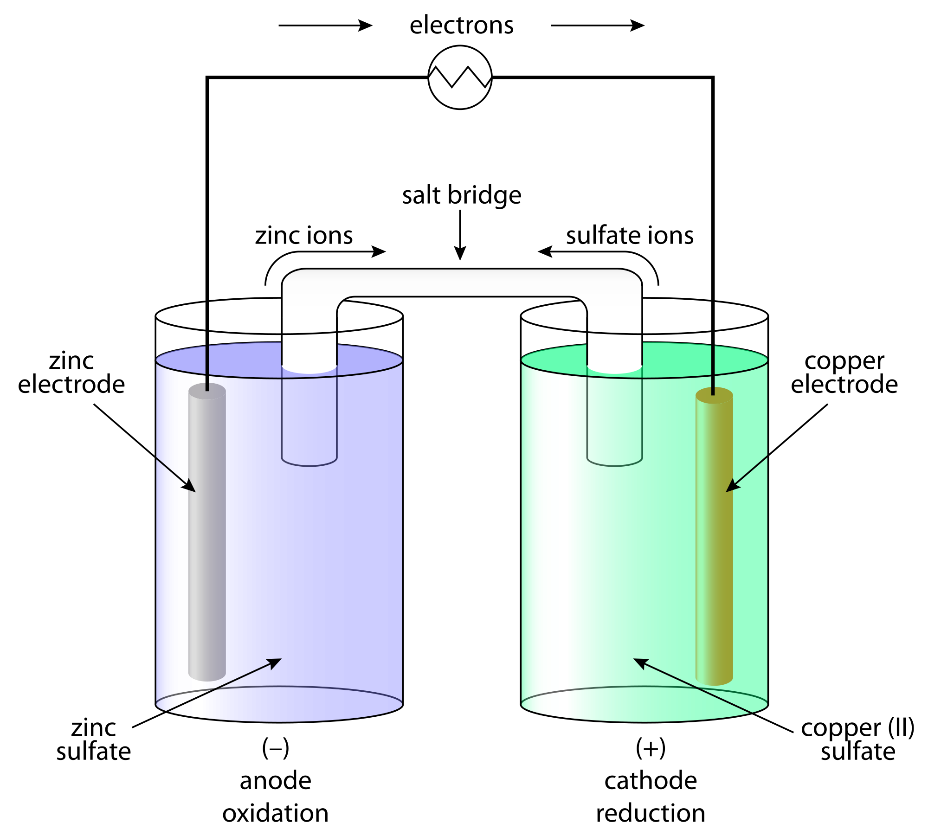
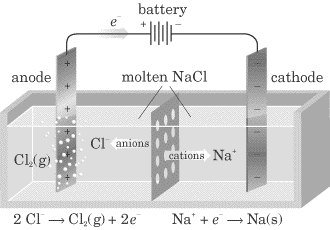
# Station 1: Introduction to Electrochemical Cells

Label the following diagrams for the two types of electrochemical cells:

**Voltaic Cell**

[](http://www.google.com/url?sa=i&rct=j&q=electrochemical+cell+types&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRw&url=http%3A%2F%2Fen.wikipedia.org%2Fwiki%2FGalvanic_cell&ei=A5ouVcRbip7JBL3ggZAI&bvm=bv.90790515,d.cGU&psig=AFQjCNG_Tz6PmTiILl6DXmZXlpjmiaRQgQ&ust=1429203817105523)

**Electrolytic Cell**

[](http://www.google.com/url?sa=i&rct=j&q=electrolytic+cell+types&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRw&url=http%3A%2F%2Fwww.sparknotes.com%2Ftestprep%2Fbooks%2Fsat2%2Fchemistry%2Fchapter6section7.rhtml&ei=tZouVbv7DNaeyASi3oDQCQ&bvm=bv.90790515,d.cGU&psig=AFQjCNEGvEPc8V0U9SPjfff_Wt620PLc7g&ust=1429204019401006)

# Station 2: Voltaic Cells

**Voltaic Cell** - a redox reaction whose two half-reactions are carried out separately, and the electrons given off by the oxidation half-reaction are used to power a device, and then given to the reduction half-reaction. ALSO CALLED A BATTERY (9v) OR CELL (AAA, AA, C, D)

**How a Voltaic Wet Cell Works**:

* Converts \_\_\_\_\_\_\_\_\_\_\_\_\_ energy to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy by the use of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ move from the metal that is \_\_\_\_\_\_\_\_\_\_\_\_ to the metal that is \_\_\_\_\_\_\_\_\_\_\_\_\_
* **Flow of electrons**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

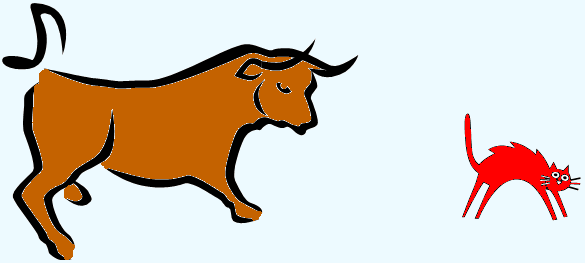
**Parts of a Voltaic Wet Cell:**

**Electrode:**

**Anode:**

**Cathode:**

**\*\*REMEMBER:**

****

**Salt Bridge:**

**External Circuit:**

# Station 3: Electrolytic Cells

1. Define the parts of an electrolytic cell

**Anode:**

**Cathode:**

**Battery:**

**Electrolyte:**

**Flow of electrons:**

**Parts of an Electrolytic Cell**:

* Uses a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ redox reaction (the reaction \_\_\_\_\_\_\_\_\_\_\_\_\_ occur on its own)
* Uses \_\_\_\_\_\_\_\_\_\_\_\_ to\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* This process is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Used for:

1)

2)

3)

# Station 4: Hydrogen Fuel Cell vs Electric Vehicles

1. Write the oxidation and reduction half-reactions for hydrogen fuel cells.

Oxidation Half-Reaction:

Reduction Half-Reaction:

2. Write the oxidation and reduction half-reactions for lithium ion batteries (electric vehicle power source).

Oxidation Half-Reaction:

Reduction Half-Reaction:

3. What are the benefits and limitations (disadvantages) of Hydrogen Fuel Cell vehicles?

Advantages:

Disadvantages:

4. What are the benefits and limitations (disadvantages) of Electric vehicles?

Advantages:

Disadvantages:

5. What type of electrochemical cell is the hydrogen fuel cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. What type of electrochemical cell is the lithium ion battery (electric vehicle)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. Which of these vehicles occur spontaneously? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# SUMMARY of Electrochemical Cells

**Similarities**

* 1.
* 2.
* 3.
* 4.

**Differences**

