

Synthesizing and Characterizing Gold Nanoparticles

Materials:

- Safety Glasses
- Gloves
- Papercraft Spectrometer
- 1 mL 5 mM Chloroauric Acid Solution (caustic!)
- 1 mL Tea
- 100 mL Deionized Water
- 6 Small Erlenmeyer Flasks or Beakers
- Stir Rod
- Pasteur Pipette
- 3 10 mL Graduated Cylinders
- Light source

Instructions:

1. Before entering the lab, write down how much deionized water your group will be using.
2. Put on your gloves and safety glasses.
3. Collect 1 mL of chloroauric acid solution, 1 mL of tea, and 100 mL of deionized water from the front of the room using 3 of your flasks/beakers.
4. Take a picture of a light source using your papercraft spectrometer.
5. Place the beaker containing the chloroauric acid solution between the light source and your papercraft spectrometer and take another picture.
6. Compare the two pictures, what is different? Record your answer in number 1 below.
7. Using your graduated cylinders, add 1 mL of tea and ____ mL of water to a small flask or beaker and stir gently. (Be sure to list how many mL of water used!)
8. While stirring, add dropwise 1.0 mL of 5 mM chloroauric acid to your diluted tea using your graduated pipette.
9. Record your observations in number 2 Below.
10. Compare your solutions to those of other groups. Can you see any difference? Record your observations in number 3.
11. Place the beakers containing your gold nanoparticle solutions between your papercraft spectrometers and your light source and take a picture. (Note, it can be difficult to get a good picture, try different positions for your spectrometer/beakers).
12. Compare your pictures to your picture of the light source.

Observations:

1. Picture of light source and picture of chloroauric acid solution:

2. Tea solutions as chloroauric acid was added:

3. What differences do you observe between your solution and that of other groups? Explain why you think this is.

4. Picture of light source and pictures of gold nanoparticle solutions: