

$$K_2 = \frac{[\text{H}^+][\text{CO}_3^{2-}]}{[\text{HCO}_3^-]}$$

$$[\text{HCO}_3^-] = \frac{[\text{H}^+][\text{CO}_3^{2-}]}{K_2}$$

$$[\text{H}_2\text{CO}_3] = \frac{[\text{H}^+]^2 [\text{CO}_3^{2-}]}{K_1 K_2}$$

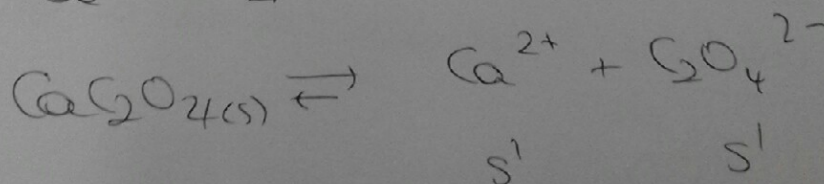
$$\alpha_{\text{CO}_3^{2-}} = \frac{[\text{CO}_3^{2-}]}{[\text{CO}_3^{2-}] + \frac{[\text{H}^+][\text{CO}_3^{2-}]}{K_2} + \frac{[\text{H}^+]^2 [\text{CO}_3^{2-}]}{K_1 K_2}}$$

así si simplifico  $[\text{CO}_3^{2-}]$

$$\alpha_{\text{CO}_3^{2-}} = \frac{1}{1 + \frac{[\text{H}^+]}{K_2} + \frac{[\text{H}^+]^2}{K_1 K_2}}$$

luego  $K_s' = \frac{K_s}{\alpha_{\text{CO}_3^{2-}}} = \frac{K_s}{\frac{1}{1 + \frac{[\text{H}^+]}{K_2} + \frac{[\text{H}^+]^2}{K_1 K_2}}} = K_s \cdot \left(1 + \frac{[\text{H}^+]}{K_2} + \frac{[\text{H}^+]^2}{K_1 K_2}\right)$

para poder calcular la solubilidad  $s'$  en función de la conc de  $[\text{H}^+]$



$K_s'$

$$K_s' = s'^2 \Rightarrow$$

$$s' = \sqrt{K_s'}$$

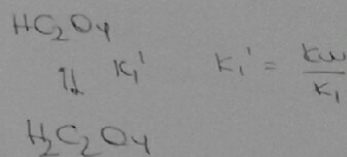
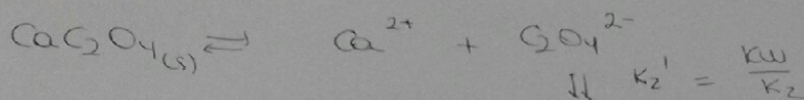
substituir  
de los valores  
dados de pH.

$$s' = \sqrt{K_s \left(1 + \frac{[\text{H}^+]}{K_2} + \frac{[\text{H}^+]^2}{K_1 K_2}\right)}$$

MADRID 2006.

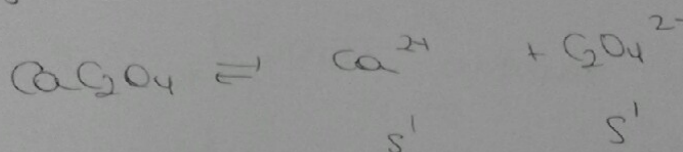
Química

①



solos.  
básicos.

Se escribe la expresión de  $K_S'$  teniendo en cuenta que  $S'$  es la solubilidad dependiente del pH.



$$K_S' = [\text{Ca}^{2+}]' \cdot [\text{C}_2\text{O}_4^{2-}]'$$

el calcio  $\text{Ca}^{2+}$  no sufre reacción lateral.

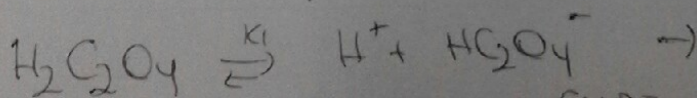
queda como

$$K_S' = [\text{Ca}^{2+}] \cdot \frac{[\text{C}_2\text{O}_4^{2-}]}{\alpha_{\text{C}_2\text{O}_4^{2-}}}$$

$$\boxed{K_S' = \frac{K_S}{\alpha_{\text{C}_2\text{O}_4^{2-}}}}$$

debemos calcular el coeficiente lateral de  $\text{C}_2\text{O}_4^{2-}$  como

$$\alpha_{\text{C}_2\text{O}_4^{2-}} = \frac{[\text{C}_2\text{O}_4^{2-}]}{[\text{C}_2\text{O}_4^{2-}] + [\text{HC}_2\text{O}_4^-] + [\text{H}_2\text{C}_2\text{O}_4]}$$



$$K_1 = \frac{[\text{H}^+][\text{HC}_2\text{O}_4^-]}{[\text{H}_2\text{C}_2\text{O}_4]}$$

$$[\text{H}_2\text{C}_2\text{O}_4] = \frac{[\text{H}^+][\text{HC}_2\text{O}_4^-]}{K_1}$$