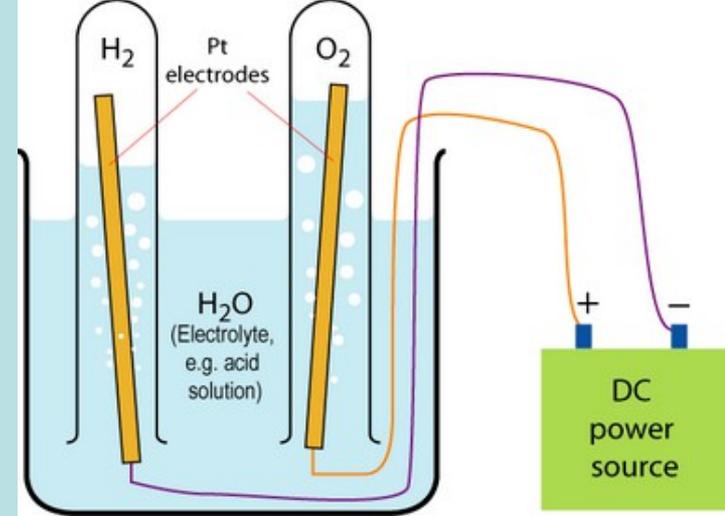


# Science

The word "Science" is rendered in a stylized, multi-colored font. The 'S' is blue with a spiral pattern. The 'c' is green. The 'i' is blue with a globe as its dot. The 'e' is orange. The 'n' is red with a sunburst above it. The 'c' is blue with a curved arrow. The final 'e' is yellow and shaped like a lit lightbulb. Below the letters are blue wavy lines representing water.

*Explore The Possibilities*

# Definitions



*Anode n.*

1. A positively charged electrolyte

*cathode n.*

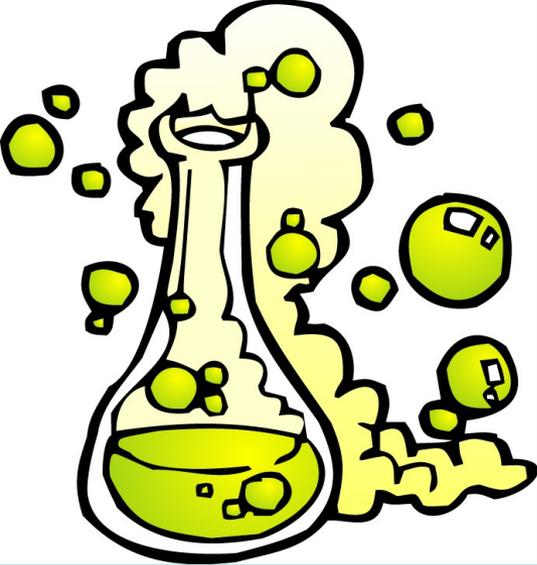
1. A negatively charged electrode, as of an electrolytic cell, a storage battery, or an electron tube.
2. The positively charged terminal of a primary cell or a storage battery that is supplying current.

*Electrolyte n.*

1. A chemical compound that ionizes when dissolved or molten to produce an electrically conductive medium.
2. *Physiology* Any of various ions, such as sodium, potassium, or chloride, required by cells to regulate the electric charge and flow of water molecules across the cell membrane.

*Electrode n.*

1. A solid electric conductor through which an electric current enters or leaves an electrolytic cell or other medium.
2. A collector or emitter of electric charge or of electric-charge carriers, as in a semi conducting device.



# Product

Aqueous copper Sulphate - Products

**Copper (II) sulphate**, also known as **cupric sulphate** or copper sulphate, is the chemical compound with the chemical formula  $\text{CuSO}_4$ . This salt exists as a series of compounds that differ in their degree of hydration.

Dilute sulphuric acid – Products

**Sulphuric acid** is a highly corrosive strong mineral acid with the molecular formula  $\text{H}_2\text{SO}_4$ . The historical name of this acid is **oil of vitriol**.

Aqueous copper - chloride

**Copper (II) chloride** is the chemical compound with the formula  $\text{CuCl}_2$ . This is a light brown solid, which slowly absorbs moisture to form a blue-green hydrate. The copper (II) chlorides are some of the most common copper (II) compounds, after copper sulphate.

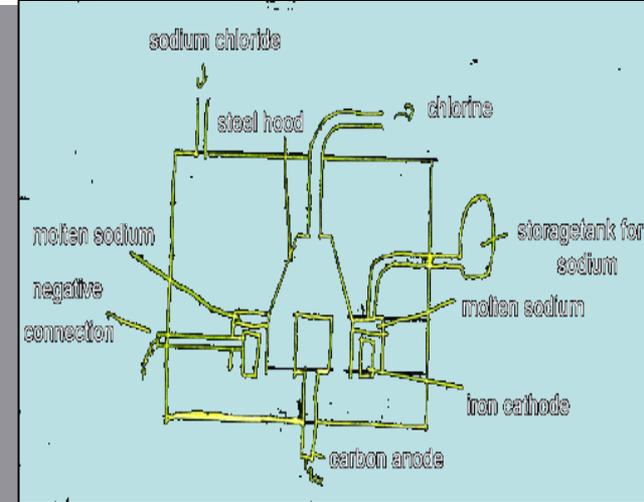
Molten Lead - Bromine

This experiment demonstrates that conduction is only possible where **lead (II) bromide** is molten, and that metallic lead and bromine are the products of **electrolysis** of the molten electrolyte. This is a demonstration that can be done as an introduction to studying electrolysis.

# Industrial Processes:



Sodium chloride dissolved in water is called brine.  
Electrolysis of brine gives hydrogen at the cathode and chlorine at the anode.  
You must know how to test for hydrogen and chlorine gas.  
Sodium hydroxide remains dissolved in the solution.  
This is an important industrial process.



## Extracting aluminium:

You need to pass an electric current through the molten aluminium oxide which is the ore for alluvium and then you get pure aluminium at the bottom because its denser than aluminium oxide. Carbon dioxide is produced as well because the metals used to pass the electric current are carbon and the co-sign reacts with the carbon to create carbon dioxide.



## Electroplating of metals:

**Electroplating** is a plating process in which metal ions in a solution are moved by an electric field to coat an electrode. The process uses electrical current to reduce captions of a desired material from a solution and coat a conductive object with a thin layer of the material, such as a metal. Electroplating is primarily used for depositing a layer of material to bestow a desired property (e.g., abrasion and wear resistance, corrosion protection, aesthetic

# SCIENCE!

## Referring copper by electrolysis with copper electrodes:

In chemistry and manufacturing, **electrolysis** is a method of using a direct electric current to drive an otherwise non-spontaneous chemical reaction. Electrolysis is commercially highly important as a stage in the separation of elements from naturally occurring sources such as ores using an electrolytic cell.