CHAPTER-II

EXPERIMENTAL
2.1 MATERIALS EMPLOYED:

The samples of Ethylene glycol of B.D.H Biochemical, Propylene glycol of B.D.H, L.R. glaxo laboratories Ltd Bombay and Butylene glycol of B.D.H chemicals Ltd Poole England were used.

Their standard solutions were prepared by dissolving a weighted quantity of the sample in distilled water.

Ceric Sulphate, ferrous ammonium Sulphate, feeroin were all B.D.H Analar grade chemicals. Sulphuric acid is of A.R. Mark.

Solution of Ceric Sulphate was prepared by warming in Sulphuric acid and water. The strength of Sulphuric acid was maintained at least 0.5 N, that was titrated against ferrous ammonium Sulphate using feeroin as indicator.

Solution of sulphuric acid was made in distilled water and standardised by sodium hydroxide which was standardised by standard solution of oxalic acid.

For ionic strength variation and keeping the ionic strength constant, sodium sulphate was used. Known amount of sodium sulphate was dissolved in distilled water.

Ceric Sulphate of different strengths was used as oxidant and also as titrant.
2.2 PROCEDURE:

The progress of the reaction was followed by estimating the amounts of remaining cerium (IV) at different intervals of time. The requisite volumes of standard Ceric Sulphate, Sulphuric Acid and catalyst Ru (III) and water are taken in 50 ml. conical flask which was kept in a thermostat to maintain the desired temperature. Requisite volume of compound solution was taken in another conical flask which was also kept in the same thermostat. After about half an hour when the reactants had attained the temperature of the bath, the reaction was initiated by adding specified amount of compound solution.

The kinetics were followed by removing 5 ml of alcohols after suitable intervals and quenching the reaction by adding it to a known excess of standard Solution of ferrous ammonium sulphate. The remaining excess of ferrous ammonium Sulphate was determined by titrating it against standard solution of Ceric Sulphate using ferroin as indicator. Two drops of ferroin was used in each titration as indicator and its end correction was made in each titre value. The titre value after ferroin correction giving the volume of Cerium (IV) consumed in 5 ml of the reaction mixture and from these values the concentration of remaining Cerium (IV) were calculated at different intervals of time.

The experimental data thus obtained at different intervals of time were utilized first in fixing the order of the reaction with respect to Ce (IV) and there after order with respect to other reactive species is ascertained by usual standard methods.
During preliminary investigations, it has been observed that none of the reactions under investigation here were found to be affected by change in ionic strength of the medium and hence in following chapters experiments have been carried out without maintaining ionic strength of the medium constant.