CHAPTER - II

SCOPE OF THE WORK

Chromium compounds have been widely used in aqueous and non-aqueous medium for the oxidation of a variety of organic compounds. Cr(VI) reagents have been proved to be versatile reagents capable of oxidizing almost all the oxidizable organic functional groups.

Halochromates have been used as mild and selective oxidizing reagents for the oxidation of organic substrates continues to be of interest. Extensive kinetic and mechanistic studies on the oxidation of organic compounds by chromium reagents have revealed that such reaction ordinarily involve a three electron change, where Cr(VI) species are reduced to Cr(III). In recent years, the kinetics and mechanism of oxidation reactions involving Cr(VI) for a number of substrates have been fairly well studied.

The oxidants employed in the present investigation are morpholinium chlorochromate (MCC) and benzyltriethylammonium chlorochromate (BTEACC). It has emerged as a very useful mild and versatile oxidant which clearly deserving of widespread application.

Cr(VI) is supposed to be highly toxic and hazardous in nature whereas the reduced Cr(III) is biologically active. Cr(VI) originating from tanneries and industrial
wastes contaminates soil, thus presenting a serious environmental hazard due to its toxicity. On the contrary Cr(III) is non-toxic and biologically active.

The chemistry of phenols, anilines, cyclicketones and chalcones is of interest as they form an important class of organic compounds. One of the important tools, in deciding the mechanism of reaction is the study of substituent effects and thermodynamic parameters. The isokinetic relationship is also an important tool for deciding the nature of a mechanism. Keeping this in view, to understand about the Hammett substituent constant for correlation, a systematic study has been made to establish the reactivity and to decide the nature of the mechanism followed in the oxidation of several para- and meta- substituted organic substrates by MCC and BTEACC.