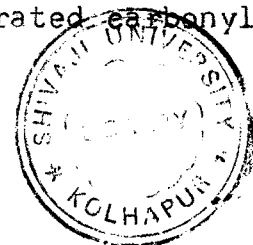


## SYNOPSIS

The dissertation entitled, "Polymer Supported Reactions in Organic Synthesis", consists of three chapters and embodies accounts of : Chapter I; a brief review of the applications of functionalized Polymers in organic synthesis. Chapter II; a simple and efficient method for the selective reduction of  $\alpha,\beta$ -unsaturated carbonyl compounds by using the borohydride exchange resins (BER). Chapter III; the chemoselective reduction of  $\alpha,\beta$ -unsaturated carbonyl compounds by the borohydride exchange resin (BER).

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, particularly in the field of organic synthesis. Chapter I is concerned with the structure and properties of functionalised polymers. advantages and disadvantages in using functionalised polymers and applications of the polymer-supported reagents in the field of organic synthesis.

The reduction of a conjugated double bond is a substantial competing process in the sodium borohydride reduction of both cyclic and acyclic ketones. Examination of the literature revealed several similar reports of conjugated ketone double bond reduction. Selective reduction of  $\alpha,\beta$ -unsaturated carbonyl



compounds without disturbing the carbon-carbon double bond is a frequent synthetic problem. In recent years various reagents have been developed for such selective reductions but they have several disadvantages such as complex reaction work-up, low yields etc. The selective reduction of  $\alpha,\beta$ -unsaturated aldehydes and ketones to the corresponding unsaturated alcohols with the BER is summarised in Chapter II. Besides this selectivity in the reduction, BER has significant advantages over other hydride systems. It is also observed that the rates of reduction of different carbonyl compounds are different. Therefore, by using polymer-supported borohydride reagent specific reductions can be carried out at room temperature and the method has immense synthetic potential.

Chapter III describes the high chemoselectivity of BER between  $\alpha,\beta$ -unsaturated aldehydes and ketones. BER reagent reduces aldehydes much faster than ketones. Chemoselectivity is also observed between different types of  $\alpha,\beta$ -unsaturated ketones. The reduction of a unhindered ketone (benzal acetone) is much faster than the hindered ketone (benzal acetophenone). Therefore, by using polymer supported borohydride reagent chemoselective reductions can be carried out at room temperature.

Two papers comprising the subject matter of chapter II and chapter III have been accepted for publications. Selective reduction of  $\alpha,\beta$ -unsaturated carbonyl compounds is accepted for

presentation at the Second International Conference on "Polymer Supported Reactions in Organic Chemistry" at Lancaster (U.K.) to be held during 2 to 5 July 1984.

List of Publications :

1) Borohydride Reducing Agent Derived from Anion Exchange Resin: Selective Reduction of  $\alpha,\beta$ -unsaturated carbonyl compounds.

Accepted for publication in Tetrahedron Letters. (1984).

2) Borohydride Reducing Agent Derived from Anion Exchange Resin: Chemoselective Reduction of  $\alpha,\beta$ -Unsaturated Carbonyl Compounds.

Accepted for publication as communication in

Indian Journal of Chemistry; Section B

for the June 1984 issue.