

Find the molarity of the solution that has 9.94g CoSO₄ in 2.50x10³ cm³ of solution?

Solution:

Molar concentration (or molarity) (c) is equal to $\frac{n}{V}$, where n – a number of moles of solute in V litres of mixture. $V = 2.50 \times 10^3 \text{ cm}^3 = 2.50 \text{ L}$ and $n = \frac{m}{M}$, where m is a mass and M is a molar mass of solute (for CoSO₄ $M = 59 + 32 + 4 \times 16 = 155 \text{ g/mole}$, according a periodic table). Then $c = \frac{m}{MV} = \frac{9.94}{155 \times 2.5} = 0.0257 \text{ mole/L}$.

Answer: 0.0257 mole/L.