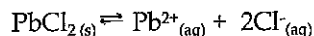


5.6 - Application of Le Chatelier's Principle.notebook

5.6 Application of Le Chatelier's Principle Assignment

1. Consider the following equilibrium system:



Describe what happens to the solubility of PbCl_2 when the following substances are added to the solution. Why?

a) $\text{Pb}(\text{NO}_3)_2$

decrease
solubility b/c $\uparrow [\text{Pb}^{2+}]$

d) AgNO_3

$\text{AgCl}(s) \therefore \uparrow \text{solubility}$
 $\therefore \downarrow [\text{Ag}^+]$

b) NaCl

$\uparrow [\text{Cl}^-] \therefore \downarrow \text{solubility}$

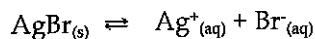
e) NaBr

$\text{PbBr}_2(s)$
 $\downarrow [\text{Pb}^{2+}] \therefore \uparrow \text{solubility}$

c) H_2O

increase solubility
b/c more
solvent

2. Consider the following equilibrium system:



Describe what happens to the solubility of $\text{AgBr}(s)$ when the following substances are added to the solution. Why?

a) $\text{Pb}(\text{NO}_3)_2$

$\text{PbBr}_2(s) \therefore \downarrow [\text{Br}^-]$
 $\uparrow \text{solubility}$

c) NaCl

$\text{AgCl}(s) \therefore \downarrow [\text{Ag}^+]$
 $\therefore \uparrow \text{solubility}$

b) AgNO_3

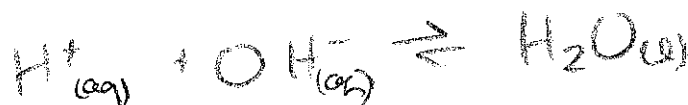
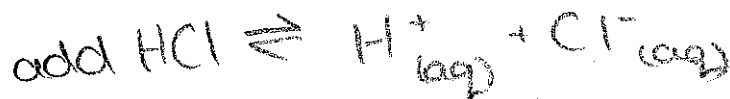
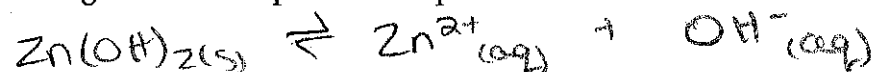
$\uparrow [\text{Ag}^+]$
 $\therefore \downarrow \text{solubility}$

d) NaBr

$\uparrow [\text{Br}^-]$
 $\therefore \downarrow \text{solubility}$

5.6 - Application of Le Chatelier's Principle.notebook

3. Explain why more $\text{Zn}(\text{OH})_2$ dissolves when 3 M HCl is added to a saturated solution of $\text{Zn}(\text{OH})_2$. Start by writing the correct equilibrium equation.



$\therefore \uparrow$ solubility of $\text{Zn}(\text{OH})_2$
(and more solvent)

4. Explain three ways in which the Haber-Bosch process utilizes Le Chatelier's principle to increase the yield of ammonia in industrial fertilizer production.

• removal of NH_3

• \downarrow temp

• \uparrow pressure