NOW TRY IN ENGLISH CLIL

Redox

Redox reactions include all chemical processes in which atoms have their oxidation number (oxidation state) changed.
This can be a simple redox process, such as the oxidation of carbon to yield carbon dioxide. It could be the reduction of carbon by hydrogen to yield methane, or it could be the oxidation of sugar in the human body, through a series of very complex electron transfer processes.
The term redox comes from the two concepts of reduction and oxidation. It can be explained in simple terms: oxidation describes the loss of an electron by a molecule, atom or ion. Reduction describes the uptake of an electron by a molecule, atom or ion.
However, these descriptions (though sufficient for many purposes) are not truly correct. Oxidation and reduction properly refer to a change in oxidation number; the actual transfer of electrons may never occur.
Thus, oxidation is better defined as an increase in oxidation number, and reduction as a decrease in oxidation number.
In practice, the transfer of electrons will always cause a change in oxidation number, but there are many reactions which are classed as «redox», though no electrons are transferred (such as those involving covalent bonds).
The terms «oxidation» and «reduction» because, in a chemical reaction, one cannot occur without the other; electrons lost by one compound must be gained by another. Reduction can also be considered to be the reducing of an atom's positive charge, and oxidation its opposite (gaining positive charge).

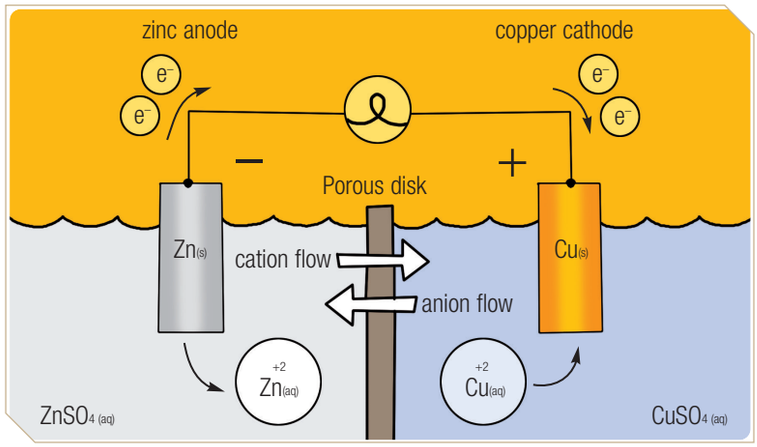
(Adapted from Wikipedia)

Electrochemistry

Several Kinds of battery

Several Kinds of battery

Electrochemistry is a branch of chemistry that studies the reactions which take place at the interface of an electronic conductor (the electrode composed of a metal or a semiconductor, including graphite) and a ionic conductor (the electrolyte). If a chemical reaction is caused by an external voltage, or if a voltage is caused by a chemical reaction, as in a battery, it is an electrochemical reaction. In general, in electrochemistry an oxidation and a reduction reaction is separated in space. The direct charge transfer from one molecule to another is not the topic of electrochemistry. An electrochemical cell is a device capable to produce electric current by a spontaneous redox reaction. This kind of cell is also known as Galvanic cell or Voltaic cell, named after by Luigi Galvani and Alessandro Volta. Both scientists conducted several experiments on chemical reactions and electric current during the late 18th century.



Daniell's cell pattern

Walther Nerst

The standard reduction potentials table is determined in a modified version of galvanic cell using an hydrogen electrode as reference, standard reduction potential for that substance is zero. Standard electrode potential is the value of the standard emf of a cell in which molecular hydrogen under standard pressure (1 atm) is oxidized to solvated protons at the left-hand electrode.

The cell potential depends on the difference between each half cell potential. Conventionally the potential associated with each electrode is chosen as the reduction takes place on the chosen electrode, hence standard electrode potential are tabulated on reduction potentials, thus tables are built on standard reduction potentials noted as.

(Adapted from Wikipedia)

Activities

Match the words in table A with the English equivalent in table B. Use a dictionary if needed.

Table A

A	Pila
B	Elettrolisi
C	Corrosione
D	Elettrodo
E	Passivazione
F	Rame
G	Zinco
H	Argento
I	Idrogeno
J	Accumulatore
K	Solfato rameico
L	Titolazione
M	Ponte salino
N	Solfato di zinco
O	Platino
P	Cloruro di argento
Q	Cloruro di potassio
R	Pila a combustibile
S	Ruggine
T	Piaccametro

Table B

1	Zinc sulphate
2	Electrode
3	Platinum
4	Passivation
5	Fuel cell
6	Silver
7	Saline bridge
8	Corrosion
9	Rust
10	Hydrogen
11	Potassium chloride
12	Zinc
13	Titration
14	Electrolysis
15	pH-meter
16	Accumulator
17	Copper(II) sulphate
18	Cell
19	Silver chloride
20	Copper

Keys

Match the words in table A with the English equivalent in table B. Use a dictionary if needed.

Table A	Table B
A	18
B	14
C	8
D	2
E	4
F	20
G	12
H	6
I	10
J	16
K	17
L	13
M	7
N	1
O	3
P	19
Q	11
R	5
S	9
T	15