Salt-Water-Battery ❤ Yánshuǐ diànchí

Salt WAter / Ice Cube Tray Designs Seem Most Solid

Powering a 3-6 Volt DC motor w/Salt Water Battery

From the comments:

You can maybe make it an ultra-battery, by coating the metal with graphene. Might up your voltage a bit.

You said you were going to power it from solar, you might want to try to power them

README.md

then :)

Ice Cube Tray Water Battery

Try citric acid, tomato juice, various fluids.

Ice Cube Tray Battery. Includes Theory and Explnation

Simple Ice Cube Tray Battery Tutorial. Lights LED. 1:42 seconds

Easiest to make. Uses vinegar to light an LED.

One minute Ice Cube Vinegar Battery

Vinegar and ice cube design to light an LED.

World's Largest Salt Water Battery

Indian genius kid. Goes through various Cathode/Anode designs.

[Commercial Salt Water Battery Firms} (https://www.youtube.com/results?search_query=aquinon+energy+salt+battery)

Aquion Energy and Greenrock both sell solar batteries.

Homemade Battery! - The DIY "Earth Battery" - Powers Clocks/Watches/Calcs/LED Lights. 4 min

Excellent. Ice cube tray design. Screws wrapped with copper wire. Gets 4-5 volts. Shows larger models. Dirt dried out in a couple of days and loses charge. Add 1 or 2 teaspoons of water.

Powering a radio from a Earth Battery

Good explnation. Enthusiastic. But Doesn't last for long...

Baghdad Batteries

How to make a Salt Water Battery Lamp. `3-4 minutes

Uses Copper and Aluminium Foil as electrodes. Simple wrapped spiral paper design. Soaked.

From the comments: This called a Bagdad battery. I have seen it done many ways. Usually a iron rod core with copper sheet or wire wrapped around it. Simply place in some acidic fluid like salt water, wine or lemon juice. My favorite example of this experiment is a lemon with a copper coin stuck in one side and a steel nail stuck in near the coin. Simply attach a led or some other low voltage device. copper to positive, steel to negative.

How to assemble a Baghdad Battery

Uses same wrapped coil spiral design.

https://en.wikipedia.org/wiki/Baghdad_Battery

Baghdad Battery. Clearly shows Cathode and Anode

Copper Anode Outside.

Aluminium Cathode inside.

Materials: An aluminum can. A sheet of copper foil of 0.3-0.4mm. Two insulating rubber spacers. An engine of a cd rom 2-3 volts, to be recovered from the inside of a PC. 1 liter of water with 3-4 tablespoons of salt for foods.The duration of rotation of the motor is approximately 7-8 minutes. When the salt water loses energy, it must be filled with fresh water and salt. For the success of this experiment it is necessary to have an engine that has a low power consumption 15-20 mA max and a voltage of 2-3 volts of a motor of a cd rom inside the pc. The use of engines for toys are not suitable for this type of experiment.* The copper foil can't be replaced with other metals.

Dirt Battery. Huge, but only gets 1.5 volts

Graphite and magnesium is the best Anode/Cathode pair.. 2 volts.

Graphite does not oxidize at room temperature.

Overview of Earth batteries, 15 minutes

Giant Earth Battery, 175 volts

Electrical conductivity with salt water

Glows brighter just before 2 minutes. Sparks and noise at 3 minutes.

Charge Phone With Lemon (4 Min)

Coke Can Battery

Penny Voltaic Pile

How to make a Coin Battery

3 Penny Battery

Charge Mobile With Salt Water

Graphite pencils as simple electrodes (at 5:30)

DIY Electrolysis Designs

Saltwater battery Using Screws

- Durable, portalbe design.
- Split into compartments, cells.
- No cups so can be easily carried and moved.
- Uses screws and copper. Solder probably unecessary.

Overview of Saltwater Batteries

2:50

- Made of safe and cheap materials.
- Peak power limited by low energy density.
- Non flammable. Pose no risk of explosions.
- Salt water electrolyte.

Drawbacks:

- Peak power limited.
- Efficiency is 90%
- Battery salt water electrolyte limited to 2 volts, must be connected in series to provide useful voltage.

You will need

- Bag of Salt.
- Half a plastic bottle.
- Old battery
- Pliers
- Magnet

Nǐ huì xūyào

- yī dài yán.
- Bàn gè sùliào píng.
- Jiù diànchí
- qiánzi
- cítiě

你會需要

- 一袋鹽。
- 半個塑料瓶。
- 舊電池
- 鉗子
- 磁鐵

Mobile Phone Battery Charger

Shows how to take apart a battery. One Graphite rod and Zinc plate inside.

https://www.youtube.com/watch?v=VM1LWwMQdRM

Battery Array, Can be Scaled.

This video shows the principles clearly.

The wires can be twisted together, you don't need to solder.

https://www.youtube.com/watch?v=BPUKbcWt1uY

How to make a Salt Water Light. 2 Minute Video.

https://youtu.be/99tJGX5PIUw

- Salt, Water, Plastic Bottles, Magnet.

Aluminum Can Battery

Lemon Battery, 3 Minute Primer

https://www.youtube.com/watch?v=GhbuhT1GDpI

Lemon Battery Charger

https://www.youtube.com/watch?v=fA2x3XsciHI

What Fruit Produces the Most Electricity?

https://www.youtube.com/watch?v=0Mux8HScrTA

Homemade batteries. Coke can battery. Good overview of science.

https://sciphile.org/lessons/survey-homemade-batteries

Homemade Voltaic Pile

https://www.youtube.com/watch?v=au7ayZWTfbg

Basic Skills

Lighting a Bettery with a Cell, 2 minute video.

How to get a light bulb to glow with a battery. 2 minutes

Multiple ways to get a light bulb to glow with a battery

Neodymium magnet easy attachment trick at 11:20...

Everything you wanted to know about lighting a bulb with a battery and a wire

3 Ways to Attach an Alligator Clip to a Wire

Fork/screw. Crimping and soldering.

Can wrap a wire round the screw.

How to crimp an alligator clip to a wire. 90 seconds

Shows the wrong way first. Correct method starts at 50 seconds.]

Homemade Alligator Clips from Clothes Pegs

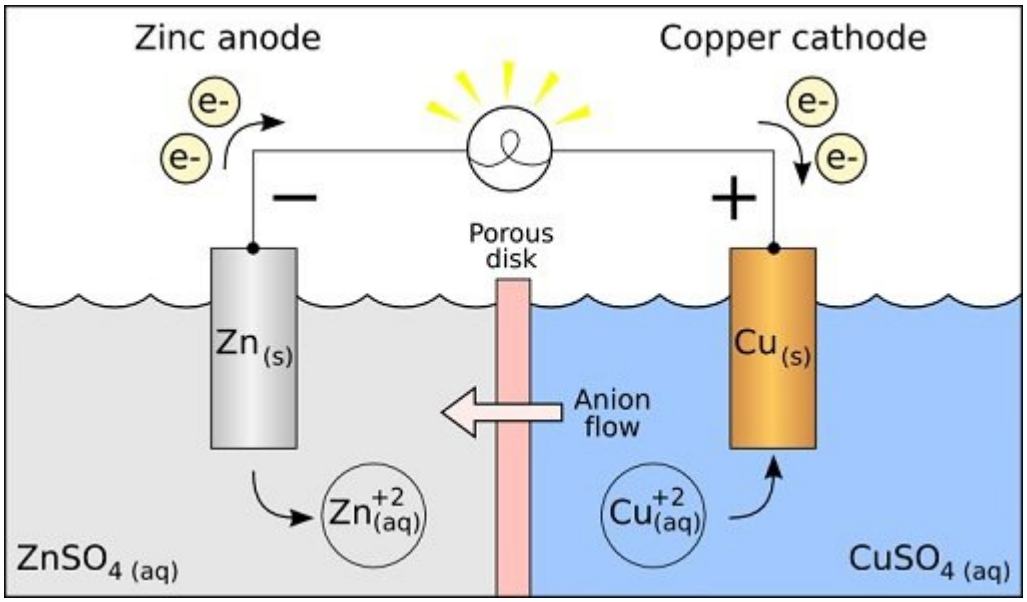
Electrolysis Basics

[Basics of electrolysis][https://www.youtube.com/watch?v=T-OwWOYHhMI])

The bubbles are hydrogen and chlorine. The solution produced is weak lye.

💜 THEORY:

How do batteries work?



Yashas V Rao

.

- When two dissimilar metals or metallic compounds are immersed in an electrolyte, there will be a potential difference produced between these metals or metallic compounds.

Electrolyte

It is found that, when some specific compounds are added to water, they get dissolved and produce negative and positive ions. This type of compound is called an electrolyte.

The popular examples of electrolytes are almost all kinds of salts, acids, and bases etc.

The energy released during accepting an electron by a neutral atom is known as electron affinity.

As the atomic structure for different materials are different, the electron affinity of different materials will differ. If two different kinds of metals or metallic compounds are immersed in the same electrolyte solution, one of them will gain electrons and the other will release electrons.

Which metal or metallic compound will gain electrons and which will lose them depends upon the electron affinities of these metals or metallic compounds.

The metal with low electron affinity will gain electrons from the negative ions of the electrolyte solution.

On the other hand, the metal with high electron affinity will release electrons and these electrons come out into the electrolyte solution and are added to the positive ions of the solution. In this way, one of these metals or compounds gains electrons and another one loses electrons.

As a result, there will be a difference in electron concentration between these two metals.

- This difference of electron concentration causes an electrical potential difference to develop between the metals.
- This electrical potential difference or emf can be utilized as a source of voltage in any electronics or electrical circuit.

This is a general and basic principle of battery.

How Do Batteries Work? Basic Article

How Do Batteries Work, TedEd

- Battery technology started in 1780s with Galvani and Alessandro Volta.

** Volta's first experient:**

Alternating layers of zinc and copper, separated by paper cloth in a salt water solution.

** Oxidation and Reduction**

- Zinc oxidizes, loses electrons, which are gained by the ions in the water.

- This process is called reduction, and produces hydrogen gas.
- Oxidation-Reduction cycle creates a flow of electrons between two substances.
- Hook a vaccuum or light bulb up between the two, you'll give it power.
- A metal oxidizes, sending electrons to do some work, before they are regained by a substance being reduced.
- A battery has a finite supply of metal. Once most of it has oxidised, the battery dies.

How do Batteries Work? Yandex Search

Oxidation: Losing electrons.

Cathodes, Anodes, Electrolytes

Graphite(Carbon Material) can ben used as used as Anode. The reason behind the use of Graphite can be explained due to its internal structure.

ANODE MATERIAL	SPECIFIC CAPACITY, (mA h)/g	VOLUME CHANGE, %	BENEFITS	CHALLENGES
Lithium	3,862	None	Highest energy density; light	Unstable; slow charge rate
Silicon	3,600	320%	High energy density	Capacity fade due to damage from expansion and contraction
Aluminum	2,235	604	Better energy density than graphite	Worse energy density and more expansion than silicon
Tin	990	252	Stabler than silicon	Worse energy density than silicon
Graphite	372	10	Stable; widely used	Poor energy density

The anode is always where oxidation happens

The cathode is always where reduction happens. (Vowel goes with vowel and consonant goes with consonant).

What is reduction and oxidation in chemistry?

There are technically a number of different ways by which you can define these processes, I will be explaining most of them.

Oxidation can be defined as:-

- Addition of Oxygen or an electronegative element.
- Losing of electrons Removal of Hydrogen or an electropositive element. Increase in the oxidation number If any one of these conditions are satisfied, the process is an oxidation process.

Reduction can be defined as:-

Addition of hydrogen or an electropositive element. Removal of Oxygen or an electronegative element. Gaining of electrons. Decrease in oxidation number. Normally, we use the definitions which are in bold because both of them technically refer to the above two statements.

- Cells are comprised of 3 essential components.

OILRIG is an acronym to help remember, Oxidation Is Losing electrons, Reduction Is Gaining electrons.

ANODE - REDUCING - RELEASE ELECTRONS

CATHODE - OXIDIZES - REDUCED/REDUCTIOL - AQUIRES ELECTRONS

- The Anode is the negative or reducing electrode that releases electrons to the external circuit and oxidizes during an electrochemical reaction.

- The Cathode is the positive or oxidizing electrode that acquires electrons from the external circuit and is reduced during the electrochemical reaction.

The Electrolyte is the medium that provides the ion transport mechanism between the cathode and anode of a cell. Electrolytes are often thought of as liquids, such as water or other solvents, with dissolved salts, acids, or alkalis that are required for ionic conduction. It should however be noted that many batteries including the conventional (AA/AAA/D) batteries contain solid electrolytes that act as ionic conductors at room temperature

The species which donates electrons is reductant.

The one which accepts electrons oxidant.

Oxidation: removal of electrons

Reduction: addition of electrons

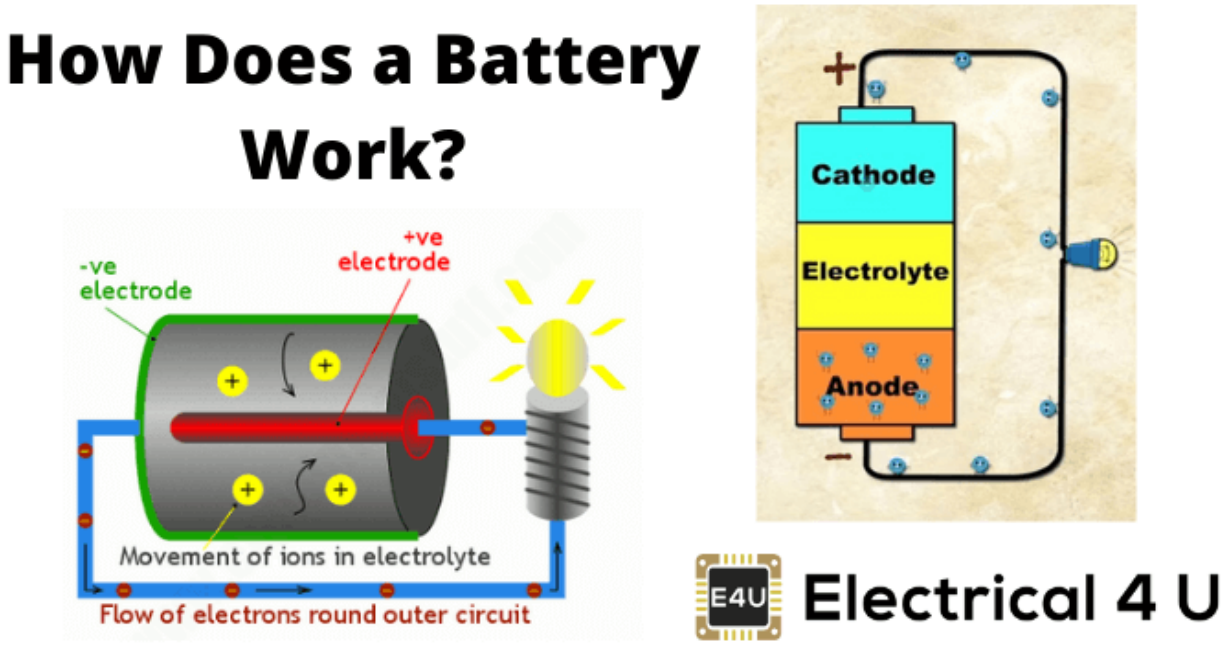
The one which is undergoing oxidation is called reductant.

The one which is undergoing reduction is called oxidant.

Voltaic Cells

Some metals lose electrons more readily than other metals.

- Current flows out of the cathode. A useful mnemonic for remembering this is CCD: Cathode Current Departs.
- Copper is an anode. An element that gains electrons are used as anode, and those lose electrons used as cathode
- This can be exploited to produce a flow of electrons from one piece of metal to another.
- Submerge two pieces of different metals in a conductive solution, such as a solution of metal salts.
- Zinc and copper can be used to make a voltaic cell because zinc gives up electrons more readily than copper. The metal plates are called the electrodes: the anode and the cathode.



Lemon Battery

A battery can be made using a piece of fruit or a vegetable such as a lemon or a potato to provide the electrolyte. The juice inside is conductive so when two pieces of metal, such as a copper penny and a zinc nail, are pushed into the fruit, an electric current is produced. This can be used to power a small electronic device with a low power requirement, such as a digital display.

Anodes and Cathodes

Common Materials Used For Anodes and Cathodes

What is the best metal to use for electrolysis of water?

** You can use pretty much any metal for the cathode (the electrode that evolves hydrogen), but the anode is more difficult.**

You need something that will resist corrosion while remaining electrically conductive. The reason this is difficult is because the anode is generating oxygen, and so the anode environment is strongly oxidizing and fiercely corrosive.

If cost is no object, you can use platinum (or probably gold, or other noble metals). These work because the metals are more stable than their oxides, and so they simply won't corrode under normal conditions.

Lead will work, particularly if you add sodium sulfate salt to the water to make the water more conductive. The lead will form a layer of PbO2, which is one of the few metal oxides that are conductive. Sulfate in the water will keep the lead oxide from dissolving too quickly. But, it does corrode somewhat, and then you have lead in your water.

A compromise is what are referred to as "Dimensionally Stable Anodes". These are a titanium base, coated with a very thin layer of "mixed metal oxides", which are proprietary mixtures but I believe they are mostly RuO2 and/or IrO2. These are also electrically-conductive oxides, but unlike PbO2, they are pretty much insoluble in most solutions. I use these in my laboratory, and they last for years. They are fairly pricey (a 1/2 inch diameter rod 4 feet long cost me $140), but if you want a long-lasting, trouble-free anode, they are worth it.

Thanks Imgur!

Extra Notes

🔴🟠🟡🟢🔵🟣🟤⚫⚪🔵🛑⭕

🟥🟧🟨🟩🟦🟪🟫⬛⬜🔲🔳🔶☑️✔️❌

❤️🧡💛💚💜💙🤎🖤🤍❤️💔❤️‍🔥💘💝💖💗❤️‍🩹❣️💕♥️♡

🔺🔻🔷🔶🔹🔸♦️💠💎💧🧊

Vortex

https://www.youtube.com/watch?v=Jlt7RfXBWlU

How to Open an Old Battery

Mad Russian Scientist Opens Battery. 2 Minutes.

https://youtu.be/fMlu4rd1dk4

One Minute Demonstration of Salt Water Light

https://www.youtube.com/watch?v=b9LeQfBxHuk

- Take Pliers, peel the Battery top.
- You will see the lid underneath.

Releases

No releases published
Create a new release

Packages

No packages published
Publish your first package