What is electrolysis?

Electrolysis can be defined as the **decomposition** of compounds which happens when **direct current** passes through a solution or molten compound.

Terms used in electrolysis

Electrolyte

This can be defined as a **liquid** which conduct elections.

Types of electrolyte

Strong Electrolyte: These are strong acids and strong bases/alkali's.

Weak Electrolyte: These are weak acids and weak bases/alkali's.

Electrode

This is a metal rod, plate or wire, which conducts electricity in an electrolytic cell.

Anode: This is the positive electrode through which conventional current enters and electrons leave.

Cathode: This is the negative electrode through wich conventional current leaves and electrons enter.

Electrolytic Cell

This is the setup of two electrodes, placed in an electrolyte, used in the electrolysis of substances.

Fradays 1st law of electrolysis

Faraday's first law of electrolysis states that the amount of reaction that occurs at any electrode during electrolysis by a current is **directly proportional** to the quantity of electric current passed through the electrolyte

Mathematically

$M \propto Q$

$M=zQ$

But, $Q=IT$

So, $M=ZIT$

Where:
z = electrochemical equivalent {96500}

Product Formation

This involves the reaction which takes place between the anode and cathode.

$M=ZIT$ -- (i)

$M=RAM \times IT/f$ --(ii)

$M=MF/f \times IT$ -- (iii)

$V/MV = IT/f$ -- (iv)

Note that:
' / ' means division

Faradays 2nd law of electrolysis

The masses of **different** ions liberated at the electrodes when the **same** amount of electricity is passed through **different** electrolytes is **directly** proportional to their chemical equivalents

Mathematically

$n \propto 1/e$

$n=k/e$

$k=ne$

So, $ne(1)=ne(2)$

Cost of electricity

$Q1/Q2 = C1/C2$

Where:

C=cost of electricity

Q=quantity of electricity

By **tracietracietraciee**

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