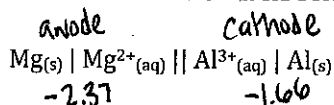
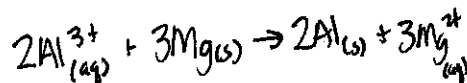


ELECTROCHEMISTRY REVIEW



- Give the balanced equation for the spontaneous cell reaction that occurs.
- ~~Indicate the oxidizing agent and the reducing agent in this reaction.~~
- Label the anode and the cathode.
- Calculate E°_{cell} . $-1.66 + 2.37 = 0.71\text{V}$
- How would increasing the size of the anode affect the voltage? Explain.



No effect

Example: 0.34 0.80
 Consider the reaction $\text{Cu}_{(s)} + 2\text{Ag}^+_{(aq)} \rightarrow \text{Cu}^{2+}_{(aq)} + 2\text{Ag}_{(s)}$.

- Write the line notation for this reaction. $\text{Cu}_{(s)} \mid \text{Cu}^{2+}_{(aq)} \parallel \text{Ag}^+_{(aq)} \mid \text{Ag}_{(s)}$
- Calculate E°_{cell} . $0.80 - 0.34 = 0.46\text{V}$
- Is this reaction spontaneous or nonspontaneous? yes
- Calculate ΔG . $\Delta G = -nFE = -2(96485)(0.46) = -88766.2\text{J} = \boxed{-88.8\text{kJ}}$
- Calculate K . $\Delta G = -RT \ln K = -8.314(273) \ln x = \rightarrow x = \boxed{9.66 \times 10^{16}}$
- How would the cell potential be affected by the addition of $\text{NaCl}_{(aq)}$? Explain.

Adding NaCl will cause a decrease in the concentration of Ag^+ ions since $\text{Ag}^+_{(aq)} + \text{Cl}^-_{(aq)} \rightarrow \text{AgCl}_{(s)}$. The reaction will shift to the left to ~~comp~~ produce more Ag^+ ions.

Example:
 A current of 5.7A is passed through a solution of Zn^{2+} , producing 3.2g of zinc metal. How long is the current applied?

$$\frac{3.2\text{g Zn}}{65.39\text{g}} \times \frac{1\text{mol}}{1\text{mol}} = 0.049\text{mol} \times \frac{96485\text{C}}{\text{mole}} \times 5.7\text{A}$$

26948.3 seconds

7.5 hours