

Solubility Products and K_{sp}

Solubility Products (K_{sp})

Solubility Equilibria

- These equilibria are represented and solved just like the other equilibria we have studied, with one exception
- Consider a saturated CaF_2 solution
 - $\text{CaF}_2(\text{s}) \rightleftharpoons \text{Ca}^{2+}(\text{aq}) + 2 \text{F}^{-}(\text{aq})$
 - What would the equilibrium expression look like for this process
 - $K_{sp} = [\text{Ca}^{2+}] [\text{F}^{-}]^2$
 - Why no CaF_2 ?
- The K_{sp} for CaF_2 is 3.9×10^{-11} . What is the solubility of CaF_2 in grams per liter?
- Calculate the molar solubility of CaF_2 in a solution that is 0.010M in $\text{Ca}(\text{NO}_3)_2$
- Is it possible to dissolve 0.25mg of CaF_2 in 35.0 mL of water?

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Homework

- 17.49
 - (a) Why is the concentration of undissolved solid not included in the express for the solubility product constant?
 - (b) Write the K_{sp} expression for the following strong electrolytes: AgI, $SrSO_4$, $Fe(OH)_2$, Hg_2Br_2 .
- 17.50
 - (a) Explain the difference between solubility and the solubility product constant.
 - (b) Write the K_{sp} expressions for the following ionic compounds: $MnCO_3$, $Hg(OH)_2$, $Cu_3(PO_4)_2$
- 17.53 / 17.55 / 17.58