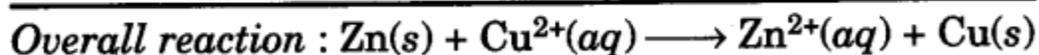
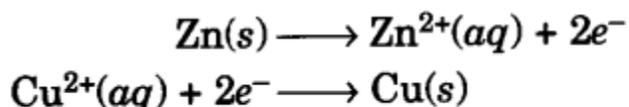


To Set Up Simple Daniell Cell Using Salt Bridge & Determine Its Emf

Theory

When a copper electrode dipped in copper sulphate solution is connected to a zinc electrode dipped in the zinc sulphate solution, then electrons flow from zinc electrode to copper electrode and the chemical reactions take place as:



Apparatus and Chemicals

One beaker, a porous pot, connecting wires, milli voltmeter, sand paper, zinc strip, copper strip, 1 M ZnSO_4 solution and 1 M CuSO_4 solution.

Procedure

Set up the apparatus as shown in Fig.

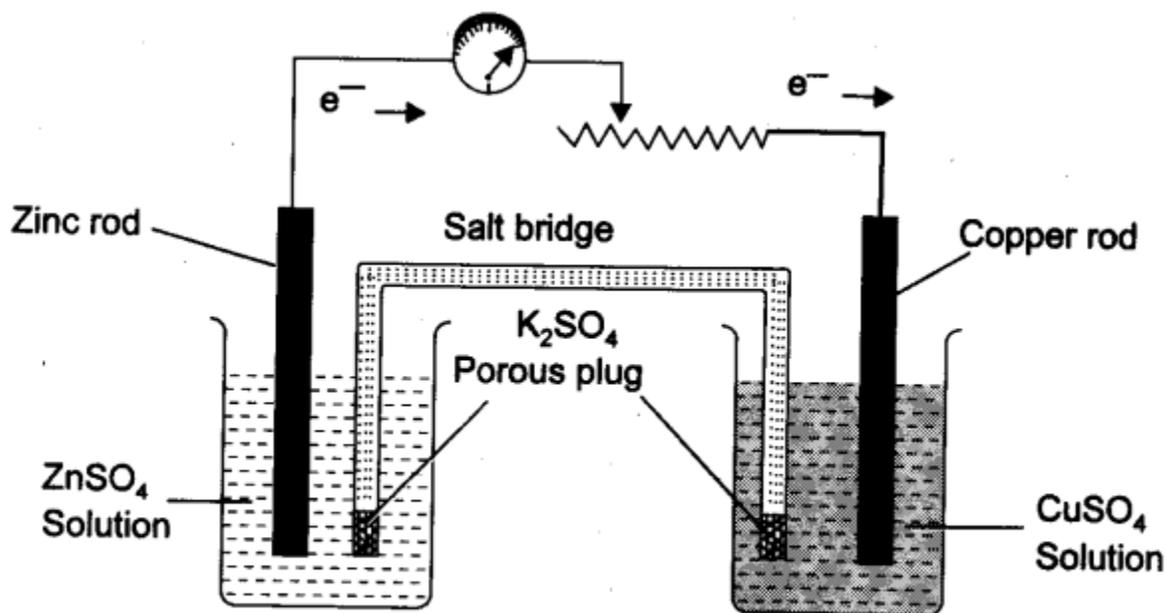


Fig. Zn-CuSO₄ reaction in an electrochemical cell.

Containing 1 M solutions of ZnSO_4 and CuSO_4 and note the position of the pointer in the voltmeter and record the reading in your record book.

Note: 1. Use of salt bridge gives a more efficient cell as it even prevents the diffusion of solvent molecules resulting from concentration difference.
2. Electrolytes in salt bridge can also be potassium chloride or potassium nitrate containing agar- agar (3 g in 100 ml of the saturated solution).

Observation

The emf of the Daniell cell is volts.

Precautions

1. The concentration of copper sulphate and zinc sulphate should neither be too low nor too high.
2. The porous pot should not be completely dipped into the copper sulphate solution, i.e., the copper sulphate solution should not be allowed to enter into the porous pot.
3. Clean zinc and copper strips with sand paper before use.
4. Carry out dilution of the solution carefully.
5. Note the reading only when the pointer becomes stable.
6. Connect copper strip with the positive terminal of voltmeter and zinc strip with negative terminal.