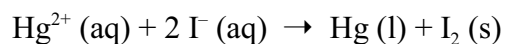


CH 223 Worksheet 8

1. A voltaic cell is based on a $\text{Co}^{2+} / \text{Co}$ half-cell and an AgCl / Ag half-cell. (a) What reaction occurs at the anode? (b) What is the standard cell potential?

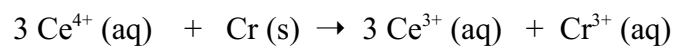
2. Using the standard reduction potentials listed in Appendix E (see attached), determine if the following reaction is spontaneous under standard conditions:



3. For the reaction $3 \text{Ni}^{2+} (\text{aq}) + 2 \text{Cr}(\text{OH})_3 (\text{s}) + 10 \text{OH}^{-} (\text{aq}) \rightarrow 3 \text{Ni} (\text{s}) + 2 \text{CrO}_4^{2-} (\text{aq}) + 8 \text{H}_2\text{O} (\text{l})$

- (a) What is the value of n ? (b) Use the data in Appendix E to calculate ΔG° . (c) Calculate K at $T = 426 \text{ K}$.

4. A voltaic cell utilizes the following reaction and operates at 310 K.



(a) What is the emf of this cell under standard conditions?

(b) What is the emf of this cell when $[\text{Ce}^{4+}] = 3.0 \text{ M}$, $[\text{Ce}^{3+}] = 0.10 \text{ M}$ and $[\text{Cr}^{3+}] = 0.010 \text{ M}$?

5. An aqueous cadmium (Cd) solution is electrolyzed using a current of 7.60 A. How many grams of cadmium will be plated out after 2.00 days?