

Series N°4

Exercise N° 1:

- 1- Calculate the K_{sp} for $Ce(IO_3)_4$, given that its molar solubility is 1.80×10^{-4} mol/L.
- 2- The molar solubility of $Ba_3(PO_4)_2$ is 8.89×10^{-9} M in pure water. Calculate the K_{sp} for $Ba_3(PO_4)_2$
- 3- Barium Carbonate ($BaCO_3$) has a solubility product of $K_{sp} = 8.1 \times 10^{-9}$ at $25^\circ C$ for the equilibrium



- a- Calculate the molar solubility of Barium Carbonate in the water at $25^\circ C$.
- b- Calculate the molar solubility of Barium Carbonate in 0.1M $PbCO_3$.

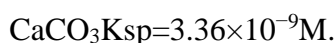
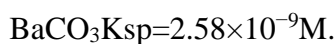
Exercise N° 2:

Given copper (II) hydroxide, $Cu(OH)_2$. The concentration of Cu^{2+} and OH^- at equilibrium in $25^\circ C$ water is 1.765×10^{-7} M and 3.530×10^{-7} M respectively.

- a. Find the K_{sp} .
- b. Find the molar solubility of $Cu(OH)_2$ in 0.100M NaOH.

Exercise N° 3:

- 1- An aqueous solution at $25^\circ C$ is 0.10 M in both Ba^{2+} and Ca^{2+} ions. One wants to separate the two ions by taking advantage of the different solubility of $BaCO_3$ and $CaCO_3$.



What is the highest possible CO_3^{2-} concentration that allows only one salt to present at equilibrium? Which ion is present in the solid, Ba^{2+} or Ca^{2+} ?

- 2- Calculate the pH of a saturated solution of $Cu(OH)_2$, $K_{sp} = 1.6 \times 10^{-19}$
- 3- What is the minimum pH at which $Cr(OH)_3$ will precipitate if the solution has $[Cr^{3+}] = 0.0670$ M? K_{sp} of $Cr(OH)_3$ is 6.70×10^{-31}
- 4- When NaF is added slowly to a solution that is 0.025 M Ba^{2+} and 0.025 M Ca^{2+} what will the concentration of calcium be when the barium just begins to precipitate? $K_{sp}(BaF_2) = 1.0 \times 10^{-7}$; $K_{sp}(CaF_2) = 1.7 \times 10^{-10}$.

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