

Answer on Question#37737-Chemistry-Other

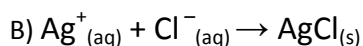
Question

0.0859 g of compound X, which contains a group II metal dissolves in water to produce colourless solution. Excess acidified silver nitrate was then added, and 0.308 g of a white precipitate (Y) was formed.

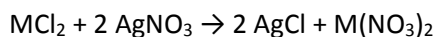
- A) identify Y
- B) write an ionic equation for the formation of Y
- C) use the data provided to identify the group 2 metal present in compound X

Answer

A) Y – **AgCl** (silver chloride)



C) Let's design the group II metal present in compound X by M, then the X is MCl_2 , and the reaction:



Based on the reaction stoichiometry we have the proportion:

$$\frac{2 \cdot M(\text{AgCl}) - m(\text{AgCl})}{M(\text{MCl}_2) - m(\text{MCl}_2)}$$

Substituting the values we have:

$$\frac{2 \cdot 143.32 \text{ g/mol} - 0.308 \text{ g}}{M(\text{MCl}_2) \text{ g/mol} - 0.0859 \text{ g}}$$

Hence:

$$\begin{aligned} M(\text{MCl}_2) &= 2 \cdot 143.32 \cdot 0.0859 / 0.308 = 79.94 \text{ g/mol} \\ M(\text{M}) &= M(\text{MCl}_2) - 2 \cdot M(\text{Cl}) = 79.94 - 2 \cdot 35.45 = 9.04 \text{ g/mol} \end{aligned}$$

So, the group II metal is **Beryllium**.