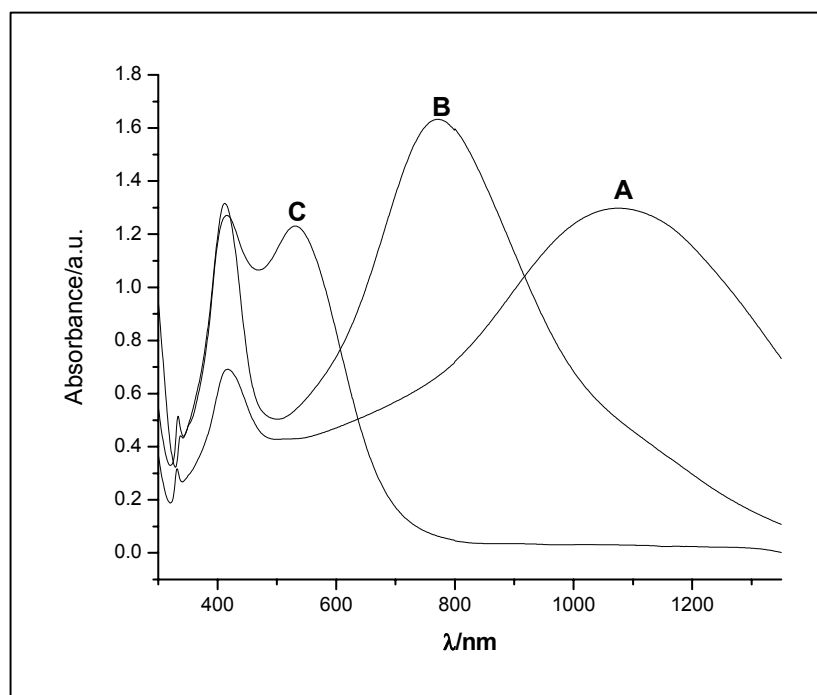


Figure S2: UV-vis spectra of sols prepared with A) 0.7 mM B) 0.35 mM C) 0.24 mM 1,3-acetonedicarboxylic acid instead of trisodium citrate. All other reaction conditions were unchanged.

A similar method to the one described above was used. The concentration of PVP was kept constant at 1wt%. 1,3-acetonedicarboxylic acid was used instead of trisodium citrate.