

CHEMICAL EFFECTS OF CURRENT

TO BE COVERED

- ❖ CONDUCTION TESTING
- ❖ CHEMICAL EFFECTS
 - ❖ ELECTROLYSIS
 - ❖ ELECTROPLATING

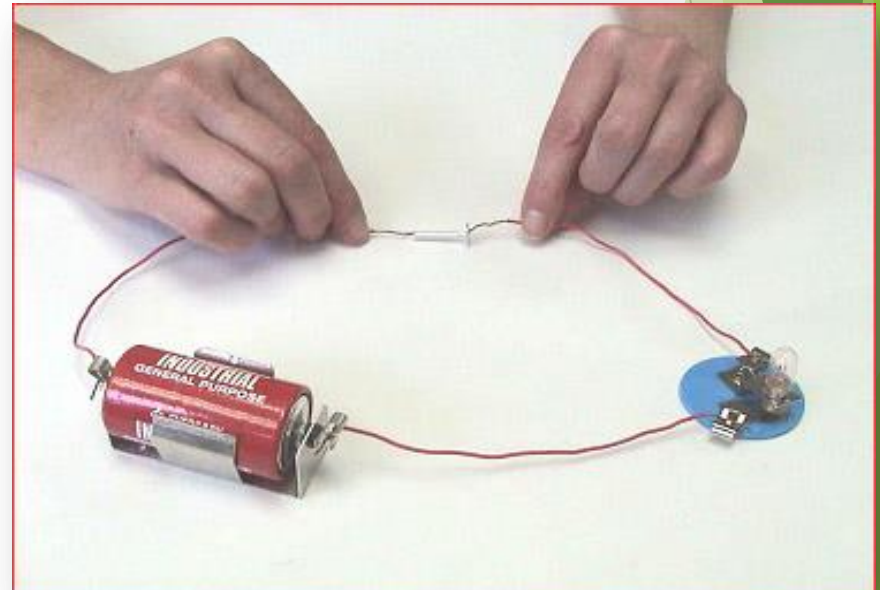
Conduction tester :-

A conduction tester is a device used to determine whether a substance is a good or poor conductor of electricity.

a) Conduction tester using a torch bulb :-

A simple conduction tester has an electric cell and a torch bulb.

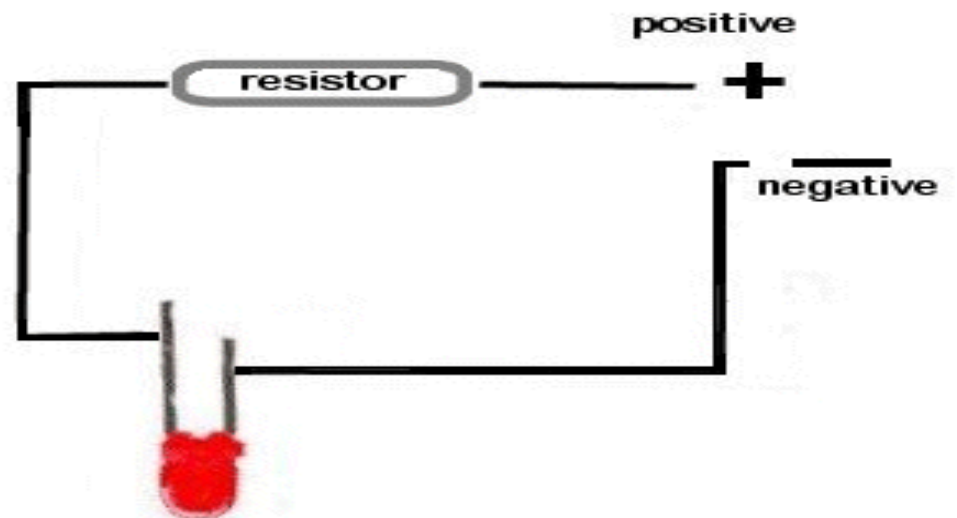
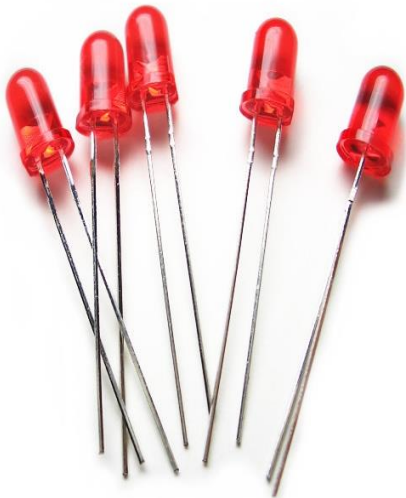
If the material is a good conductor, the bulb glows and if it is a poor conductor the bulb does not glow.



b) Conduction tester using LED :-

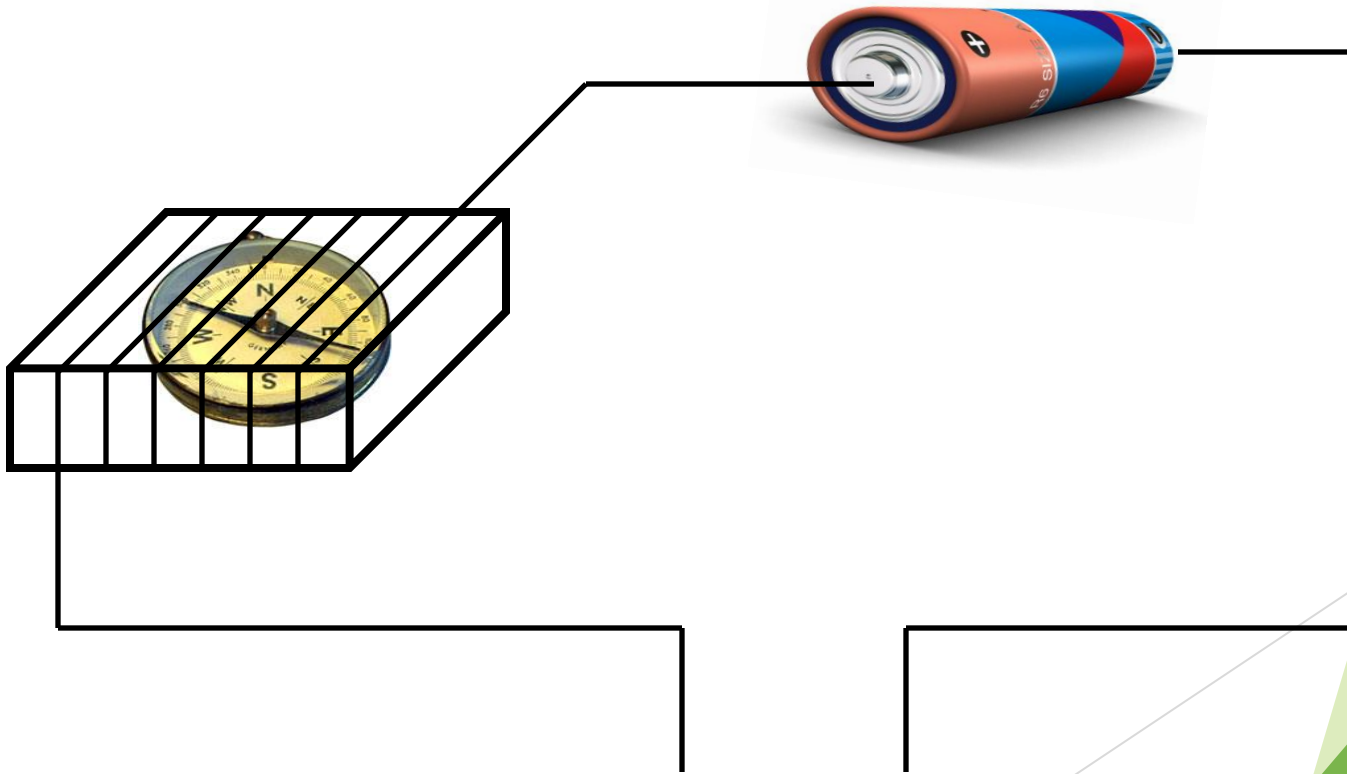
Sometimes the current flowing through the circuit may be too weak. Then an LED can be used in the circuit.

LED glows even when a weak current flows in the circuit.



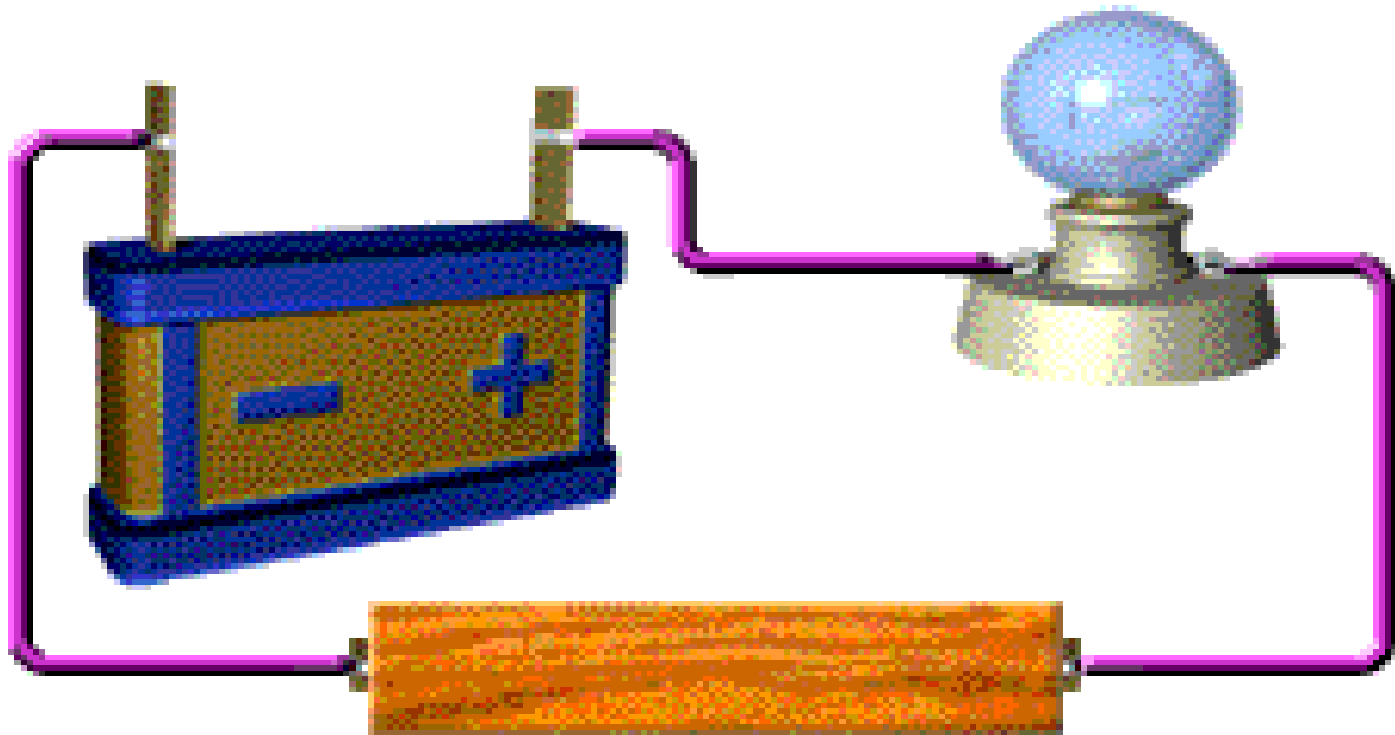
c) Conduction tester using a magnetic compass :

If a magnetic compass is kept near a wire and current flows through the wire, the magnetic needle gets deflected.



The magnetic needle gets deflected even if a weak current flows in the circuit.

Electrical conductivity of solids :-



wood

CONDUCTORS

Solids which allow easy passage of electricity

Eg :- copper, steel, iron, aluminium etc.

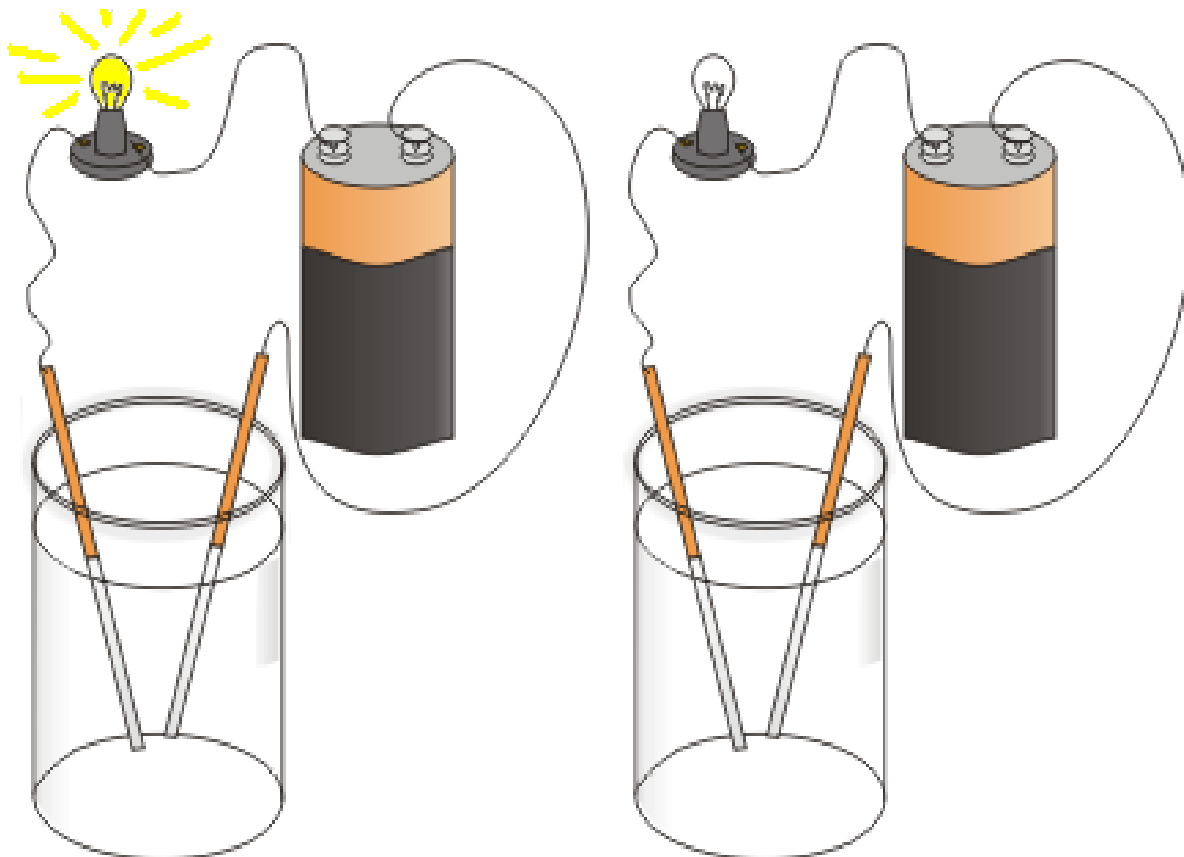
INSULATORS

Solids which do not allow easy passage of electricity

Eg :- wood, plastic, rubber, glass etc.

Electrical conductivity of liquids :-

Solutions of acids, bases and salts are conductors of electricity



GOOD CONDUCTORS

Some liquids are good conductors of electricity.

Eg :- tap water, salt solution, hydrochloric acid, sodium hydroxide etc.

BAD CONDUCTORS

Some liquids are poor conductor of electricity .

Eg :- distilled water, sugar solution, kerosene, spirit etc.



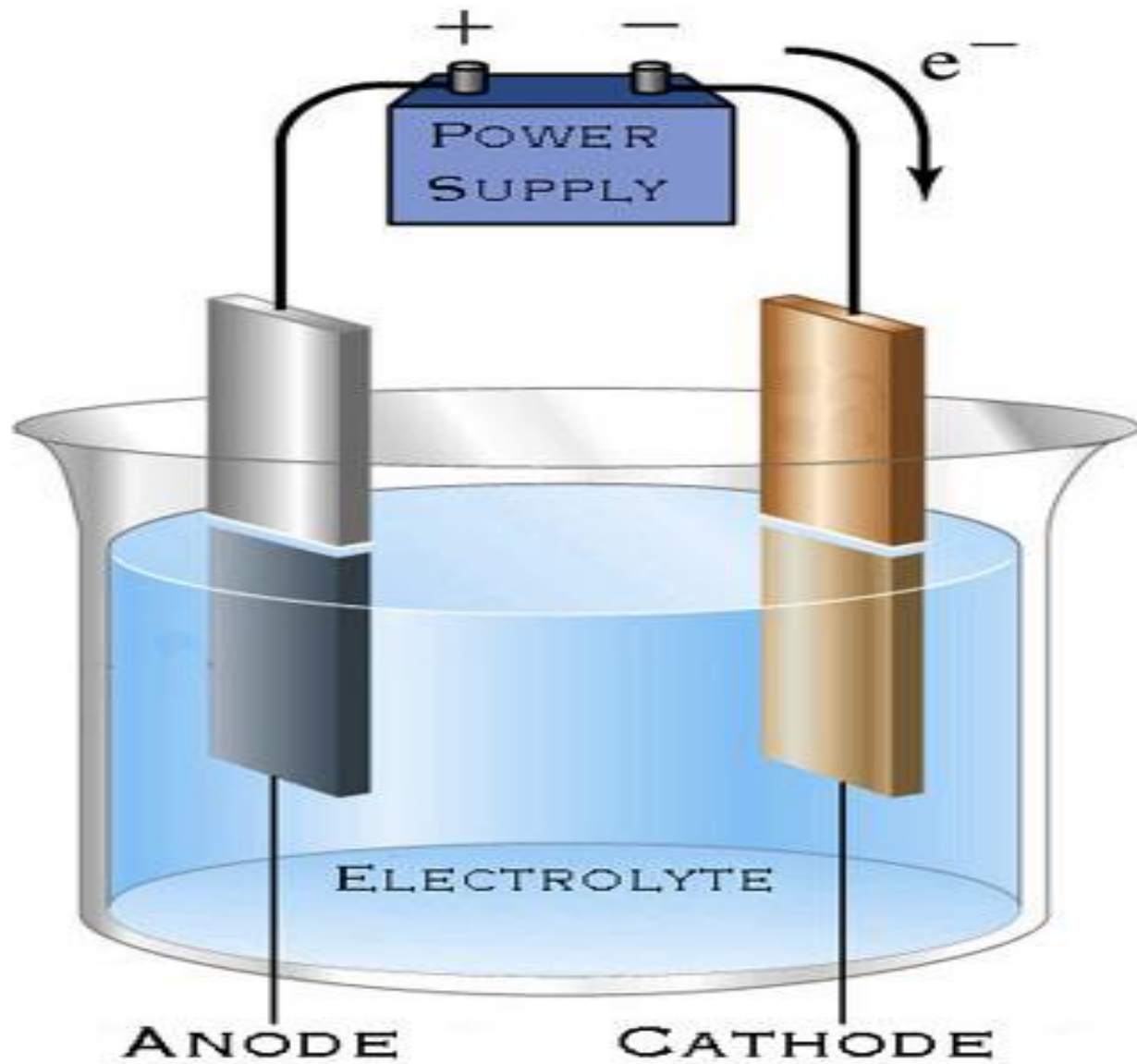
Chemical effects of electric current :-

When electric current passes through a conducting solution, it causes chemical reactions. This is called

CHEMICAL EFFECT OF ELECTRIC CURRENT.

Chemical effect of electric current may cause :-

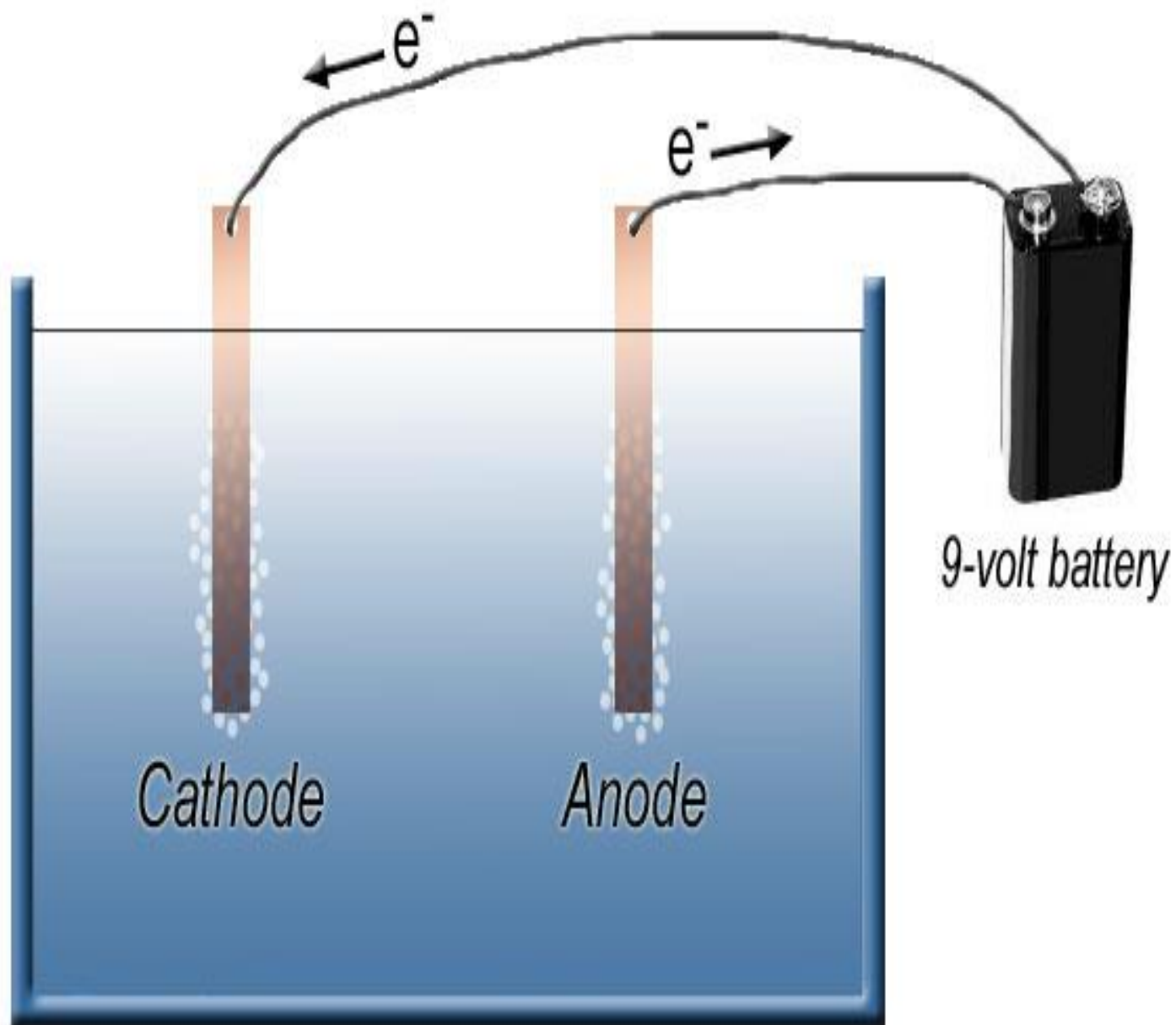
- i) Formation of gas bubbles at the electrodes.**
- ii) Deposit of metal on the electrodes.**
- iii) Change in colour of the solution.**



Electrolysis of water :-

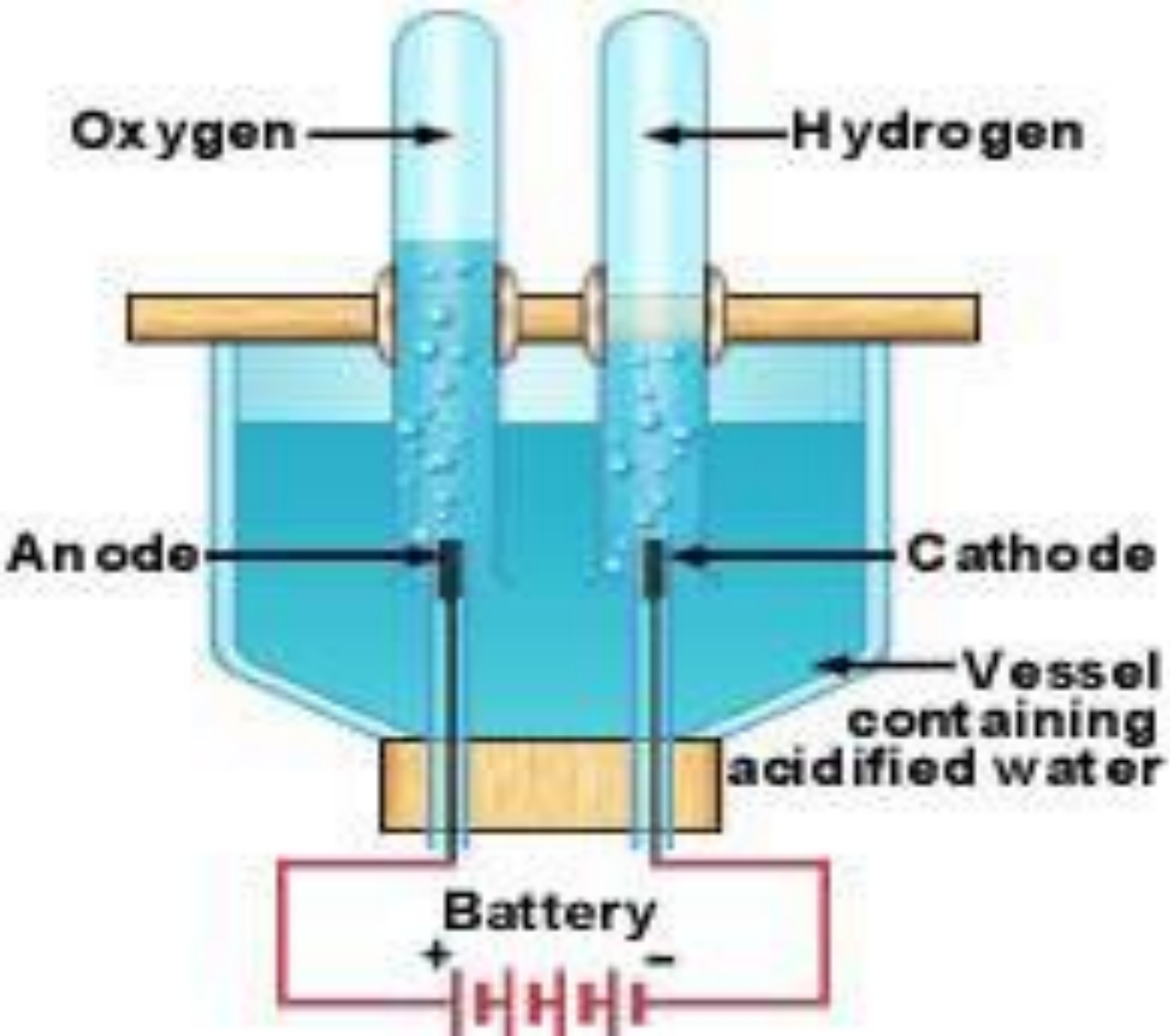
When electric current is passed through water, it splits up into hydrogen and oxygen. This is called ELECTROLYSIS OF WATER.

When electric current is passed through water oxygen gas bubbles are produced at the electrode connected to the positive terminal of the battery and hydrogen gas bubbles are produce at the electrode connected to the negative terminal of the battery.



Set-up for electrolysis experiment

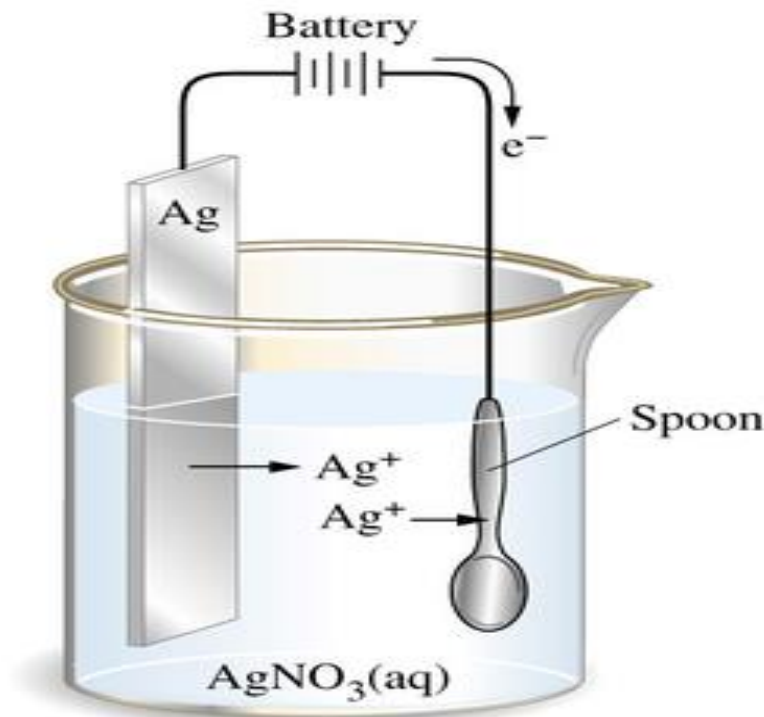
When electric current is passed through water oxygen gas bubbles are produced at the electrode connected to the positive terminal of the battery and hydrogen gas bubbles are produced at the electrode connected to the negative terminal of the battery.



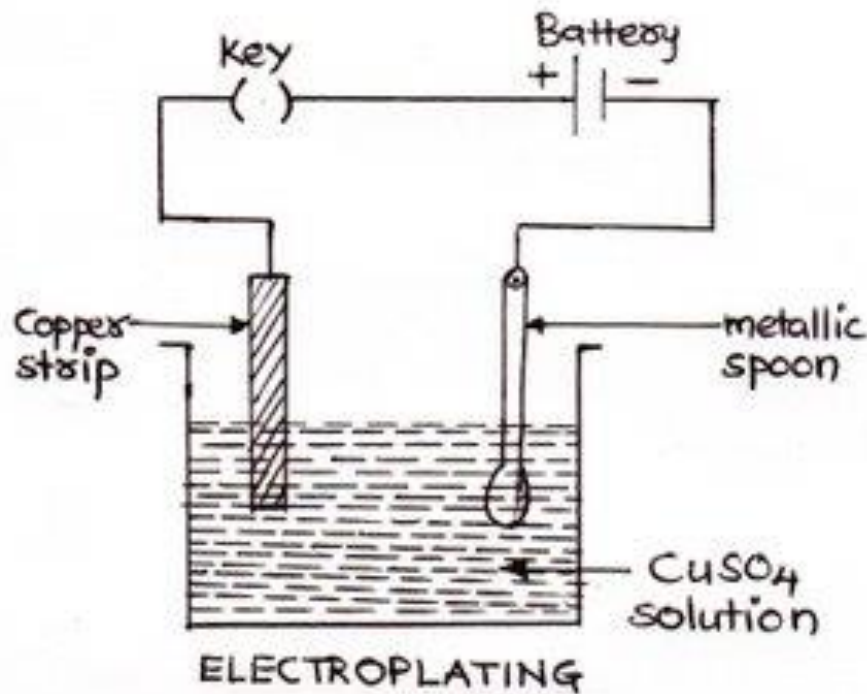
Electroplating :-

The process of depositing a layer of any desired metal on another material by means of electricity is called **ELECTROPLATING**.

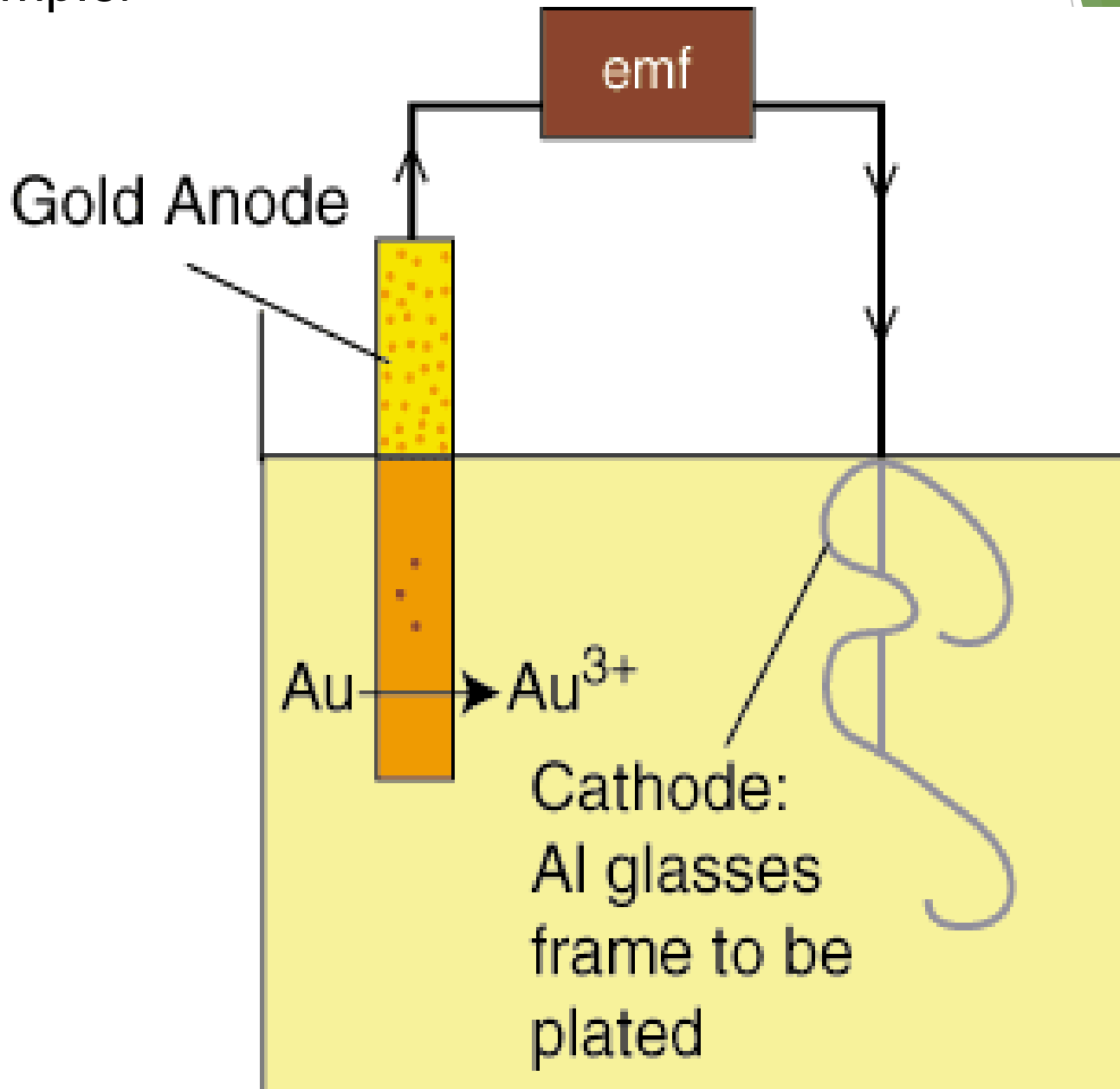
Example:



For electroplating of copper on an object, the object is dipped in acidified copper sulphate solution and connected to the negative terminal of a battery. A copper strip is dipped in the solution and connected to the positive terminal of the battery. When electric current is passed through the solution, copper from the copper strip is deposited on the object.



Example:



Uses of electroplating :-

Electroplating is used in industry for coating metal objects with a thin layer of a desired metal.

Chromium has a shiny appearance and it does not corrode. Chromium plating is done on objects like bicycle parts, car parts, taps, gas burners, wheel rims etc.



Jewellery makers electroplate gold and silver on less expensive metals to give an appearance of gold or silver.

Tin cans used for storing food are electroplated with tin over iron because tin is less reactive than iron and protects iron from corrosion.

Iron objects are coated with zinc to protect it from corrosion.



THE END