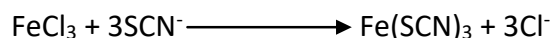


### (3): Spectrophotometric determination of Iron (III) using Thiocyanate

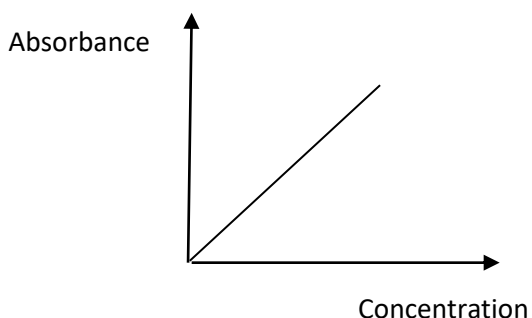
#### Purpose:

The Iron (III) ( $\text{Fe}^{3+}$ ) is determined qualitatively by using thiocyanate (SCN) as an indicator.

If (SCN) is added to a solution containing ( $\text{Fe}^{3+}$ ), a blood red solution is formed due to the formation of  $\text{Fe}(\text{SCN})_3$ .



The Iron (III) is determined quantitatively by using Spectrophotometer at 500 nm with tungsten filament and quartz cuvette.



#### Tools and materials used

Separatory funnel 100ml, funnel, Iron (III) solution, Thiocyanate ammonium 30%, Diethyl ether.

#### Procedure

1. Pipette (1, 2, and 2.5) ml of iron (III) solution into three separatory funnels.
2. Add 6 ml of thiocyanate ammonium 30% to each separatory funnel.
3. Extract using diethyl ether three times (7 ml each time), then collect all extracts in volumetric flask 25 ml. Dilute to volume with diethyl ether.
4. Record the absorbance at 500 nm using 1 cm quartz cuvette.
5. Repeat all steps with the unknown solution (1.5 ml).
6. Calculate the concentration of the unknown solution