

EXPERIMENT

Objective:

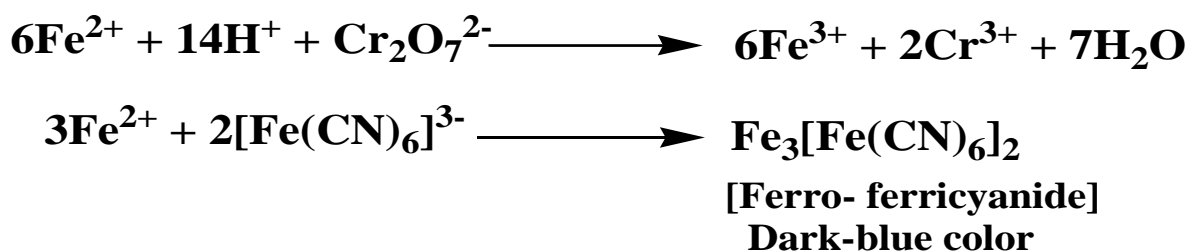
To determine the iron content of a given ferrous ammonium sulphate $[\text{FeSO}_4(\text{NH}_4)_2 \cdot 6\text{H}_2\text{O}]$ solution by titrating it against $\text{N}/50 \text{ K}_2\text{Cr}_2\text{O}_7$ solution using potassium ferricyanide $\text{K}_3[\text{Fe}(\text{CN})_6]$ as an external indicator.

Apparatus and Chemical required:

Solution of ferrous ammonium sulphate (FAS) or Mohr's salt, $\text{K}_2\text{Cr}_2\text{O}_7$ solution, $\text{K}_3[\text{Fe}(\text{CN})_6]$ distilled water, burette, Pipette, conical flask, diluted sulphuric acid.

Theory:

Acidic $\text{K}_2\text{Cr}_2\text{O}_7$ is a strong oxidizing agent. When it is added to FAS solution containing dil. H_2SO_4 . Only FeSO_4 is oxidized and $(\text{NH}_4)_2\text{SO}_4$ remain unchanged.



The end point is detected when the yellow color of the indicator does not change

Procedure:

Pipette out 10 ml. FAS + 2ml of dil. $\text{H}_2\text{SO}_4 \rightarrow$ titrate it against $\text{K}_2\text{Cr}_2\text{O}_7$ from burette \rightarrow take a drop of this solution and place it on the external indicator on a piece of paper observe the color change \rightarrow repeat the above step till the end point reaches \rightarrow note the reading \rightarrow repeat the same for 5 times.

Observation:

S.No.	Volume of $K_2Cr_2O_7$ used (ml)
1.	
2.	
3.	
4.	
5.	

Calculation:

Volume of FAS taken = 10 ml.

Normality of potassium dichromate taken = 1/50 N

Volume of potassium dichromate used = V ml.

$$N_{FAS} \times 10 = N/50 \times V$$

$$\text{Strength of FAS (S)} = N_{FAS} \times 392.16 \quad \text{gm/lit.}$$

$$\text{Thus, Iron content} = S \times 56/392.16 \quad \text{gm.}$$

Result:

The strength of FAS is = gm/lit.

The iron content is = gm.

Precautions:

- (1) Burette should be vertical throughout the experiment.
- (2) The reaction mixture should continuously be shaken during titration.
- (3) Glass ware should be washed and dried before doing the experiment.