Polymer-supported reagents and catalysts are increasingly important tools for organic synthesis. A polymeric reagent is a reactive organic group bound to a macromolecular support and used in stoichiometric quantities to achieve the chemical modification of an added substrate. Such groups may be attached to polymeric carriers by physical absorption or by chemical bonding. The chemical reagents covalently attached to polymeric carriers are successfully used in organic synthesis and after the reaction the byproducts remain attached to insoluble polymer and can be removed by simple filtration. Another intrinsic advantage of these reagents is that they may be used in excess to drive a reaction to completion and they do not contaminate the product solution. Some of these can be regenerated for repeated use.

Polymeric reagents have been developed for use in oxidation, halogenation, acylation, epoxidation, catalysis etc. Oxidation is an important class of reaction from both industrial and academic points of view. In recent years, a large number of oxidising agents have been used by different researchers for a variety of industrial reactions. Supported oxidising agents have attracted the attention of many scientists due to their unique features such as utmost simplicity of workup.

There has been an incessant interest in the development of Cr(VI) reagents for the effective oxidation of organic substrates, especially under mild aprotic conditions and a number of polymer-supported Cr(VI) reagents have received considerable attention. Polymer-bound chromate based on commercial Amberlyst A-26 resin, polyvinyl pyridinium chlorochromate, polyvinylpyridinium dichromate, Jones’ reagent and
polymer-supported quaternary ammonium complex chromate are some examples.

Many researchers have developed a number of polymer-bound reagents which have wide application in organic chemistry. This thesis presents a comparative study of the physicochemical characteristics of crosslinked polystyrene-, polyvinyl pyrrolidone- and polyacrylamide-supported chromates towards the oxidation of primary and secondary alcohols. This book is structured in five chapters including the introductory chapter which describes the study. The second chapter presents a background knowledge of the theory and applications of polymer-supported reagents. The third chapter deals with preparation, analysis, characterisation and synthetic reactions of the newly developed reagents. The effect of polymer structure and reaction conditions on reactivity of these chromate-supported reagents, their recyclability and thermal stability are also included in this chapter. The fourth chapter forms the experimental part and the last chapter summarises the overall results.