

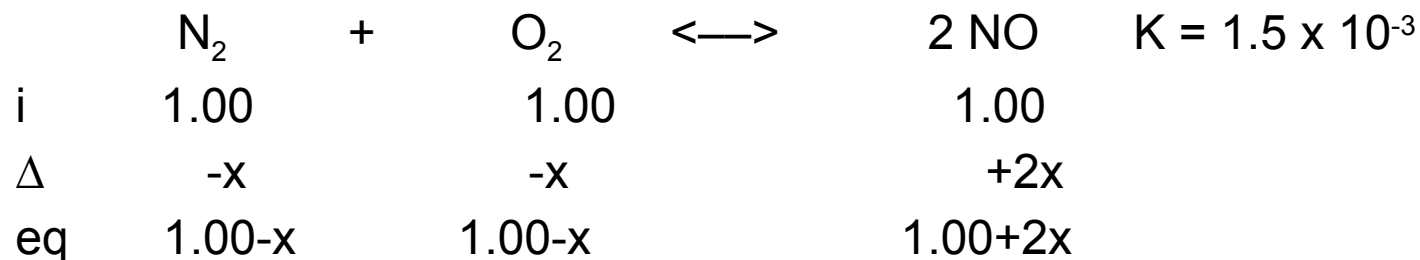
Announcements

- Turn on the Clicker (the red LED comes on).
- Push “Join” button followed by “20” followed by the “Send” button (switches to flashing green LED if successful).
- VOTE NEXT TUESDAY!!!!
- Let me know of potential grading errors in writing ASAP.
- Will probably be starting on chapter 16 today.
- If you do not get an e-mailed suggested reading and problems for chapter 16 by tomorrow morning check the class web site.

Review

- $K_{ov} = K_1 K_2 \dots$ for sequential RXNs
- $K_P = K_C (RT)^{\Delta n}$
 - R must be in $L \text{ atm mol}^{-1} K^{-1}$ if partial P's have units of atm.
 - R must be in $J \text{ mol}^{-1} K^{-1}$ if partial P's in Pa.
- $\Delta G^\circ_{rxn} = -RT \ln K$ or $K = \exp(-\Delta G^\circ_{rxn} / \{RT\})$
- Le Châtelier's principle (effects of adding species, P and T)
- $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ (Haber-Bosch process)
 - $n_{\text{reac}} = 4$ and $n_{\text{prod}} = 2 \Rightarrow \Delta n = -2$.
 - Increase in P favors products

No Approximation



$$1.5 \times 10^{-3} = (1.00 + 2x)^2 / \{(1.00-x)(1.00-x)\}$$

2. In this case if we ignore x in any of the terms we should ignore them in all of them => 1.5×10^{-3} should $\approx (1.00)^2 / \{1.00 \cdot 1.00\} = 1.00!!!$ way off....

3. multiply it out: $1.5 \times 10^{-3} = (1.00 + 4.00x + 4x^2) / (1.00 - 2x + x^2)$

$$\Rightarrow 1.00 + 4.00x + 4x^2 = (1.5 \times 10^{-3})(1.00 - 2x + x^2)$$

$$\Rightarrow 1.00 + 4.00x + 4x^2 = (1.5 \times 10^{-3})x^2 - (3.0 \times 10^{-3})x + 1.5 \times 10^{-3}$$

$$\Rightarrow 3.9985x^2 + 4.003x + 0.9985 = 0$$

Chapter 16-Solution Equilibria

- Equilibria and Acid Rain
- Equilibria and Bases
- Brønsted-Lowry vs Lewis acids and Bases
- Conjugate pairs
- Structure-acidity relations
- pH
- pH of salt solutions
- Buffers
- Indicators
- titration
- solubilities of solids (K_{sp})
- Complex ions