

Answer on Question #78566 - Chemistry - Physical Chemistry

Question:

Estimate the solubility of CaCO_3 in mole/l if its $K_S=3.8 \cdot 10^{-9} \text{ M}^2$.

Solution:

$$S(\text{solubility}) = m(\text{CaCO}_3) / V;$$

$$[\text{Ca}^{2+}] = [\text{CO}_3^{2-}] = K_S^{1/2} = 6.16 \cdot 10^{-5} \text{ M};$$

$$S(\text{CaCO}_3) = m/V = n \cdot M/V = 6.16 \cdot 10^{-5} \cdot 100 = 6.16 \cdot 10^{-3} \text{ g/L}.$$

Answer: $6.16 \cdot 10^{-3} \text{ g/L}$.