

## Experiment NO. 4

### Determination of Iron as Ferric Oxide ( $\text{Fe}_2\text{O}_3$ )

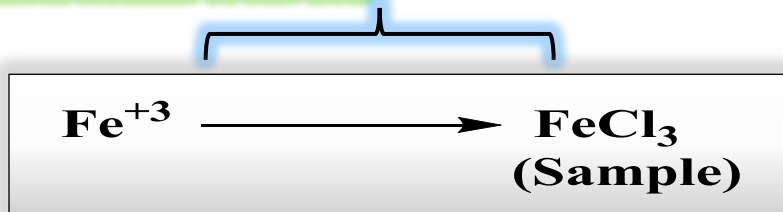
1- What is the effect of ammonium hydroxide addition to the ferric salt solution? Explain with equations?

A \ Ammonium hydroxide is added to the ferric salt solution as a precipitating agent so that all ferric ions are precipitated as anhydrous ferric oxide  $\text{Fe}_2\text{O}_3$ .

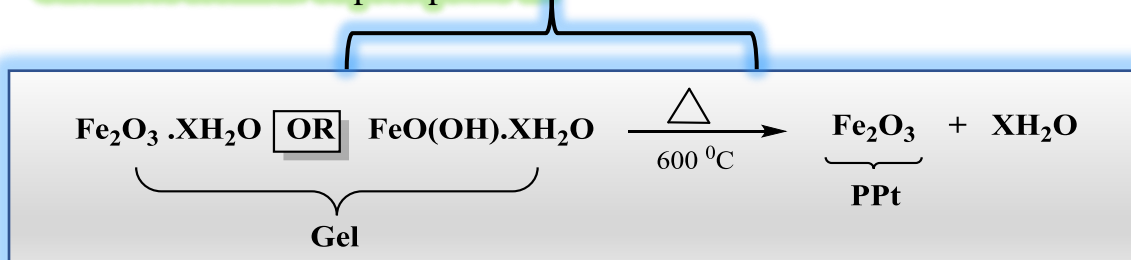
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2- What is the chemical formula of precipitated and salt iron?

A \ Chemical formula of salt iron:



Chemical formula of precipitate is:



4 - What is the purpose of concentrated  $\text{HNO}_3$  addition the produced solution from the added of  $\text{HCl}$  to ferric salt?

A \ To Oxidation remaining  $\text{Fe}^{+2}$  ions in the solution to  $\text{Fe}^{+3}$  ions.

4- A sample of is magnetite, not pure  $\text{Fe}_3\text{O}_4$  weighed 0.5g converted chemically reaction to the ferric oxide weight 0.41g What is the percentage of  $\text{Fe}_3\text{O}_4$  in the magnetite? Fe = 56, O= 16

$$\text{Wt. of Fe}_3\text{O}_4 = \text{G.F} \times \text{Wt. of Fe}_2\text{O}_3$$

$$\text{Wt. of Fe}_3\text{O}_4 = \frac{\text{M.Wt of Fe}_3\text{O}_4}{\text{M.Wt of Fe}_2\text{O}_3} \times \frac{2}{3} \times 0.41\text{g} = \boxed{0.39 \text{ g}}$$

$$\% \text{ of Fe}_3\text{O}_4 = \frac{\text{Wt of Fe}_3\text{O}_4}{\text{Wt of Sample}} \times 100$$

$$\% \text{ of Fe}_3\text{O}_4 = \frac{0.39}{0.5} \times 100 = \boxed{78\%}$$