PREFACE

The nitrone moiety can be regarded as a 3 centered dipolar 4π System, which enables 1,3 dipolar cycloaddition reactions with dipolarophilic reagents to occur. 1,3 Dipolar cycloadditions are susceptible to electronic and Steric influences.

The question of reactivity and substituent effects in 1,3 dipolar cycloaddition reactions has been rationalised successfully using the 'Perturbation Molecular Orbital Theory' which provides the relative interaction energies of the frontier orbitals of 1,3 dipole and dipolarophile. Conjugating Substituents, electron attracting groups or electron releasing moieties influence the atomic orbital coefficients and have a significant influence on the regio selectivity of the reaction.

In 1,3 dipolar cycloaddition reactions, alkenes & alkynes with electron withdrawing groups are highly reactive where as alkenes with electron releasing substituents are moderately reactive.

But recently known nitrile-nitrone cycloadditions are allowed under thermal as well as under high pressure conditions with complete regio selectivity. Therefore, though it is generally accepted that in 1,3 dipolar cycloaddition of nitrones to alkenes are single step concerted reaction but polarized dipolaro philes (e.g nitriles) may undergo concerted but not necessarily synchronous cycloadditions.

The present work entitled " Studies of 1,3 Dipolar cycloaddition Reactions with N- Cyclohexyl Nitrones " describes the theoritical study as well as a systematic investigation of 1,3 dipolar cycloaddition reactions of two different N-Cyclohexyl nitrones with a variety of alkenes and a few alkynes along with some interesting results of the nitrone - nitrile cycloaddition.

Chapter - I is an attempt to find out the existence and approximate stabilities of different N- cyclohexyl nitrones. Special emphasis has been given to theoritical HMO calculation for such nitrones to study the mechanistic course of 1,3 dipolar cycloaddition reactions.

Chapter - II deals with the chemistry of intra & inter molecular 1,3 dipolar cycloadditions of nitrones. Attempts have been made in this chapter to cover a complete review of the literature & the latest developements upto 1994 in a more comprehensive manner.

Chapter - III is the experimental section. In this section, cycloaddition reactions with different alkenes viz, normal, conjugated, moderately electron deficient and moderately electron rich along-with few alkynes and their reaction conditions are given.

Chapter - IV deals with the results and discussion, along with spectral interpretation viz, PMR and Mass.

Chapter - V deals with the further scope and objectives of the present work in brief.

Structures of all the products were assigned on the basis of PMR, Mass and IR Spectra's .