

Competition Corner: Cell-Model Evidence

g10_u06_w22

Use only supplied cell-model information. Keep electron and ion paths distinct, identify redox from half-reactions, and avoid inferring voltage or device performance from notation alone.

1. A model gives $\text{Mg(s)}|\text{Mg}^{2+}(\text{aq})||\text{Ag}^{+}(\text{aq})|\text{Ag(s)}$, with Mg oxidation and Ag^{+} reduction. Label anode/cathode and the external electron direction.
2. In that model, predict which bridge-ion type moves into each half-cell and explain the charge-balance reason.
3. Critique: “The salt bridge supplies electrons to the cathode.” Replace it with a precise statement.
4. Convert the half-reactions $\text{Al} \rightarrow \text{Al}^{3+} + 3\text{e}^{-}$ and $\text{Ni}^{2+} + 2\text{e}^{-} \rightarrow \text{Ni}$ into a balanced overall reaction, then identify which side would be written first in cell notation.
5. Name two pieces of evidence beyond a cell-notation string that would be needed to support a claim about measured voltage under particular conditions.