

Answer on Question #52375 – Chemistry – Inorganic Chemistry

Question:

A 100 mL sample of a 6.0 mol/L solution of H₂SO₄ is diluted to a final volume of 500 mL. What is the concentration of the diluted solution?

Answer:

Molar concentration or molarity is most commonly expressed in units of moles of solute per litre of solution.

$$c = \frac{n}{V}$$

Here, **n** is the amount of the solute in moles, **n** is the number of molecules present in the volume **V** (in litres).

In our case is the amount of the solute does not change, but change the volume of solution.

That's why we can write the following expression:

$$n = c_1V_1 = c_2V_2$$

then

$$c_2 = \frac{c_1V_1}{V_2} = \frac{6.0 \times 0.1}{0.5} = 1.2 \text{ mol/L}$$

Answer: The concentration of the diluted solution of H₂SO₄ is **1.2 mol/L**.