

Building a Cell

Chemistry

Setting up an electrochemical cell and measuring EMF.

A simple two-half-cell arrangement.

1

Prepare both half-cells

Metal electrode in a 1.0 mol dm^{-3} solution of its own ion.

2

Clean the electrodes

Emery paper, then rinse. Oxide layers ruin the reading.

3

Connect the salt bridge

Filter paper soaked in potassium nitrate, or an agar bridge.

4

Connect a high-resistance voltmeter

So negligible current flows and equilibrium is maintained.

5

Read the EMF

The more positive electrode is the positive terminal.

WHY POTASSIUM NITRATE

Neither ion reacts with the half-cell contents

Chloride would precipitate silver

Sulfate would precipitate barium or lead

A high-resistance voltmeter is essential: drawing current changes the concentrations and the measured EMF falls.