

AgI se forme en premier

$$[CN^-] = 6n = 1,7 \times 10^{-6}$$

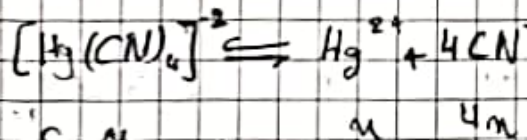
$$n = 2,8 \times 10^{-7} N$$

Serie 4

C = 1 mol/l

$$K_d = \frac{(2,8 \times 10^{-7})^2 \times 6^6}{1}$$

$$K_d = 6,29 \times 10^{-42}$$



$$K_d = \frac{[Hg^{2+}][CN^-]^4}{[Hg(CN)_4^{2-}]} = \frac{n(4n)^4}{C-n}$$

$$n + (0)^2 = +1 \Rightarrow$$

$$n + (0)^4 = +2$$

[Cu(H₂O)₆]²⁺ = Tetra-aqua Cuivre (II)

[CrCl₂(H₂O)₄]³⁺ = dichlore-tetra-aqua-chrome (III)

[Ag(S₂O₃)₂]³⁻ = Ion-thiosulfate Argentate (III)

$$K_d = \frac{2,56 n^5}{C} = 4 \times 10^{-42}$$

$$n = \sqrt[5]{\frac{K_d \times C}{2,56}} = 1,09 \times 10^{-9} M$$

Fe(CO)₅ Penta-carbonyl Fer

[Al(OH)₄(H₂O)₂]⁻ = Ion-tetra-Hydroxo-diaqua-Aluminate

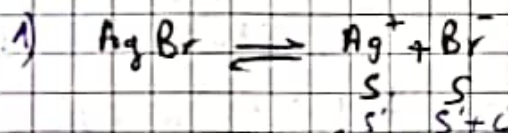
$$[Hg^{2+}] = 1,09 \times 10^{-9} \text{ mol/l}$$

$$[CN^-] = 4,37 \times 10^{-9} M$$

2) ion Hexaammine cobalt III [Co(NH₃)₆]³⁺

Ex 3:

ion tétra-iodo mercurate II [Hg(I)₄]²⁻



ion dithiosulfato argentate I [Ag(S₂O₃)₂]³⁻

$$K_s = [Ag^+][Br^-] = S^2$$

ion Hexacyano cobaltate II [Co(CN)₆]⁴⁻

$$S (mg/l) \rightarrow S (mg/l) \frac{10^{-3}}{M}$$

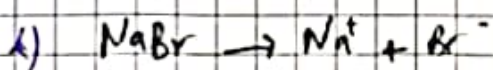
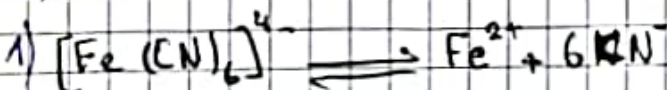
ion tetraqua cuivre II [Cu(H₂O)₄]²⁺

$$S = 6,33 \times 10^{-3} M$$

ion Hexaqua chrome III [Cr(H₂O)₆]³⁺

$$K_s = S^2 = 4 \times 10^{-13}$$

Ex 2:



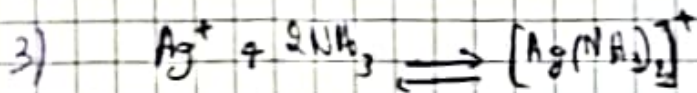
$$C = 0 \quad 0 \quad 0 \quad 0$$

$$C_s = C - n \quad n \quad 6n$$

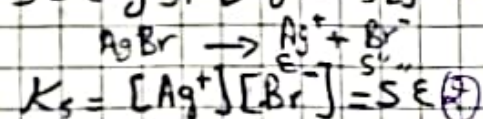
$$K_d = \frac{[Fe^{2+}][CN^-]^6}{[Fe(CN)_6^{4-}]} = \frac{6^6 n^7}{C-n}$$

$$K_s = S'(S'+C)$$

$$K_s = S'(C) \Rightarrow S' = \frac{K_s}{C} = 8,032 \times 10^{-14}$$



$$S = [\text{Ag}^+] + [\text{Ag}(\text{NH}_3)_2]^+ \quad (1)$$



$$K_s = [\text{Ag}^+][\text{Br}^-] = S \cdot S \quad (2)$$

$$K_d = \frac{[\text{Ag}^+][\text{NH}_3]^2}{[\text{Ag}(\text{NH}_3)_2]^+} \quad (3)$$

$$(3) \Leftrightarrow [\text{Ag}(\text{NH}_3)_2]^+ = \frac{[\text{Ag}^+][\text{NH}_3]^2}{K_d}$$

$$(3) \text{ in } (1) \quad S'' = [\text{Ag}^+] + \frac{[\text{Ag}^+][\text{NH}_3]^2}{K_d}$$

$$S'' = [\text{Ag}^+] \left(1 + \frac{[\text{NH}_3]^2}{K_d} \right)$$

$$[\text{Ag}^+] = \frac{S'' K_d}{K_d + [\text{NH}_3]^2}$$

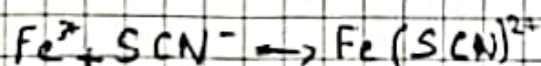
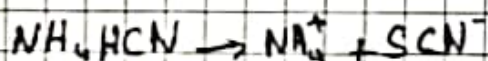
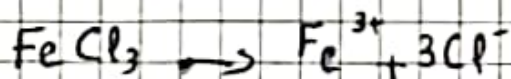
$$K_s = S'' \times \frac{S'' K_d}{K_d + [\text{NH}_3]^2} = S''^2 \frac{K_d}{K_d + [\text{NH}_3]^2}$$

$$S'' = \sqrt{\frac{K_s (K_d + [\text{NH}_3]^2)}{K_d}}$$

$$S'' = \sqrt{\frac{4 \times 10^{-10} (1,6 \times 10^{-7} + 0,5^2)}{1,6 \times 10^{-7}}}$$

$$S'' = 7,9 \times 10^{-4} \text{ mol/L}$$

Ex 4:



$$K_f = \frac{[\text{Fe}(\text{SCN})^{2+}]}{[\text{Fe}^{3+}][\text{SCN}^-]}$$

$$x = [\text{Fe}(\text{SCN})^{2+}]$$

$$[\text{Fe}^{3+}]_T = [\text{Fe}^{3+}]_R + x$$

$$[\text{Fe}^{3+}]_R = [\text{Fe}^{3+}]_T - x$$

$$[\text{SCN}]_T = [\text{SCN}]_R + x$$

$$[\text{SCN}]_R = [\text{SCN}]_T - x$$

$$K_f = \frac{x}{([\text{Fe}^{3+}]_T - x)([\text{SCN}]_T - x)}$$

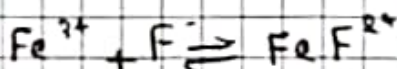
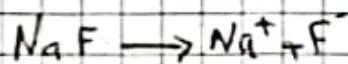
$$x = K_f (x^2 - (10^{-3} + 1)x + 10^{-3})$$

$$100x^2 - 101,1x + 0,1 = 0$$

$$x_1 = 1,01 \text{ M} \quad x_2 = 0,99 \times 10^{-3} \text{ M}$$

$$\text{on choisit } x = 0,99 \times 10^{-3} \text{ M}$$

Le Fe^{3+} se complexe totalement



$$K_d = \frac{[\text{Fe}^{3+}][\text{F}^-]}{[\text{FeF}^{2+}]}$$

$$[\text{NaF}] = y$$

$$y = [\text{F}^-] + [\text{FeF}^{2+}]$$

$$[\text{SCN}]_T = 1 - [\text{Fe}(\text{SCN})^{2+}] = 1 - 10^{-6}$$

$$[\text{Fe}^{3+}] = \frac{10^{-6}}{10^2} = 10^{-8} \text{ M}$$

$$[\text{Fe}^{3+}]_T = [\text{Fe}^{3+}]_R + [\text{Fe}(\text{SCN})^{2+}] + [\text{FeF}^{2+}]$$

$$[\text{FeF}^{2+}] = [\text{Fe}^{3+}]_T - [\text{Fe}(\text{SCN})^{2+}] - [\text{Fe}^{3+}]_R$$

$$= 10^{-3} - 10^{-6} - 10^{-8} = 10^{-3}$$

$$[\text{F}^-] = \frac{K_d [\text{FeF}^{2+}]}{[\text{Fe}^{3+}]}$$

$$[\text{F}^-] = \frac{3,2 \times 10^{-6} \times 10^{-3}}{10^{-8}} = 0,32 \text{ M}$$

$$y = [\text{F}^-] + [\text{FeF}^{2+}] = 10^{-3} + 0,32$$

$$= 0,321 \text{ M}$$

$$C = \frac{n}{MV} \Rightarrow n = (MV) \times C = 0,321 \times 42 \times 10^{-3}$$

$$n = 19,48 \text{ g}$$