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Serie No. 4

Exercice 1

Calculate the solubility in pure water for the following compounds, assuming they dissociate completely in solution (neglecting interactions with H_3O^+ and OH^-) :

a) **$CaSO_4$** : pKs=4.6

b) **CaF_2** : pKs=10.4

c) **Ag_2CrO_4** : pKs=12.0

Exercice 2

The solubility product of silver chloride (AgCl) is Ks =1.8×10^{-10} at 25°C.

1) **Calculate its solubility**
   a) In pure water.
   b) In a silver nitrate solution with a concentration of 0.2 mol/L.
   c) In a hydrochloric acid solution with a concentration of 0.5 mol/L.
2) **Compare the solubility values in the three cases**. What do you observe ? What is this effect called ?

Exercice 3

The solubility equilibrium for magnesium hydroxide is :

$$Mg(OH)_2(s) \rightleftharpoons Mg^{2+} + 2OH^-$$

The solubility product constant is Ks = 1.8×10^{-11}.

a) Calculate the solubility of $Mg(OH)_2$ in pure water at 25°C.

b) How does the solubility change if the pH of the solution is adjusted to 10 ?