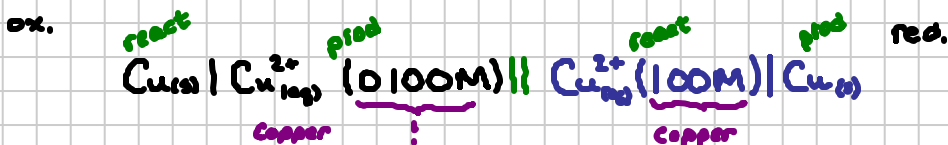


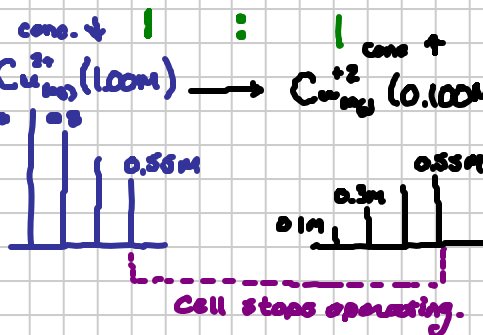
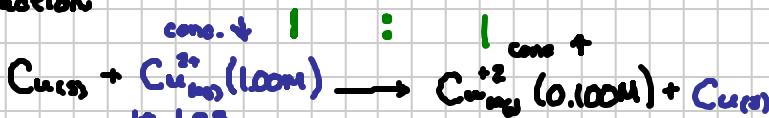
Lecture 22.3 Concentration Cells (Nernst Equation)

Note Title

11/15/2011



net cell reaction



$$\text{conc.} = \frac{0.100 + 1.00}{2}$$

$$\text{Conc.}_f = 0.55\text{M}$$

Initially: Entropy.

$V_1 [\text{Cu}^{2+}] = 0.100\text{M}$.
 $V_2 [\text{Cu}^{2+}] = 1.00\text{M}$.:

Finally:

$V_1 [\text{Cu}^{2+}] = 0.55\text{M}$:.
 $V_2 [\text{Cu}^{2+}] = 0.55\text{M}$.:.

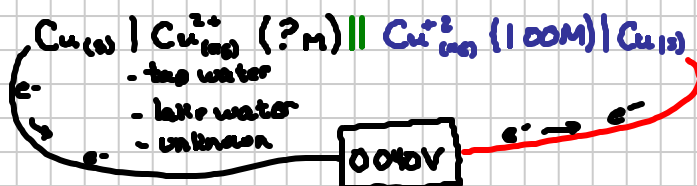
$S_i < S_f$ ☺
 Spontaneous!

Conc. Cells are driven by increase in entropy.

Nernst Equation: $E_{\text{cell}} = E^{\circ}_{\text{cell}} - \frac{0.0592}{n} \log Q$
 $E^{\circ}_{\text{cell}} = E^{\circ}_{\text{cath}} - E^{\circ}_{\text{anode}} = 0 \dots$ true for conc. cells

$E_{\text{cell}} = - \frac{0.0592}{n} \log Q = - \frac{0.0592}{2} \log \left(\frac{0.100\text{M}}{1.00\text{M}} \right)$
 $E_{\text{cell}} = 0.0296\text{Volts} = 296\text{mV}$

Appl. of Conc. cell: Ion sensitive electrode.



Nernst Eq.: $E_{\text{cell}} = - \frac{0.0592}{n} \log Q$

$0.040\text{V} = - \frac{0.0592}{2} \log \left(\frac{?}{1.00\text{M}} \right) \dots$ solve for ? = 0.0445M.