

PHARMACEUTICAL ANALYSIS – BP102T

UNIT : III PRECIPITATION TITRATION, COMPLEXOMETRIC TITRATION, GRAVIMETRY AND DIAZOTISATION TITRATION

CLASS:24

TOPIC: METAL ION INDICATORS

Metal ion indicators:

A **complexometric indicator** is an ionochromic dye that undergoes a definite color change **in the presence** of specific metal ions.

- It forms a weak complex with the ions present in the solution, which has a significantly different color from the form existing outside the complex.
- Complexometric indicators are also known as pM indicators.
- In analytical chemistry, complexometric indicators are used in complexometric titration to indicate the exact moment when all the metal ions in the solution are sequestered by a chelating agent (most usually EDTA).
- Such indicators are also called **metallochromic indicators**.

The indicator may be present in another liquid phase in equilibrium with the titrated phase; the indicator is described as an extraction indicator.

- Some complexometric indicators are sensitive to air and are destroyed. When such solution loses color during titration, a drop or two of fresh indicator may have to be added.

Complexometric indicators are water-soluble organic molecules. Some examples are:

- Calcein with EDTA for calcium

- Patton-Reeder Indicator with EDTA for calcium with magnesium
- Curcumin for boron, that forms Rosocyanine, although the red color change of curcumin also occurs for $\text{pH} > 8.4$
- Eriochrome Black T for aluminium, cadmium, calcium and magnesium
- Fast Sulphon Black with EDTA for copper
- Hematoxylin for copper
- Murexide calcium and rare earths

Xylenol orange for gallium, indium and scandium

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