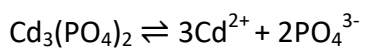


Answer on Question #83026, Chemistry / General Chemistry

The solubility product, K_s , of $\text{Cd}_3(\text{PO}_4)_2$ is 2.5×10^{-33} . What is the solubility (in g / L) of $\text{Cd}_3(\text{PO}_4)_2$ in pure water?

Solution

Find the molar solubility of $\text{Cd}_3(\text{PO}_4)_2$:



$$2.5 \times 10^{-33} = (3s)^3 \times (2s)^2 = 108s^5$$

$$s = 1.18 \times 10^{-7} \text{ (mol/L)}$$

Convert mol/L into g/L:

$$S_{\text{new}} = s \times M(\text{Cd}_3(\text{PO}_4)_2) = 1.18 \times 10^{-7} \times 527.2 = \mathbf{6.24 \times 10^{-5} \text{ (g/L)}}$$

Answer

$6.24 \times 10^{-5} \text{ g/L}$ is the solubility of $\text{Cd}_3(\text{PO}_4)_2$ in pure water.

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