

What cell. the fact that a voltaic

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What are they? A voltaic cell is also known as a galvanic cell, it was named/created by Alessandro Volta (voltaic) and Luigi Galvani (galvanic). It is a type of cell that makes electrical energy from the chemical reactions that occur inside itself.

The chemical reaction that occurs inside of the cell is a redox reaction.

Examples: batteries inside your TV controller, batteries inside flashlight.

Examples of types of voltaic cells: 1-Alkaline cell 2-Daniell cell 3-Simple cell 4-

Lead-acid accumulator 5-Dry cell. The fact that a voltaic cell can produce

energy/ electricity is by using Zinc (anode) and Copper (cathode) that are

connected by a wire and that are put in a solution: CuSO_4 . When the wire

and the salt bridge (helps to balance the charges in the galvanic cell, it is

composed of Na^+Cl^- and 2 cotton plugs that won't let the solution of Na^+Cl^- of pouring into the cathode and anode sites) are there, they will

allow electrons to move through the wire(s) that connect(s) Cu (with a strong pull of electrons) to Zn (with a weak pull of electrons) with a LED between the two.

When electrons are in a movement position, they produce or make electricity

which will turn the LED on. We said that there were two chemical reactions:

reduction and oxidation. The cathode (Cu) part is the site where reduction

occurs and the anode is where the oxidation occurs. That because

the electrons are moving from Zn to Cu and the Zn^{2+} that are present on the

anode site come across to the cathode site and react with the Cu^{2+} to make

only Cu? what happens in the Copper site is a reduction process: Cu^{2+}

(aqueous = dissolved in water) + $2e^- \rightarrow \text{Cu}$ (solid metal) And in the Zinc site is

an oxidation process: Zn (solid) $\rightarrow \text{Zn}^{2+}$ (aqueous) + $2e^-$ These two half cells can

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be called: the reduction half cell and the oxidation half cell. We saw in TP that if you only put 1 Zn and 1 Cu, it won't provide enough electricity to turn a LED on. So what we did is we took more half lemons and connected the 3 Zn and 3 Cu with 4 more wires and it made the LED turn on with enough electricity that was moving within the 4 wires. An electrolytic cell is also happening with redox reaction. It is where an electric current will make the transfer of the electrons during/in the redox reaction.

Here, the anode is positively charged and the cathode is negatively charged. The flow of the electrons during the redox goes from the positive (anode) to the negative charge (cathode). The electrolytic cell will convert electrical energy to chemical energy.

A battery is an electrical energy. It is the total opposite of a galvanic cell. It is a type of cell that needs energy and is non-spontaneous so forced. An example of electrolytic cell could be electroplating (it is the process of coating one metal with another. Here, the redox occurs in the one and only section, which is where the anode and the cathode are together so the equations are: Anode ? oxidation = $X^- \rightarrow X + e^-$ And Cathode ? oxidation = $M^+ + e^- \rightarrow M$ Difference between a voltaic and electrolytic cell 1. The Galvanic cell has a salt bridge and the electrolytic doesn't have one.

2. The Electrolytic cell uses a battery to produce energy and the Voltaic cell uses a light/ LED. 3. They have a different flow of the electrons: Voltaic ? from negative (anode) to positive charge (cathode) and Electrolytic ? from positive (anode) to negative charge (cathode). 4. In Galvanic, the energy

goes from the Zinc and the Copper to the light or LED and in Electrolytic, the energy goes from the battery to the Zinc and Copper.

5. The voltaic has two sections in two different containers (the reduction half cell and the oxidation half cell) and the electrolytic has only one section in one container (redox). 6.

Galvanic converts chemical energy to electrical power/energy and electrolytic converts electrical power/energy to chemical energy. 7. Galvanic is a spontaneous and electrolytic is a forced mechanism/flow. 8.

A reaction generates current (galvanic) and a current drives a reaction (electrolytic)