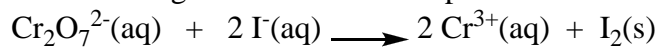


Problem of the Day 44 CHEM 1252

1. A voltaic cell is based on the reaction given below. It takes place in acidic solution.



a) Balance the reduction half reaction. You must show your work.

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b) Balance the oxidation half reaction. You must show your work.

	5
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c) Write the overall balanced reaction.

	3
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d) Calculate E°_{cell} for this reaction.

	3
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e) Calculate the equilibrium constant at 25°C for this reaction.

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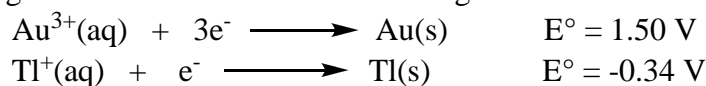
2. a) What is the purpose of a salt bridge?

3

b) A salt bridge filled with KCl connects the anode and the cathode compartment in a voltaic cell. Explain in which direction the respective ions in the salt bridge will travel (i.e. to the cathode compartment or the anode compartment) . *You must justify your answer.*

6

3. Consider the galvanic cell based on the following half-reactions:



a) Determine the overall cell reaction and calculate E°_{cell} .

4

b) Calculate K for the cell reaction at 25°C.

5

c) Calculate E_{cell} at 25°C when $[\text{Au}^{3+}] = 1.0 \times 10^{-2} \text{ M}$ and $[\text{Tl}^{+}] = 1.0 \times 10^{-4} \text{ M}$

6