Activity Sheet 1
Making a Silvery Penny

1. Clean the penny with steel wool until it is shiny all over. (We want the new metal to stick on well!)

2. Using an alligator clip (or paperclip and wire), connect the penny to the NEGATIVE terminal of the battery.

3. Using an alligator clip (or paperclip and wire), connect the paperclip to the POSITIVE terminal of the battery.

DO NOT LET THE ELECTRODES TOUCH!

PUT ON YOUR SAFETY GLASSES BEFORE USING THE CHEMICALS IN THE NEXT STEP.

4. Pour Zinc Sulfate solution (ZnSO₄ – 0.5 Molar) to half-fill a beaker.

5. Place both the penny and paperclip into the beaker. Place the penny on one side of the beaker and the paperclip on the opposite side (see the photo below). Watch carefully to see what happens.

You can take the penny out to watch as the coating grows.

6. For fun you could try switching the electrodes. What happens?
Activity Sheet 1
Making a Silvery Penny (cont’d)

Observations:

1. What happened at the positive terminal?

2. What happened at the negative terminal?

3. Can you smell anything while it is running?

4. Does the zinc coating rub off easily?

5. Can you do anything to make the reaction go faster or slower?

6. What happens if you switch the terminals?
Activity Sheet 2
Making a Copper Nickel

1. Clean the nickel with steel wool until it is shiny all over. (We want the new metal to stick on well!)

2. Using an alligator clip (or paperclip and wire), connect the nickel to the NEGATIVE terminal of the battery.

3. Using an alligator clip (or paperclip and wire), connect the paperclip to the POSITIVE terminal of the battery.

DO NOT LET THE ELECTRODES TOUCH!

PUT ON YOUR SAFETY GLASSES BEFORE USING THE CHEMICALS IN THE NEXT STEP.

4. Pour Copper Sulfate solution (\(\text{CuSO}_4 \ - \ 0.5\ \text{Molar}\)) to half-fill a beaker.

5. Place both the nickel and paperclip into the beaker. Place the nickel on one side of the beaker and the paperclip on the opposite side (see the photo below). Watch carefully to see what happens.

You can take the nickel out to watch as the coating grows.

6. For fun you could try switching the electrodes. What happens?
7. **Observations:**

1. What happened at the positive terminal? Is this different from the penny experiment?

2. What happened at the negative terminal?

3. Can you smell anything while it is running?

4. Does the copper coating rub off easily?

5. Is it uniformly distributed?

6. How thick do you think it is?