

## PRACTICE: GALVANIC CELLS

1. A galvanic cell is constructed using a nickel electrode in aqueous of nickel(II) chloride and a magnesium electrode in aqueous magnesium chloride.
  - (a) Draw a labelled diagram of the cell with a salt bridge. Choose an appropriate salt for the salt bridge.
  - (b) Write the half-reaction occurring at each electrode.
  - (c) Label the anode and cathode.
  - (d) Draw a wire connecting the anode and cathode, and indicate the direction of electron flow in the wire.
  - (e) Indicate the direction of migration of the cations and anions through the solutions.
  - (f) The *net cell reaction* is the overall redox reaction occurring in the cell, and is determined by adding together the two half-reactions. Write the net cell reaction.
  - (g) Calculate the cell potential (voltage).
  - (h) Using proper conventions, write the cell notation (line notation) for the cell.
  
2. Consider the galvanic cell represented by the following cell notation.
$$\text{Fe(s)} \mid \text{Fe(NO}_3)_2(\text{aq}) \parallel \text{AgNO}_3(\text{aq}) \mid \text{Ag(s)}$$
  - (a) Draw a labelled diagram of the cell with a porous boundary.
  - (b) Write the half-reaction occurring at each electrode.
  - (c) Label the anode and cathode.
  - (d) Draw a wire connecting the anode and cathode, and indicate the direction of electron flow in the wire.
  - (e) Indicate the direction of migration of the cations and anions through the solutions.
  - (f) Write the net cell reaction.
  - (g) Calculate the cell potential (voltage).