

Practice and Revision - Analytical Chemistry - Use of Ammonium Hydroxide and Sodium Hydroxide

Chapter 4: Analytical Chemistry - Use of Ammonium Hydroxide and Sodium Hydroxide · Topic 2

Key Concept

Adding sodium hydroxide to a metal salt solution can form a coloured precipitate, helping identify the metal ion present, like blue for copper.

Ammonium hydroxide can also form precipitates with metal ions, and testing for excess reagent dissolving the precipitate helps distinguish between similar ions.

For example, zinc hydroxide precipitate dissolves in excess NaOH (amphoteric), while iron hydroxide precipitate does not dissolve in excess.

This systematic approach to using specific reagents and observing reactions is fundamental to qualitative analysis in analytical chemistry.

Quick Revision Notes

- NaOH forms coloured precipitates with metal salts.
- Colour helps identify the metal ion.
- Example: blue precipitate for copper ions.
- NH_4OH also forms precipitates with metal ions.
- Excess reagent test distinguishes similar ions.
- Zinc hydroxide dissolves in excess NaOH (amphoteric).
- Iron hydroxide does not dissolve in excess.
- This is fundamental to qualitative analysis.

Practice Questions

- 1 Predict the precipitate colour when NaOH is added to a copper salt solution.
- 2 Discuss the amphoteric nature of zinc hydroxide.
- 3 Compare the reactions of iron and zinc hydroxides with excess NaOH.
- 4 Research how analytical chemistry identifies unknown substances.
- 5 Design a simple test to distinguish two metal ions.
- 6 Explain qualitative analysis in your own words.