

Weekly School –Sabaragamuwa –Provincial Educational Department

Subject- Science

–Week august 16- 20

Grade- 11

Prepared by zonal educational office – kegalle

ELECTRO CHEMISTRY

In our everyday life, we frequently use equipment powered by domestic electricity as well as appliances operated by electro chemical cells. Some examples are given below.

Equipment powered by domestic electricity	Equipment powered by Electrochemical cells
Iron	Calculator
Heater	Clock
Rice cooker	Toy cars
Refrigerator	Mobile phones

In electrochemical cells, the chemical energy stored in them is converted to electrical energy.

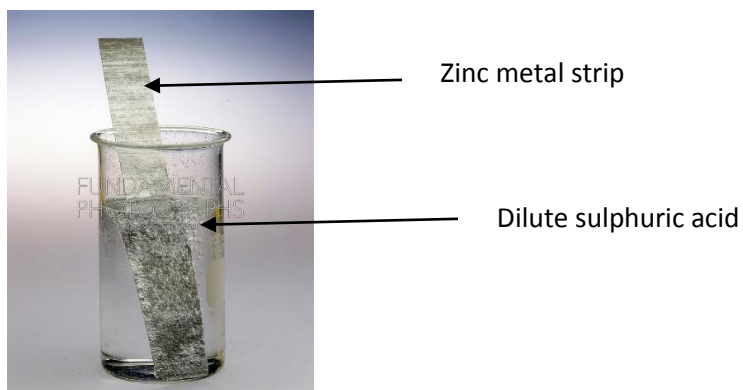
- We can show it as an energy transformation.

Chemical energy in electro chemical cells



Electrical energy

Let's do an activity to see the reaction of chemical cells.

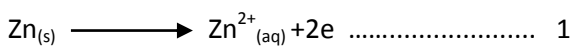


Place a strip of zinc metal sheet in the beaker so that a part of it dips in the dilute Sulphuric acid solution.

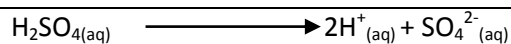
- Observations**
- 1. Gas bubbles are liberated near the Zinc strip.
 - 2. Zinc strip dissolves gradually.

Let's find the reasons for these observations.

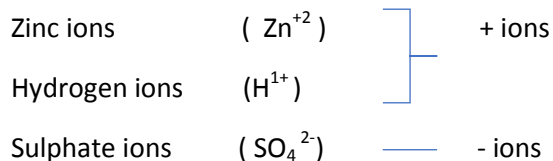
Zinc atoms (Zn) go into the solution as Zinc ions (Zn^{+2}) leaving electrons on the metal.



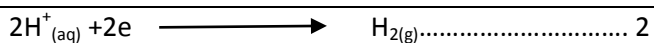
Sulphuric acid dissociates into hydrogen ions (H^+) and sulphate ions (SO_4^{2-}) in water.



(aq) is called aqueous.



The H^+ ions in the solution are attracted towards the Zinc strip to capture electrons on it. Hydrogen ions, after receiving the electrons become $\text{H}_{2(g)}$ gas. This can be written as follows.



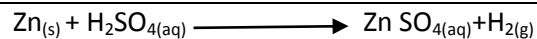
Zn strip is dissolving as it releases electrons.

When study reactions 1 & 2

1. Reaction 1 - Release electrons
2. Reaction 2 -Receive electrons

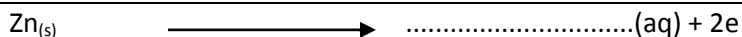
Conversion of one chemical species into another by removing or accepting electrons are known as '**Half Reactions**'.

By adding two half reactions, balanced ionic equation can be obtained.



Assignment

1. Name two observations that you can see when we put a Zinc metal strip into a beaker with diluted H_2SO_4 acid.
2. Name the positive and negative ions in that solution mixture.
3. The reaction near the zinc strip is given below. Fill in the blanks.



4.Students say that; Gas bubbles can be seen in the above mentioned beaker. What is that gas?

5.Suggest an activity to identify the above mentioned gas.