

## SNC1L Forensic Chemistry – Lab #4

Name: \_\_\_\_\_

### Fool's Gold

The investigation into the Windsor robbery continues to heat up. The family followed the demands from the ransom note and provided \$500 000 in gold coins, or so the robber thought. After leaving the bag of coins for the robber, the police alerted banks that there would be a large amount of **fake gold** coins showing up in the next few days. Sure enough, 2 days later the Royal Bank called police when a "Little Miss Trouble" tried to cash in a bag of gold coins for cash.

#### Materials:

– 1 penny (from 1982 or earlier)                      - Tongs

- Goggles



#### Procedure:

1. Put penny in the zinc & NaOH solution on the hot plate.  
Leave for **3-5 minutes**.  
*!! Be very careful this is a corrosive solution. !!*
2. Use tongs to remove penny. Rinse in water & pat dry.
3. Light Bunsen burner.
4. Hold penny over flame with tongs. **Keep it moving!** Remove once it has turned a gold colour.



#### What Happened?

You formed a mixture of zinc & copper called brass. Brass is a metal that is often confused for gold, especially by people who don't see real gold very often. The zinc formed a thin layer over the penny. When the penny was heated over the Bunsen burner, the silver zinc coating mixed with copper of the penny and caused the penny to change colour to gold.

#### Follow Up Questions:

1. What is a chemical property of zinc? *HINT: What happened when you heated it?*
2. What is NOT a chemical property of zinc based on what you observed in the lab?
3. What are 2 physical properties of brass?
4. How do you think the police could test the coins to be sure that they are alloys and not real gold? *HINT: They don't want to ruin the coins if they are real gold, what physical properties could they investigate?*