

P R E F A C E

The work 'On the cycloaddition reactions of N-cyclohexyl methylene nitrene' was taken up in April, 1980, under the supervision of Dr. T.K.Dasgupta, Reader, Department of Chemistry, University of North Bengal. The idea of selection of this methylene nitrene is due to the cordial suggestion of Prof. A.Eschenmoser, ETH, Zurich. The method adopted for the preparation of the nitrene is taken from the unpublished work of Dr. F.H^{ci}jenzer, ETH, Zurich. In the present thesis the method of preparation has been further extended with the isolation of some side products of the reaction.

The present work mainly deals with a systematic investigation of 1,3-dipolar cycloadditions of N-cyclohexylmethylene nitrene with a wide variety of alkenes and alkynes.

Chapter - I deals with reviews and theories of the preparation and 1,3-dipolar cycloadditions of nitrene. The scope, objective and nature of the work have been summarized in Chapter II. Chapter III is the main text of the thesis, it includes the results and discussions of the work.

Different types of alkenes viz. normal, conjugated, moderately electron deficient and moderately electron rich alkenes have been chosen for the study of its cycloadditions. The different reaction conditions needed for such reactions have also been studied. In the cases with the sluggish olefins high pressure techniques have been used. Cycloaddition of the nitrene with

cyclooctatetraene has been studied also.

The regio selectivity and stereo specificity being the common criteria of the 1,3-dipolar cycloadditions have also been studied.

The cycloadditions with several dipolarophiles proceed through intense charge transfer intermediates. In such cases charge transfer spectra have been recorded.

Considerable attention has been devoted to the study of cycloadditions of N-cyclohexylmethylene nitrene with the moderately electron deficient alkynes.

The structure of the adducts have been assigned on the basis of mass, $^1\text{H-NMR}$ and IR data.

Finally, attempt has been made to interpret the mass fragmentation pattern of 2-cyclohexyl 1,2-Isioxazolidine heterocyclic system in a generalised form. The experimental procedures have been stated in Chapter IV.