29474, Inorganic Chemistry

Calculate the molar concentration of ammonium-sulphate (NH4)2SO4 (molar mass 132.14 g/mol) in a solution if the sulphur concentration are found to be 10.0 microgram/gram.

Solution:

In 1 mole of $(NH_4)_2SO_4$ contains 1 mole of sulphur (S).

If we assume that the density of solution is 1 g/mL, than one litter of solution weighs 1000 g.

The mass of sulphur which is contained in 1 L of solution is: $10.0 \cdot 10^{-6} \cdot 10^3 = 0.01$ g.

Number of moles of sulphur per liter of solution is: $0.01/32.06 = 3.12 \cdot 10^{-4}$ mol/L.

As mentioned above, the molar concentration of $(NH_4)_2SO_4$ is $3.12 \cdot 10^{-4}$ mol/L.

Answer:

The molar concentration of $(NH_4)_2SO_4$ is $3.12 \cdot 10^{-4}$ mol/L.