

DISPLACEMENT REACTIONS

AIM:- To show that zinc is more reactive than iron and copper.

Definition:- When a more reactive metal displaces a less reactive metal from its aqueous solution, the reaction which takes place is called **CHEMICAL DISPLACEMENT**.

Materials required:- 5 test tubes, copper sulphate solution, iron sulphate solution, zinc sulphate solution, two small iron nails, two small pieces of zinc metal, a small piece of copper metal.

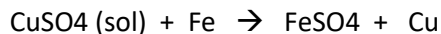
Procedure: Five beakers labelled A, B, C, D and E are taken containing freshly prepared solutions of copper sulphate solution in beakers A and B; iron sulphate solution in beakers C and D and zinc sulphate solution in beaker E.

- A small iron nail is dropped in beaker A.
- A small zinc metal is dropped in beaker B
- A small zinc metal is dropped in beaker C.
- A small copper metal is dropped in beaker D.
- Another iron nail is dropped in beaker E.

Observation and Inference :-

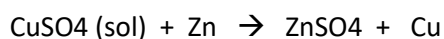
BEAKER A: The blue colour of copper sulphate solution changes to light green and a reddish deposit of copper is formed on the surface of iron.

This proves that a more reactive metal (iron) displaces a less reactive metal (copper) from its salt solution. The reaction can be represented as:-



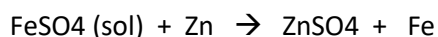
BEAKER B: The blue colour of copper sulphate solution changes to colourless and a reddish deposit of copper is formed on the surface of zinc.

This proves that a more reactive metal (zinc) displaces a less reactive metal (copper) from its salt solution. The reaction can be represented as:-



BEAKER C: The light green colour of iron sulphate solution changes to colourless and a grey deposit of iron is formed on the surface of zinc.

This proves that a more reactive metal (zinc) displaces a less reactive metal (iron) from its salt solution. The reaction can be represented as:-



BEAKER D: No change in colour of iron sulphate takes place. No deposit is formed on the piece of copper.

This proves that no chemical reaction takes place. It is because copper is less reactive than iron in iron sulphate, and hence no chemical displacement takes place.

BEAKER E: No change in colour of zinc sulphate takes place. No deposit is formed on the piece of iron.

This proves that no chemical reaction takes place. It is because iron is less reactive than zinc in zinc sulphate, and hence no chemical displacement takes place.

CONCLUSION: We can conclude that zinc is the most reactive metal, followed by iron and copper.