

Technical Data Sheet

Gold Sols Preparation

16580

To make 100ml of GOLD SOLS prepare two separate solutions in CLEAN GLASSWARE

Solution A:

Gold Chloride solution (Use 250ml beaker)

- 1ml 1% (w/v) Gold Chloride in deionized water
- 79ml deionized water

Solution B:

Reducing solution (Use 50ml beaker)

- 4ml 1% Sodium Citrate, dihydrate (FW. 294.11) Make fresh monthly
- 1% Tannic Acid (EMS #21720) Make fresh monthly
- 25mM Potassium carbonate (K₂C₀₃) Make fresh on day of use (Volume used is equal to the volume of Tannic Acid)
- Deionized water to bring to a final volume of 20ml

The final diameter of the gold particle is inversely proportional to the volume of Tannic Acid solution added. Some common sizes and the volume of Tannic Acid solution to be added are:

Gold Particle Size	Volume of Tannic Acid
15nm	0.022ml
10nm	0.100ml
5-6nm	0.900ml

Procedure

1. Heat Solution A and B to exactly 60°C in a water bath; cover the solution to eliminate evaporation during heating.
2. Remove Solution A to a hot plate (which is heated sufficiently to boil water); begin mixing vigorously and immediately add the entire contents of Solution B in one quick motion to the beaker of Solution A.
3. Continue to mix the solution until it reaches 100°C. (It may be necessary to reduce the vigor of the stirring in order to achieve 100°C).
4. Try to minimize evaporation during the heating to 100°C.
5. After the solution has been at 100°C for 2 - 5 minutes, remove and allow to cool. Check the volume and adjust to 100ml with deionized water.

6. Store at 4°C in a clear glass bottle, appropriately labeled as to the size of the particle, date and maker.