

Electrode Potentials

Chemistry

The electrochemical series, and predicting cell reactions.

The cell EMF is the difference between the two standard electrode potentials.

$$E^{\circ}_{\text{cell}} = E^{\circ}(\text{reduced}) - E^{\circ}(\text{oxidised})$$

$$\text{Zn}^{2+}/\text{Zn} = -0.76, \text{Cu}^{2+}/\text{Cu} = +0.34$$

Copper is reduced.

$$E^{\circ}_{\text{cell}} = +1.10 \text{ V}$$

Positive E°_{cell}

Feasible

Standard conditions

298 K, 1 mol dm⁻³, 100 kPa

THE COMMON MISTAKE

✗ **Assuming a positive EMF means it happens**

✓ **It means it is thermodynamically feasible**

Kinetics can still prevent it. A high activation energy makes a feasible reaction immeasurably slow.

All potentials are measured against the standard hydrogen electrode, which is defined as exactly 0.00 V.