SYNOPSIS

The dissertation entitled "Polymer-Supported Reactions in Organic Synthesis", consists of three chapters and embidies accounts of : Chapter 1; a brief review of the applications of functionalized polymers in organic synthesis. Chapter 2; polymer-supported Meldrum's acid anion : a simple and efficient method for bis-alkylation of Meldrum's acid. Chapter 3; polymer-supported reagents : the use of anion-exchange resin in the synthesis of aryloxyacetic acid esters.

The dissertation begins with a review in the applications of functionalized polymers in organic synthesis. The reagents supported on insoluble polymers have found wide application during the last decade or so in various fields, perticularly in the field of organic synthesis. Chapter 1 is concerned with the preparation, structure and properties of functionalized polymers, advantages and disadvantages in using functionalized polymers and applications of the polymer-supported reagents in the field of organic synthesis.

Bis-alkylated Meldrum's acids are important synthetic intermediates. They can be easily converted into malonic esters or acids, ketones and barbiturates. They have also been used for generation of ketenes. In view of the importance of bis-alkylated Meldrum's acid in pharmaceuticals, a simple and efficient method is now reported for the bis-alkylation of Meldrum's acid in chapter 2. Other methods for bis-alkylation of Meldrum's acid involve tedious reaction work up. The use of anion exchange resins for bis-alkylation of Meldrum's acid which

combines the advantage of solid phase synthesis and anionic activation, it avoids the tedious preparation of the quaternary ammonium salt and has the advantage in terms of yields and simplicity of performance. The resin could be used repeatedly, since it can be regenerated to its initial activity by treating with a solution of hydrochloric acid.

Chapter 3 describes the use of anion exchange resins in the synthesis of aryloxyacetic acid esters. Aryloxyacetic acid esters are used as flavouring agents. Polymer-supported aryloxy-acetate ion can be alkylated by treatment with alkyl halide in a suitable solvent. The esterifications proceed in nonpolar solvents as well as in polar solvents, showing that the reactions involving the polymeric reagents are independent of the nature of the solvent. Hydrophilic and hydrophobic solvents are equally effective indicating that the microenvironment of the resin, in which the reaction site is made, is almost independent of the medium. Thus, less expensive and less poisonous solvents may often be employed. Runs with catalytic amount of the resin do not give satisfactory results in the esterification. Thus, the nucleophilicity of polymer-bound aryloxyacetate ion is increased sufficiently to allow esterification with alkyl halides in a manner which is related to the principles of phase transfer technique with low molecular catalysts. In addition to this transesterification is observed when alcohol is used as a solvent.