**“Gold” Penny**

**(Mini-Lab Report)**

* **Question:** What is the relationship between the properties of an alloy and metallic bonding?
* **Introduction:** Alloys are mixtures which contain at least one metal. The alloy you will be making in this lab is a mixture of zinc and copper called brass.
* **Safety:** Goggles, gloves and aprons are required for this lab. Zinc chloride is a skin and respiratory irritant. All Bunsen burner precautions should be followed.

**Data Table**

*Write your observations directly on this paper.*

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| --- |
| Part one (Describe the appearance of your pennies) |
| Part two (Describe the appearance of your pennies) |
| Part three (Describe the appearance of your penny) |

* **Procedure:** (✓ *each of the steps as you complete them.)*

Part One:

* 1. Obtain three pennies per person. Make sure they all predate 1982. (such as 1981, 1980, 1979 …)
* 2. Obtain a small amount of steel wool. Polish your pennies until bright and new looking.
* 3. Rinse your pennies with distilled water.
* 4. Observe and record the appearance of your pennies and set one (1) of the three (3) pennies aside.

Part Two:

* 5. Place your 250mL beaker containing the Zn solution on a hotplate and turn it on fully. Before it starts boiling, carefully lower your two (2) clean pennies into the solution using tongs. (don't drop them in, add them gently so they don’t splash) Cover beaker with a watch glass.
* 6. Gently heat the solution until it just begins to bubble. Do not allow the solution to boil vigorously or become heated to dryness. Keep the solution simmering gently until there is a good coating of zinc on your pennies.
* 7. Using tongs, carefully remove your four coins from the beaker.
* 8. Rinse them under running tap water, then gently dry them with a paper towel.
* 9. Observe and record the appearance of your pennies and set one (1) of these two (2) pennies aside.

Part Three:

* 10. Set up and light the Bunsen burner.
* 11. Use the tongs to place one of your pennies into the flame of the Bunsen burner.
* 12. Hold the penny in the flame while flipping constantly only until it changes color, and no longer. Pay attention, it happens quickly (about 10 seconds).
* 13. Immediately rinse your heated coin under running tap water and gently dry it with a paper towel.
* 14. Observe and record the appearance of your penny.
* **Mini-Lab Report Questions:**

1. What is an alloy?
2. Would an alloy be considered a compound or a mixture? EXPLAIN your answer.
3. Describe a metallic bond.
4. What was the metal on the outside of the penny in part 1?
5. What was the metal on the outside of the penny in part 2?
6. What was the alloy on the outside of the penny in part 3?