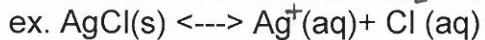


Name: Kay
Blk: J Date: _____

Chemistry 12
Solubility Lesson #10
THE COMMON ION EFFECT and other ways to alter the solubility of a salt

What does it mean to INCREASE or DECREASE the solubility of a salt?



INCREASE SOLUBILITY, reaction shifts to favour the PRODUCTS.



DECREASE SOLUBILITY, reaction shifts to favour the REACTANTS.



Recall LE CHATELIER'S PRINCIPLE; changing the concentration of dissolved ions in the equilibrium will shift the equilibrium:

A. DECREASING the solubility of a salt

If we INCREASE the concentration of one of the ions in solution, according to Le Chatelier the reaction will shift to the REACTANTS

ex i. Increase $[\text{Ag}^+]$ by adding AgNO_3



ex ii. Increase $[\text{Cl}^-]$ by adding NaCl

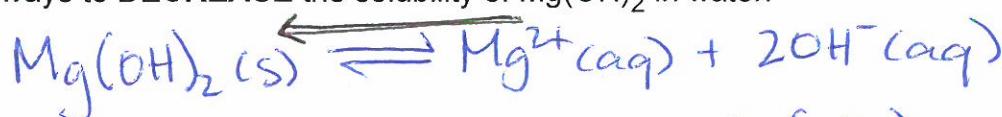


THIS PROCEDURE IS CALLED THE COMMON ION EFFECT!

The common ion effect is often used in chemistry to deliberately prevent a particular salt from dissolving to any great extent or to force a particular dissolved ion to leave a solution.

Example 1: The solubility of $\text{Mg}(\text{OH})_2$ is about 0.5 M at 25 °C.

State two ways to **DECREASE** the solubility of $\text{Mg}(\text{OH})_2$ in water.

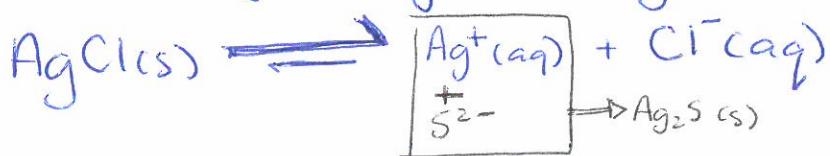
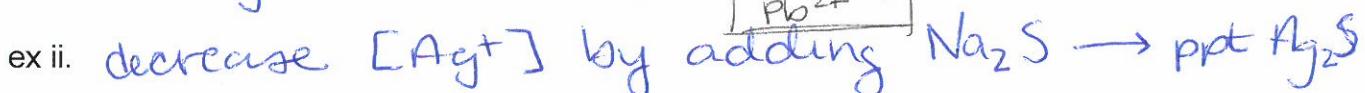
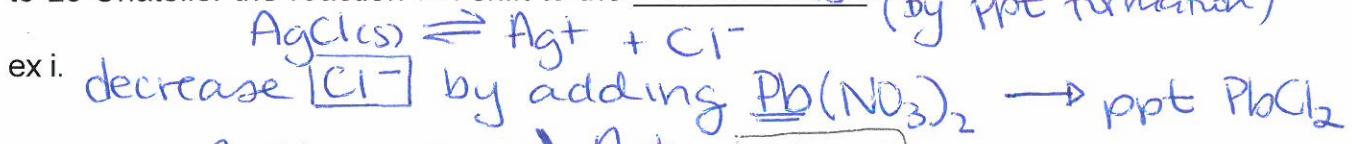


① Increase $[\text{Mg}^{2+}]$ by adding $\text{Mg}(\text{NO}_3)_2$

② Increase $[\text{OH}^-]$ by adding NaOH

B. INCREASING the solubility of a salt

If we DECREASE the concentration of one of the ions in solution, according to Le Chatelier the reaction will shift to the PRODUCTS. (By ppt formation)



Example 2: In which solution would SrCl_2 be most soluble? In which solution would SrCl_2 be least soluble? Explain your answers

- A) 1 M NaNO_3
 B) 1 M Na_2SO_4
 C) 1 M $\text{Sr}(\text{NO}_3)_2$
 D) 1 M MgCl_2



Most SOLUBLE $\rightarrow \downarrow$ ion concentration.



Least SOLUBLE $\rightarrow \uparrow$ ion concentration



Seatwork/Homework: Exercises 81- 86
 PLO: H5