

### SYNOPSIS

The dissertation entitled "Polymer Supported Reactions in Organic Synthesis" consists of three chapters and embodies account of : Chapter 1; a brief review of the application of functionalized polymer in organic synthesis; Chapter 2; Polymer Supported Reactions : Synthesis of methylene diesters of carboxylic acids; Chapter 3; Polymer supported reagents : Synthesis of phenacyl esters of phenoxyacetic acids.

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.

Chapter 2 describes synthesis of methylene diesters prepared by the reaction of polymer supported carboxylate anion with dichloromethane. The method reported here is very efficient method for preparation of methylene diesters due to high yields, ease and simplicity. This method is particularly useful to prepare monomers such as methylene diester of cinnamic acid, to prepare bifunctional monomers like methylene diester of o-amino benzoic acid. In addition to this methylene diesters of heterocyclic acids such as nicotinic acid, isonicotinic acid have been prepared in good yields and purity. Polymer support causes anionic activation of the carboxylate ion. The reaction is performed simply by

refluxing polymer supported carboxylate ion in dichloromethane. Other reactions for preparation of methylene diester involve tedious reaction work up and generally result in low yields.

Chapter 3 describes the synthesis of phenacyl esters of phenoxyacetic acids. Phenacyl esters are used as protecting groups. Polymer supported phenoxyacetate ion with phenacyl bromide in suitable solvent forms phenacyl ester in good yields and purity. The esterification proceed in nonpolar solvents as well as in polar solvents, showing that the reactions involving polymeric reagents are independent of the nature of the solvent. Hydrophilic and hydrophobic solvents are equally effective indicating microenvironment of the resin is independent of the medium. Literature survey showed that the formation of phenacyl esters by traditional methods is plagued by slow reaction times, hydrolysis of alkylating agents and low yields of the products. Kinetically it has been shown that, phenoxyacetate ion is very weak nucleophile. But the polymer supported reaction mentioned here is pretty fast, clean and gives quantitative yields of pure products due to anionic activation.