

WJEC (Eduqas) Chemistry A-level

SP PI1.1 - Construction of Electrochemical Cells and Measurement of E_{cell}

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SP PI1.1 - Construction of Electrochemical Cells and Measurement of E_{cell}

Aim

Construction of a copper/zinc **electrochemical cell** and the determination of E_{cell} .

Apparatus and Chemicals

- Wires
- Crocodile clips
- Voltmeter
- 2 x 100 cm³ beakers
- Filter paper cut into a long strip
- Cu foil strip
- Zn foil strip
- 1.0 mol dm⁻³ CuSO₄ solution
- 1.0 mol dm⁻³ ZnSO₄ solution
- Saturated KNO₃ solution



Safety Considerations

- ★ 1.0 mol dm⁻³ CuSO₄ solution - harmful, dangerous to environment
- ★ 1.0 mol dm⁻³ ZnSO₄ solution - irritant, dangerous to environment
- ★ Saturated KNO₃ solution - oxidising

Method

1. Measure 50 cm³ of CuSO₄ solution into one of the beakers.
2. Measure 50 cm³ of ZnSO₄ solution into the other beaker.
3. Place the copper foil in the CuSO₄ solution.
4. Place the zinc foil in the ZnSO₄ solution.
5. Connect the zinc foil strip and copper foil strip to the **ammeter**.
6. Connect the **voltmeter** across the zinc foil and copper foil connections.
7. Place the two beakers directly next to each other.
8. Soak the filter paper in the saturated KNO₃ solution and place it across the two beakers.
9. Ensure that the ends of the filter paper are in direct contact with the solutions in the two beakers. This is called a **salt bridge**.
10. Measure the potential difference of the cell using the voltmeter.



Diagram

