

Wednesday: 5-17-17

Pick up a copy of today's lab(on front desk), apron, goggles.

Today: Voltaic Cell lab (spontaneous reaction. This is how batteries work!)

Cathode = **positive** and Anode is negative(metals are electrodes)

You need a salt bridge which has spectator ions.

You need solutions containing cations of each metal.

Homework: Complete today's lab.DUE TOMORROW Study for test on Monday. Keep working on the semester review objectives and practice test!

READING GUIDES DUE FRIDAY

SAFE SHOES TOMORROW. BRING A METAL OBJECT TO ELECTROPLATE FOR THURSDAY.

Experiment #1: Which combination of metals makes the most voltage?

In this experiment mini-batteries will be made using combinations of five different metals. The voltage of each battery will be measured using a Vernier voltmeter.

Procedure: Cut a piece of filter paper and label it so it looks like Figure-3. Lay your filter paper on a zip-lock baggie. Add a few drops of each metal solution on top of the symbol for each metal. Connect the wet spots of metal solution by soaking a line along the dotted lines with NaNO_3 . Place a metal piece of each metal on the matching zone. You now have 10 different battery combinations to choose from on one piece of filter paper.

Measure the voltage of each battery by pushing down on two of the metals with the red and black Vernier leads. If you get a negative voltage, switch the leads. **Record all voltages as positive numbers.**

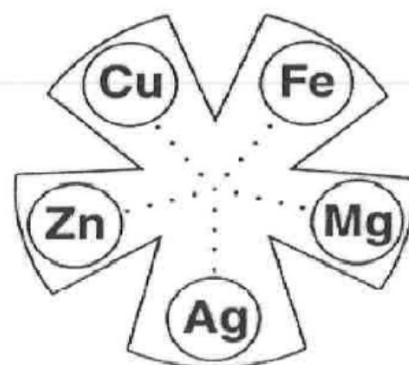


Figure 3.

1. Obtain a paper plate, baggie, precut filter paper.
2. Use a pencil and write symbols of the five metals and draw the line where the salt bridge goes.
3. Sign in on chromebook. Find graphical analysis. Plug in interface and conductivity probe. Open VIEW: METER

meL

Date _____

Gain of e⁻

Number given on meter

Data Part A.

Metal	Metal	Cathode reaction	Anode reaction	Experimental voltage	Theoretical Voltage Value	% error
Copper	Zinc					
Iron	Zinc					
Magnesium	Zinc					
Silver	Zinc					

Calculations for theoretical voltage:

Use page 31 to see what element is reduced. (highest number) and what element is oxidized. (lowest number)

Flip sign on oxidation element and ADD the two to obtain the cell potential.

Calculations for % error:

Data Part B:

Metal	Metal	Cathode reaction	Anode reaction	Experimental voltage	Theoretical Voltage Value	% error

Calculations for theoretical voltage:

Calculations for % error:

Analysis:

- 1. Explain why you would have error in this lab.**
- 2. Which two metals would you choose to mass produce batteries to sell for a profit? Explain your choice.**

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