



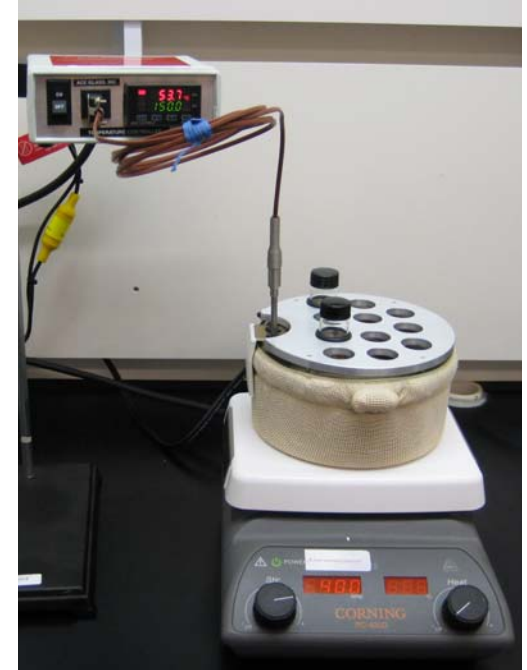
Synthetic Protocol for Ag Nanocubes

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Preparation

- Set up an oil bath by filling a 250 ml beaker about $\frac{3}{4}$ full with Si oil. Heat and stir oil bath on hot plate to 150°C.
- Add 6mL ethylene glycol (EG) to black capped reaction vial with a stir bar (320 rpm); put it into oil bath with an o-ring as a support on a vial holder and heat for 1 hour.
- While EG is heating, solutions may be prepared starting at around the 30 minute mark.



Making Solutions

- Measure 0.045g PVP with end of a disposable glass pipette and mix in EG with a ratio of 0.03g PVP/1.5mL ethylene glycol. Seal and allow PVP to dissolve; vortex if necessary.
- Next, prepare a 3mM NaHS solution in EG: transfer a piece of NaHS about 0.001g using a disposable glass pipette, then calculate the amount of EG needed to make a 3mM NaHS solution.



Making Solutions

- Prepare AgNO_3 solution in ethylene glycol: transfer 0.03g AgNO_3 with a disposable glass pipette into a reaction vial, and calculate the amount of ethylene glycol required using a ratio of 0.12g AgNO_3 / 2.5 mL EG. Seal the vial and use vortex until solution has dissolved.

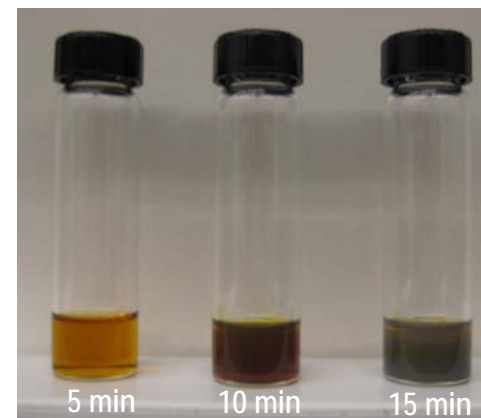


Adding Chemicals

- After the reaction vial has heated for 1 hour, remove cap and add 70 μ l of the 3mM NaHS solution in EG to the reaction vial. (Keep reaction vial clamped in place) Replace cap loosely and wait 8-9 minutes.
- After 8-9 minutes, add 1.5mL of the PVP solution to the reaction vial.

Running Reaction

- Next, add 0.5mL of AgNO_3 to the black-capped reaction vial and tighten cap on vial. The reaction will take approximately 10-15 minutes and the vial should be moved to an ice bath upon color change to a green ochre color with ruddy red meniscus.



Isolating Nanocubes from Solution

- Transfer the reaction solution to a 50-mL centrifuge tube, add 16mL acetone, and then spin down the product at 11,000 rpm for 10min. Remove and discard the supernatant with a disposable pipette.
- Add 10mL deionized water to the tube, agitate via sonication and vortex to re-disperse the products, and then spin down the product at 11,000rpm for 10 min. Remove and discard the supernatant. Repeat the water washing step 2-3 times.

