## SYNOPSIS

The dissertation entitled "**KINETICS AND MECHANISM OF OXIDATION WITH POLYMER SUPPORTED CHROMATES**" consists of three chapters and embodies accounts of: chapter-I. A survey on the applications of haloamines and polymer supported reagents in oxidation of organic compounds; chapter-II Preparation and applications of polymer supported chromates in oxidation and chapter-III. Results and discussion.

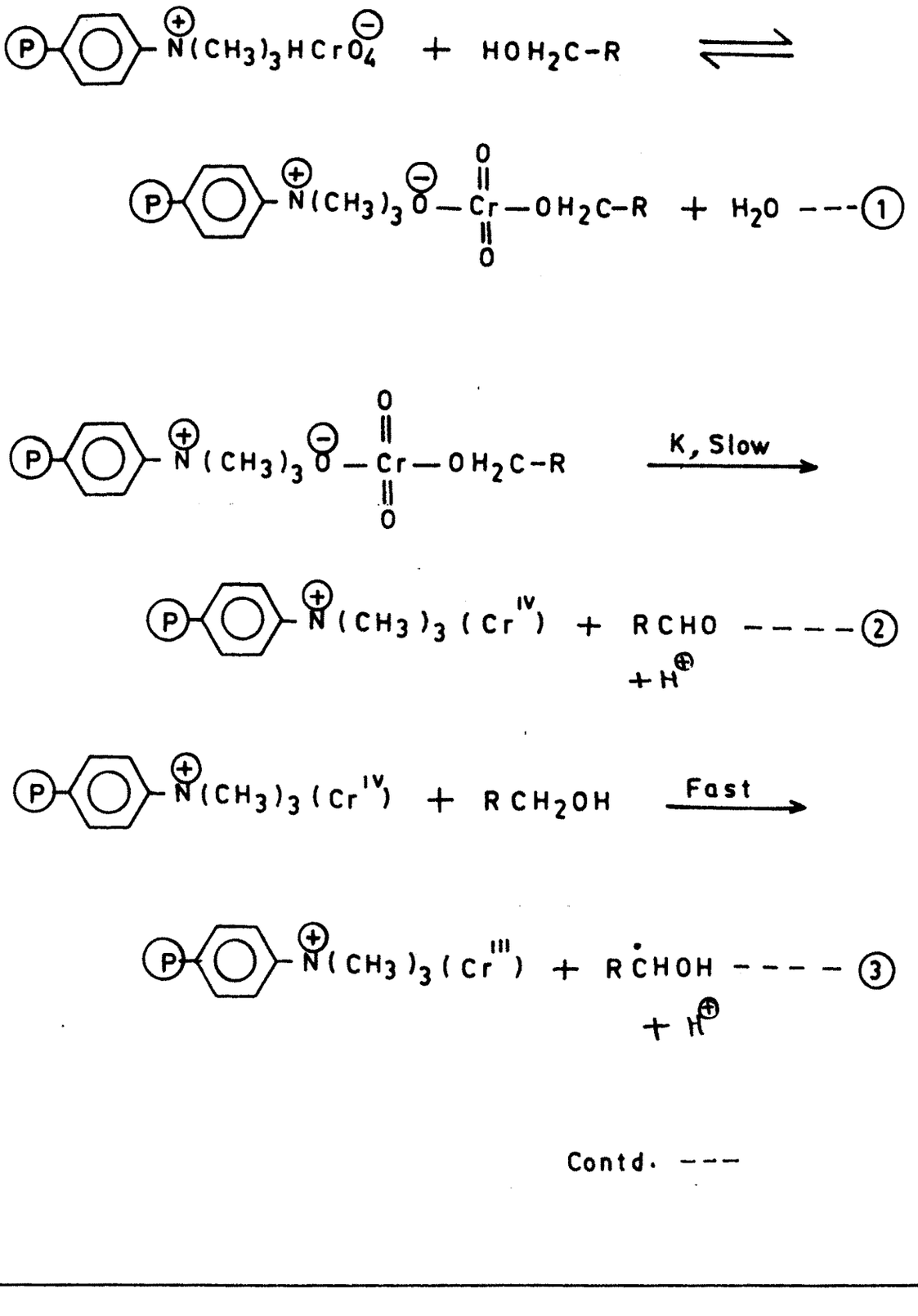
The dissertation begins with the concept of kinetics, fundamental aspects of haloamines like classification, application of chloromine-I in oxidation of alcohols. The fundamental aspects of functionalised polymers like definition and classification of polymers, properties of functionalised polymers, concepts and characteristics of polymeric reagent, types of supports and also advantages and disadvantages in the use of functionalized polymers in chapter-I. Significant applications of polymer supported reagents in the field of organic synthesis are also summarized.

Chapter-II deals with the preparation of polymer-supported chromates from commercially available anion exchange resin Amberlyst A-26 and it's use in the oxidation of alcohols. Although the rate of reaction was slow, the use of polymer supported reagents have certain advantages in

yield, purity of product, ease of separation and selective oxidation over the conventional single phase solution methods. Polymer supported chromate is remarkably effective in oxidizing primary alcohols to aldehydes only.

Chapter-III Describes the mechanistic details of oxidation. The reaction is zero order with respect to polymer supported chromates and alcohol concentration. The rate law and probable mechanism involving generation of free radical ion are discussed. The probable mechanism of oxidation of benzyl and 4-methoxy benzyl alcohols is given in SCHEME-I.

## SCHEME – I'




Contd. ---

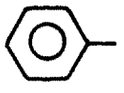
## SCHEME-I (Contd.)

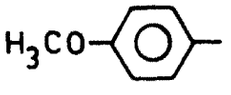
$$R\dot{C}HOH + \text{P-C}_6\text{H}_4\text{-}\overset{\oplus}{N}(CH_3)_3\,HCrO_4^{\ominus} \xrightarrow{\text{Fast}}$$

$$RCHO + \text{P-C}_6\text{H}_4\text{-}\overset{\oplus}{N}(CH_3)_3(Cr^{V}) + H^{\oplus} \quad \text{----(4)}$$

$$\text{P-C}_6\text{H}_4\text{-}\overset{\oplus}{N}(CH_3)_3(Cr^{V}) + RCH_2OH \xrightarrow{\text{Fast}}$$

$$\text{P-C}_6\text{H}_4\text{-}\overset{\oplus}{N}(CH_3)_3(Cr^{III}) + RCHO + 2H^{\oplus}$$

R =  for benzyl alcohol

and  for 4-methoxy benzyl alcohol