Electrolysis—Demonstration

http://media.pearsoncmg.com/bc/bc\_0media\_chem/chem\_sim/electrolysis\_fc1\_gm\_11-26-12/main.html

1. Describe the change in amount of metal on each electrode. How are these changes related?

2. What flows from the + electrode in the external circuit via the wire?

3. What causes the direction of the flow?

4. What flows from the + electrode in the solution?

5. Describe the action that causes the metal ions to plate on to the electrode. Write a chemical equation that summarizes your explanation.

Electrolysis—Experiment

Design an experiment to answer each of the following experimental questions:

-How does the amount of time affect the change in mass on the two electrodes?

-How does the number of amps affect the change in mass on the two electrodes?

-How does the type of metal affect the change in mass on the two electrodes?

For each experiment, include

-Independent variable

-Dependent variable

-Data table

-Summary of results

Electrolysis Example Problems

Example 1 The current in a given wire is 1.80 amp. How many coulombs will pass a given point on the wire in 1.36 minutes?

Example 2 If a constant current of 8.00 amperes is passed through a cell containing Zn2+ for 2.00 hours, how many grams of zinc will plate out onto the cathode?

Example 3 Calculate the amount of time required to produce 1000 grams of magnesium metal by electrolysis of molten MgCl2 using a current of 50 A.

Example 4 What amperage is required to plate out 50.00 grams of Cr from a Cr+3 solution in a period of 8.00 hours?

Example 5 Two cells, one containing aqueous AgNO3 and the other containing CuSO4 are set up in series. In a given electrolysis that results in depositing 1.25 g of silver in the first cell, how much copper should deposit simultaneously in the second cell?