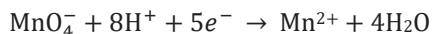


REDOX TITRATION

Oxidation-Reduction Titration

Oxidation-Reduction Titration, also known as redox titration, involves titrations based on oxidation-reduction reactions. In the case of Permanganate Titration, potassium permanganate serves as the oxidizing agent in an acidic medium.

The indicator used in this titration is KMnO_4 , which acts as a self-indicator. The reaction during the titration is represented as follows:



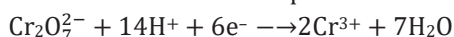
Prior to reaching the end point, the solution maintains a colorless appearance. However, after the equivalence point, the addition of a single drop of KMnO_4 imparts color to the solution.

This titration finds application in the estimation of FeSO_4 , where KMnO_4 is employed for its oxidizing properties.

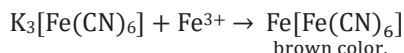
Dichromate Titration

Dichromate Titration involves the utilization of $\text{K}_2\text{Cr}_2\text{O}_7$ as an oxidizing agent in an acidic medium.

The chemical reaction associated with this titration is represented as follows:



For the purpose of indicating the endpoint, $\text{K}_3[\text{Fe}(\text{CN})_6]$ can be used as an external indicator, or diphenylamine can serve as an internal indicator. The reaction between $\text{K}_3[\text{Fe}(\text{CN})_6]$ and Fe^{3+} is expressed as:



Dichromate titration finds application in the estimation of F_2^+ salts and I^- .

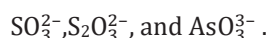
Iodimetric Titration

Iodimetric Titration involves the use of free iodine and is particularly employed in titrations. Due to the challenges associated with preparing a solution of iodine, given its volatility and low solubility in water, it is instead dissolved in a potassium iodide (KI) solution, resulting in the formation of KI_3 :



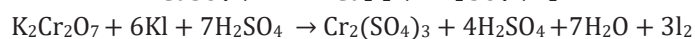
This iodine-containing solution needs to undergo standardization before being utilized in titrations.

Its application extends to the estimation of ions such as:



To indicate the endpoint of the titration, starch is commonly employed as the indicator, facilitating the detection of the presence of free iodine in the solution.

Iodometric Titration



Starch is employed as the indicator in this context.