Gold Penny

Purpose

To show the properties of metal and the process of wet chemical plating through the process of plating a penny in zinc then heating it up to form a brass alloy.

Materials

Penny (MUST be pre 1982)

3M NaOH (24g/200mL)

Granular zinc

Hot plate

400 mL beaker

Tongs

Paper towels

250 mL beaker of DI H_2O

Bunsen burner

Procedure

1. Pour 200 mL of the 3M NaOH into the 400 mL beaker
2. Place the beaker on the hot plate and heat over medium-high heat. Do not boil.
3. Add 5g of granular zinc to the beaker
4. Place penny in the beaker and stir for 4 minutes
5. Using the tongs, remove penny from the NaOH solution and place in the beaker of water.
6. Remove penny from the water and rub with a paper towel to achieve a shiny silver look. The penny is now zinc plated.
7. Using the tongs, place the penny in the flame of the Bunsen burner, slowly moving it back and forth across the flame.
8. The heat will cause the zinc and copper atoms to mix forming a brass alloy, making the penny gold.

Additional Information

1. The penny used must be from before 1982 due to the differences in composition of pennies. From 1962 to 1981, pennies were composed of 95% copper and 5% zinc. Where pennies from 1982 and after are comprised of 97.5% zinc and 2.5% copper.
2. The process in this demo is one that was historically used by alchemist to try to fool people into believing they could change common metals into gold.

Disposal

The remaining solution should be placed in a properly labeled waste container with UI# 100948.