• What is the molarity of the solution formed when 0.50 g of aluminium fluoride is dissolved in 800.0 mL of water?

**Marks 2**

**The molar mass of AlF$_3$ is:**

molar mass = (26.98 (Al) + 3 × 19.00 (F)) g mol$^{-1}$ = 83.98 g mol$^{-1}$

**The number of moles in 0.50 g is therefore:**

number of moles = mass / molar mass = 0.50 g / 83.98 g mol$^{-1}$ = 0.0060 mol

**The concentration of this amount in 800.0 mL is then:**

concentration = number of moles / volume
= 0.0060 mol / 0.8000 L = 0.0074 mol L$^{-1}$

Answer: **0.0074 mol L$^{-1}$ or 0.0074 M**

What is [F$^-$] in this solution?

**As the formula is AlF$_3$, dissolution results in 3F$^-$(aq) per formula unit.**

[F$^-$(aq)] = 3 × 0.0074 mol L$^{-1}$ = 0.022 mol L$^{-1}$

Answer: **0.022 mol L$^{-1}$ or 0.022 M**

**THE REMAINDER OF THIS PAGE IS FOR ROUGH WORKING ONLY.**