

### Serie No. 4

#### Exercice 1

Calculate the solubility in pure water for the following compounds, assuming they dissociate completely in solution (neglecting interactions with  $\text{H}_3\text{O}^+$  and  $\text{OH}^-$ ):

- a)  $\text{CaSO}_4$  :  $\text{pK}_s=4.6$
- b)  $\text{CaF}_2$  :  $\text{pK}_s=10.4$
- c)  $\text{Ag}_2\text{CrO}_4$  :  $\text{pK}_s=12.0$

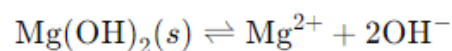
#### Exercice 2

The solubility product of silver chloride ( $\text{AgCl}$ ) is  $\text{K}_s = 1.8 \times 10^{-10}$  at  $25^\circ\text{C}$ .

- 1) **Calculate its solubility**
  - a) In pure water.
  - b) In a silver nitrate solution with a concentration of  $0.2 \text{ mol/L}$ .
  - c) In a hydrochloric acid solution with a concentration of  $0.5 \text{ mol/L}$ .
- 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 :



The solubility product constant is  $\text{K}_s = 1.8 \times 10^{-11}$ .

- a) Calculate the solubility of  $\text{Mg}(\text{OH})_2$  in pure water at  $25^\circ\text{C}$ .
- b) How does the solubility change if the pH of the solution is adjusted to 10 ?