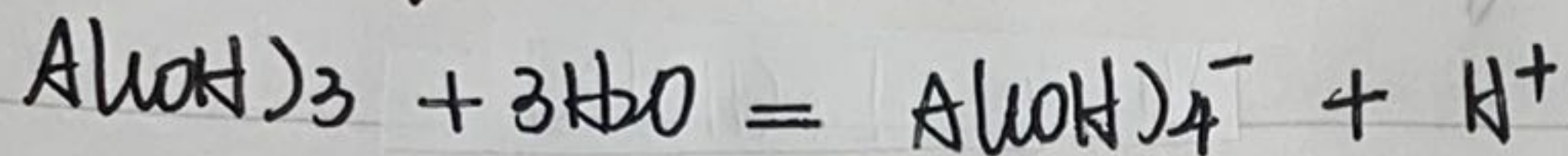
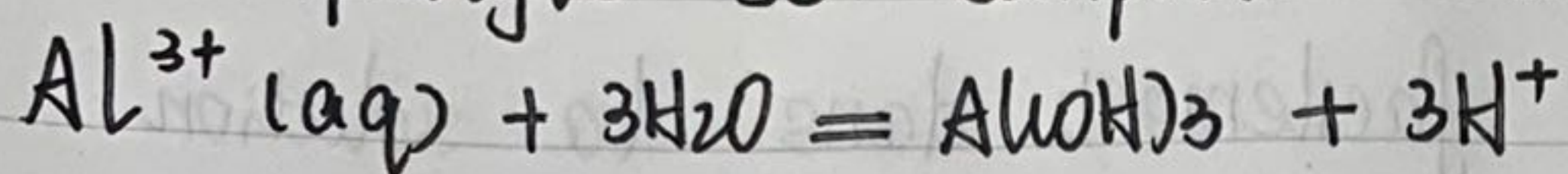


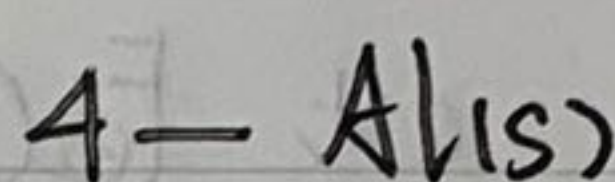
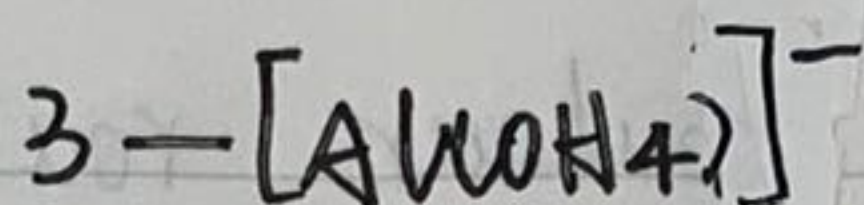
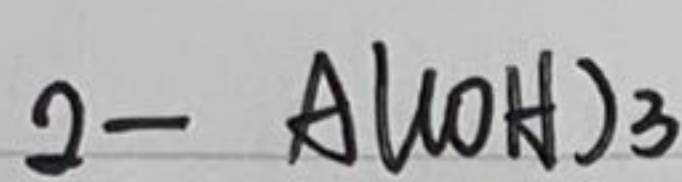
2018/10/052 Joséphine

## 1. Traitement de la bauxite

1. Un ampholyte se comporte comme un acide et une base



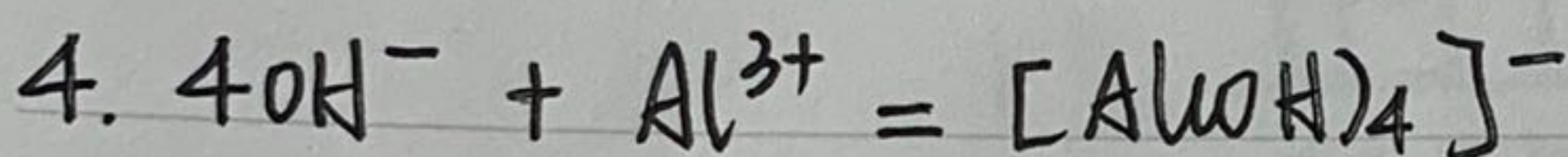
2.

plus pH faible, plus la concentration de  $[\text{OH}^-]$ 

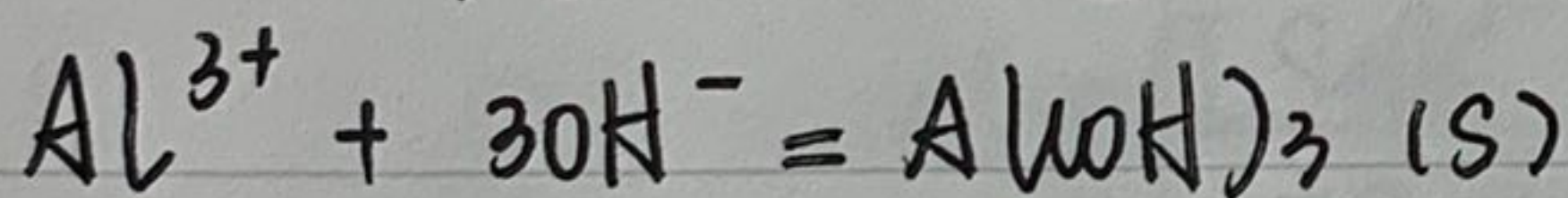
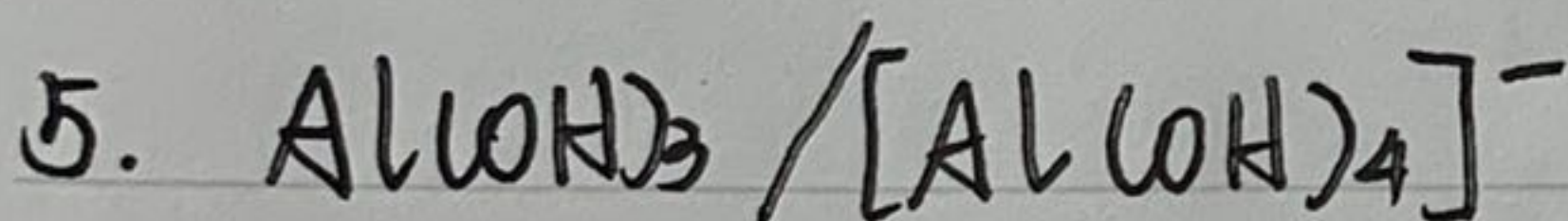
3.  $K_s = [\text{Al}^{3+}][\text{OH}^-]^3$

$$[\text{OH}^-] = \frac{K_e}{[\text{H}^+]} = 10^{-10} \text{ mol/L}$$

$$\Rightarrow K_s = [\text{OH}^-]^3 [\text{Al}^{3+}] = 10^{-32}$$

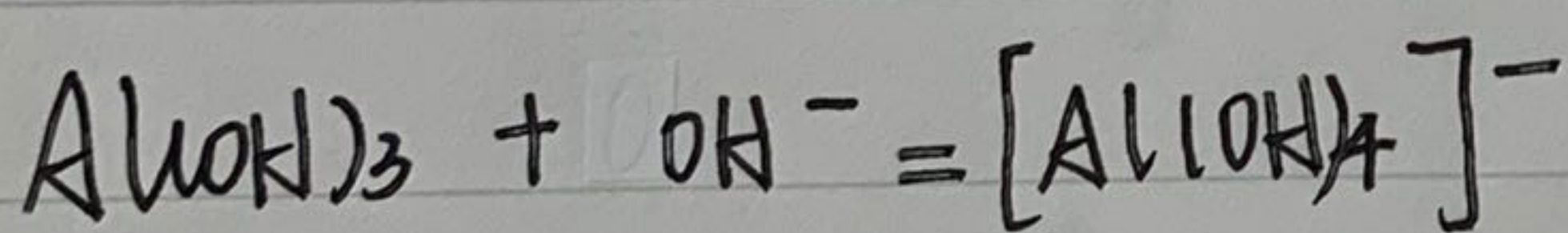


$$\beta = \frac{[\text{Al}(\text{OH})_4^-]}{[\text{Al}^{3+}][\text{OH}^-]^4} = 10^{-34}$$



$$\beta_{(1)} = \frac{1}{[\text{Al}^{3+}][\text{OH}^-]^3} = \frac{1}{K_s} = 10^{32}$$

$$\beta' = \frac{\beta_2}{\beta_1} = 10^2$$



$$\beta = \frac{[\text{Al}(\text{OH})_4^-]}{[\text{OH}^-]} = 10^2$$

$$\text{pH} = -\log\left(\frac{K_e}{[\text{OH}^-]}\right) = 10$$

6.

$$\textcircled{1} E = E^\circ(\text{Al}^{3+}/\text{Al}) + \frac{0.06}{3} \log([\text{Al}^{3+}])$$

$$\textcircled{2} E = E^\circ(\text{Al}(\text{OH})_3/\text{Al}) + \frac{0.06}{3} \log([\text{H}^+]^3)$$

$$= E^\circ(\text{Al}(\text{OH})_3/\text{Al}) - 0.06 \text{ pH}$$

$$\textcircled{3} E = E^\circ(\text{Al}(\text{OH})_4^-/\text{Al}) + \frac{0.06}{3} \log\left(\frac{[\text{H}^+]^4}{[\text{Al}(\text{OH})_4^-]}\right)$$

$$= E^\circ(\text{Al}(\text{OH})_4^-/\text{Al}) - 0.08 \text{ pH}$$



Soit la valeur des pentes est  $-0.08$

7. broyer le minerai pour réagir facilement dans la solution de soude.

8. le solide est  $\text{Fe}_2\text{O}_3$  (couleur rouille)  
chimique contenue

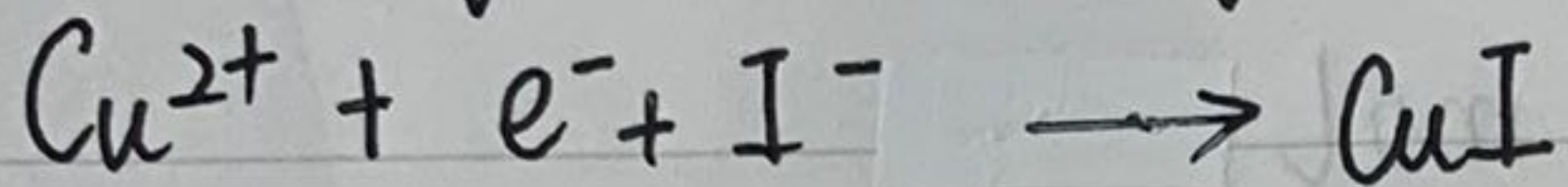
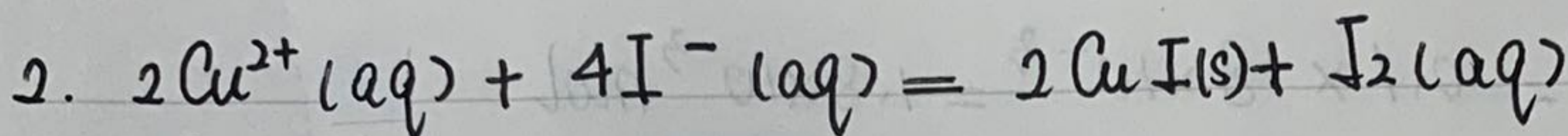
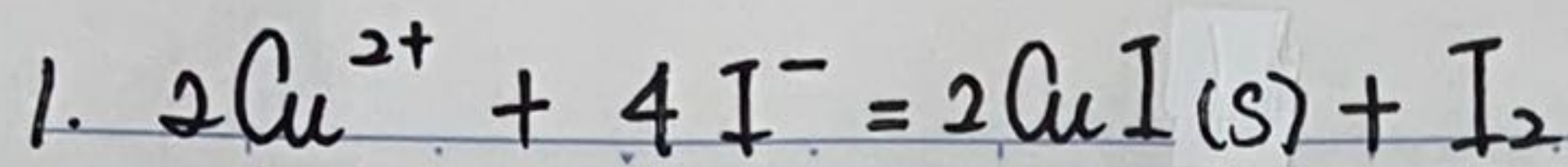
9.  $\text{pH} > 10$ , il nécessaire de se placer pour que cette étape soit efficace

10.  $5 < \text{pH} < 9$  est cette étape

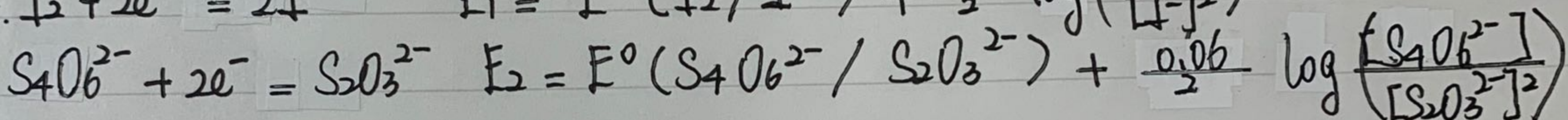
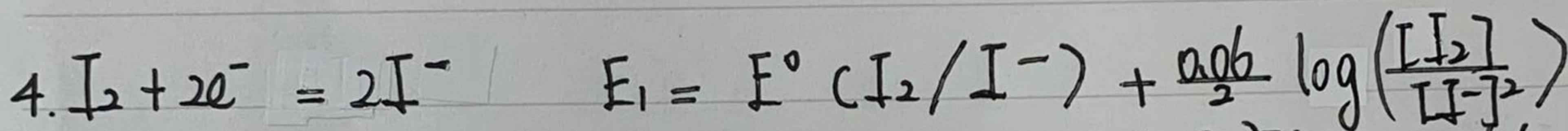
Parce qu'il exist  $\text{Al}^{3+}$  quand  $\text{pH} < 4$



## 2. Titrage des ions cuivrique en solution



3.



On sait  $K^\circ = \frac{[\text{I}^-]^2 [\text{S}_4\text{O}_6^{2-}]}{[\text{S}_2\text{O}_3^{2-}]^2 [\text{I}_2]}$

$$E_0(\text{I}_2/\text{I}^-) + \frac{0.06}{2} \log \left( \frac{[\text{I}_2]}{[\text{I}^-]^2} \right) = E_2(\text{S}_4\text{O}_6^{2-}/\text{S}_2\text{O}_3^{2-}) + \frac{0.06}{2} \log \left( \frac{[\text{S}_4\text{O}_6^{2-}]}{[\text{S}_2\text{O}_3^{2-}]^2} \right)$$

$$\Delta E = 0.03 \log \left( \frac{[\text{S}_4\text{O}_6^{2-}] [\text{I}^-]^2}{[\text{S}_2\text{O}_3^{2-}]^2 [\text{I}_2]} \right)$$

$$\Delta E = 0.03 \log K^\circ$$

$$\log K^\circ = \frac{1}{0.03} (0.62 - 0.08)$$

$$= 18$$

$$K^\circ = 10^{18}$$

5.

Cette réaction peut être considérée comme totale.



## 2.2 Réalisation pratique du dosage

$$b \quad n(S_2O_3^{2-}) = 2n(I_2)$$

$$n(Cu^{2+}) = 2n(I_2)$$

$$n(S_2O_3^{2-}) = [S_2O_3^{2-}] \cdot V = 0,1 \times 18 \times 10^{-3} = 1,8 \times 10^{-3} \text{ mol}$$

$$n(I_2) = \frac{1}{2} n(S_2O_3^{2-}) = 0,9 \times 10^{-3} \text{ mol}$$

$$n(Cu^{2+}) = n(S_2O_3^{2-}) = 1,8 \times 10^{-3} \text{ mol}$$

$$[Cu^{2+}] = \frac{n(Cu^{2+})}{V} = \frac{1,8 \times 10^{-3}}{88 \times 10^{-3}} = 0,02045 \text{ mol/L}$$

7.