B.Sc. Semester-VI
GroupA / DSE-4
Organic Synthesis

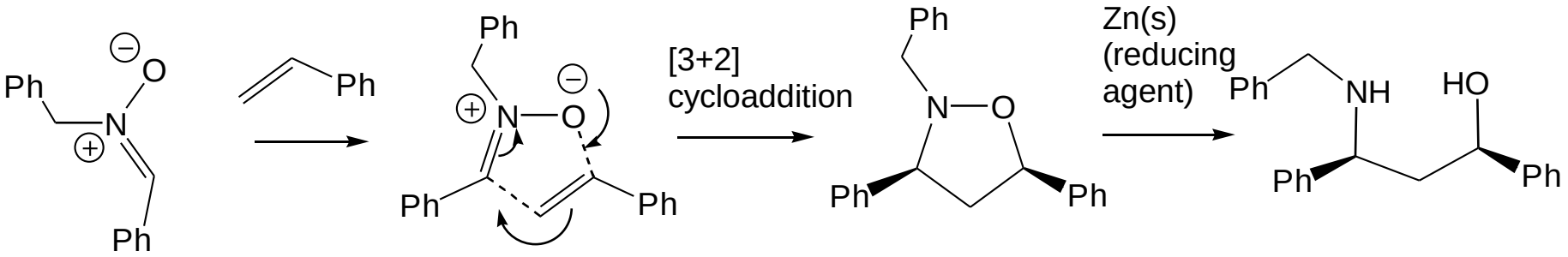
II. Pericyclic Reactions

7. 1,3-Dipolar Cycloaddition Reaction

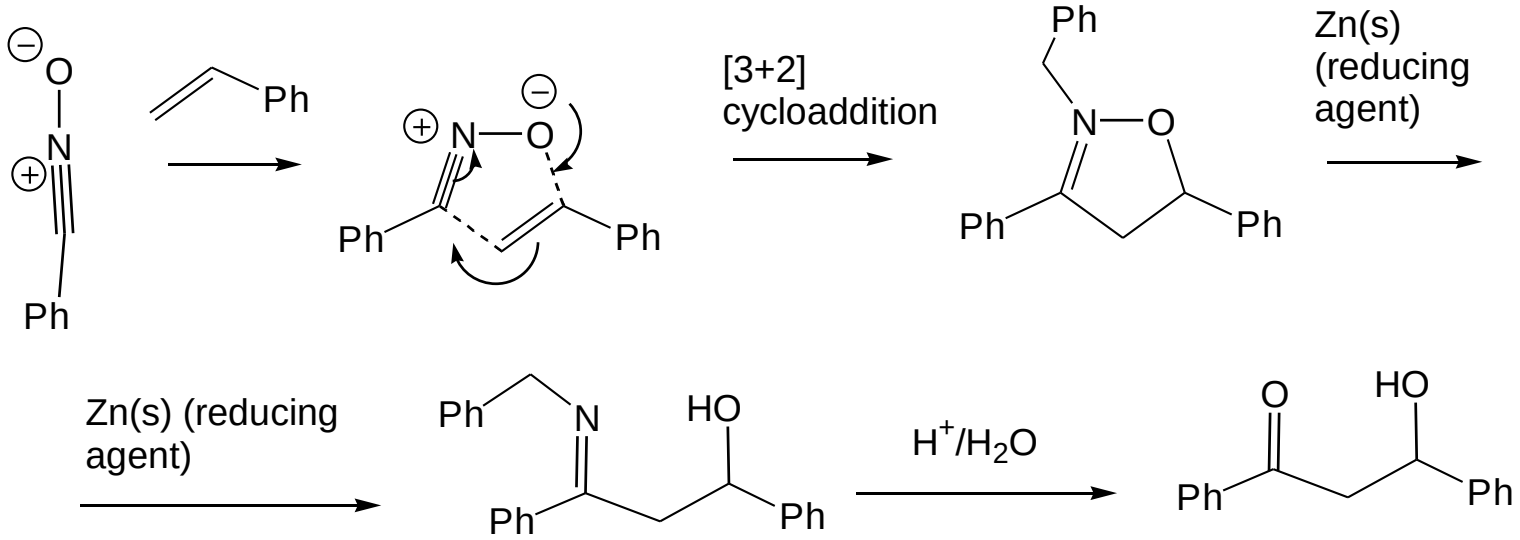
Dr. Rajeev Ranjan
University Department of Chemistry
Dr. Shyama Prasad Mukherjee University, Ranchi

1,3-Dipolar Cycloaddition Reactions

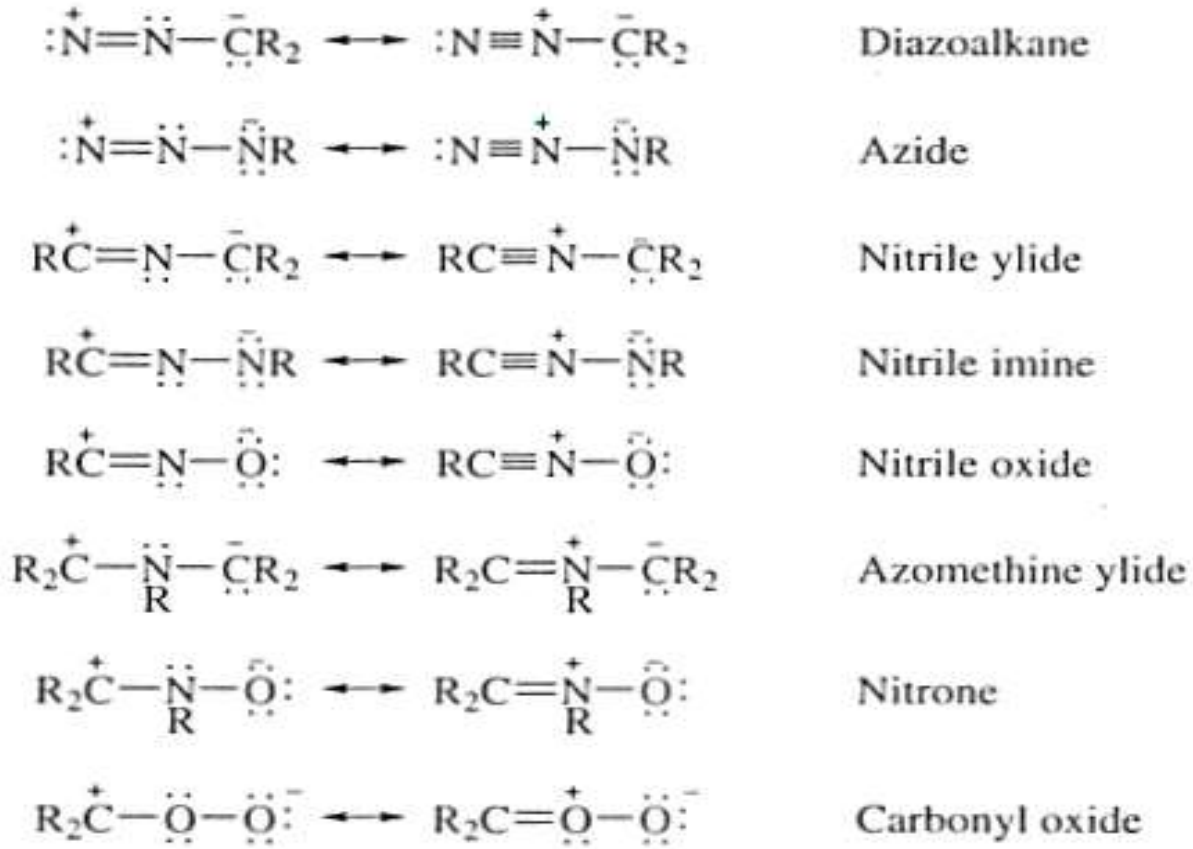
The cycloaddition of nitrones to alkenes (below) is a 6-electron process which proceeds in a suprafacial manner. The cycloaddition product can be reductively opened, thus providing a stereoselective method for the synthesis of 1,3-aminoalcohols.



A similar cycloaddition of nitrile oxides provides a method for the synthesis of 3-hydroxy ketones, all these reactions involve 4n+2 electrons and are suprafacial:



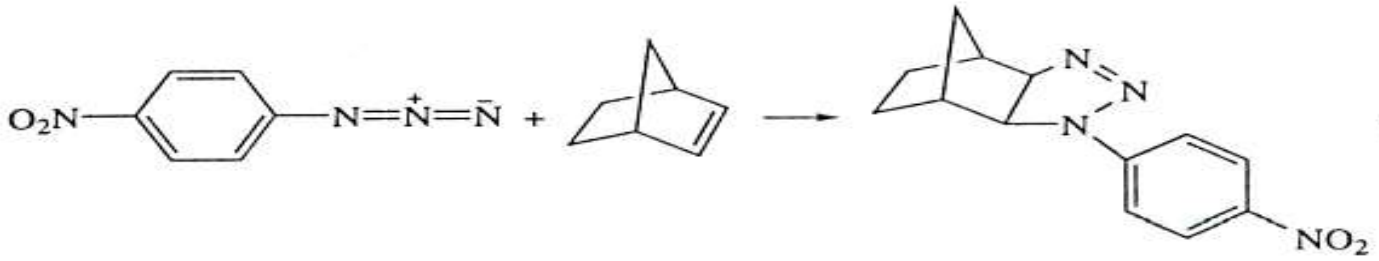
1,3- Dipolar Compounds:



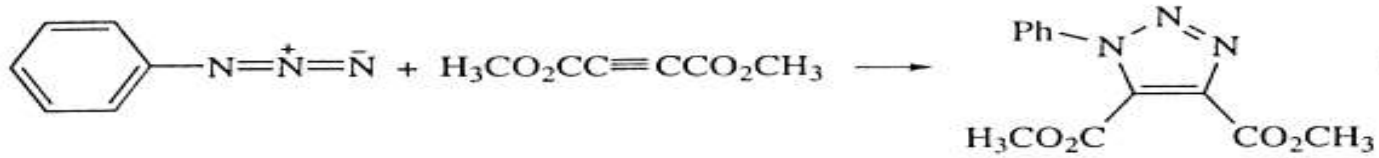
1,3-Dipolar Cycloaddition Reaction (Intermolecular)

A. Intermolecular cycloaddition

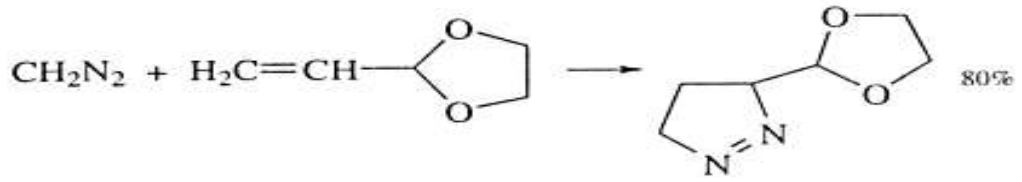
1[a]



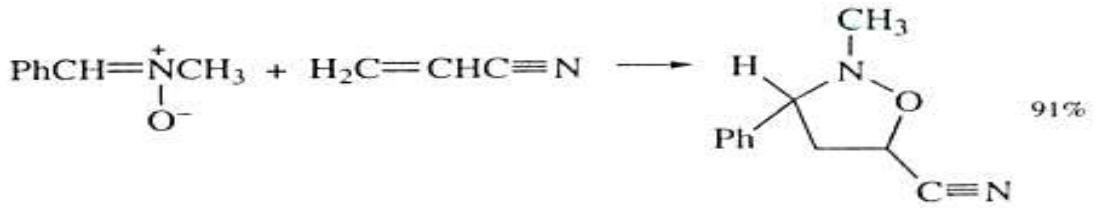
2[b]



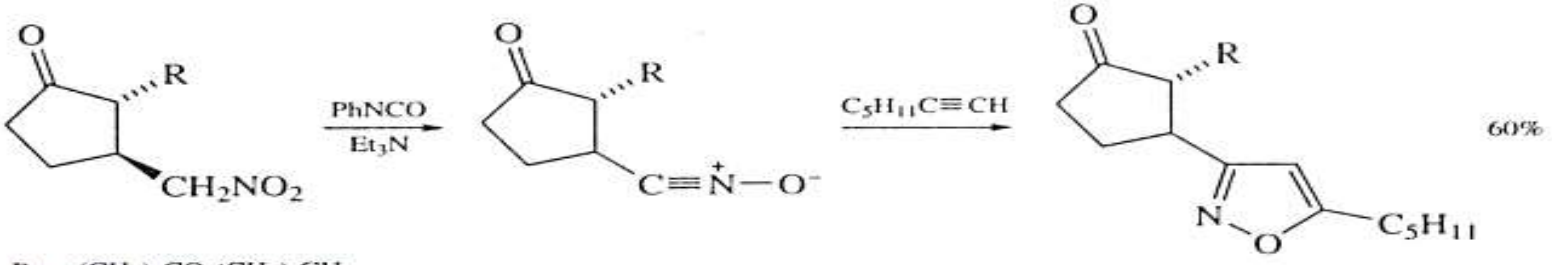
3[c]



4[d]



5[e]

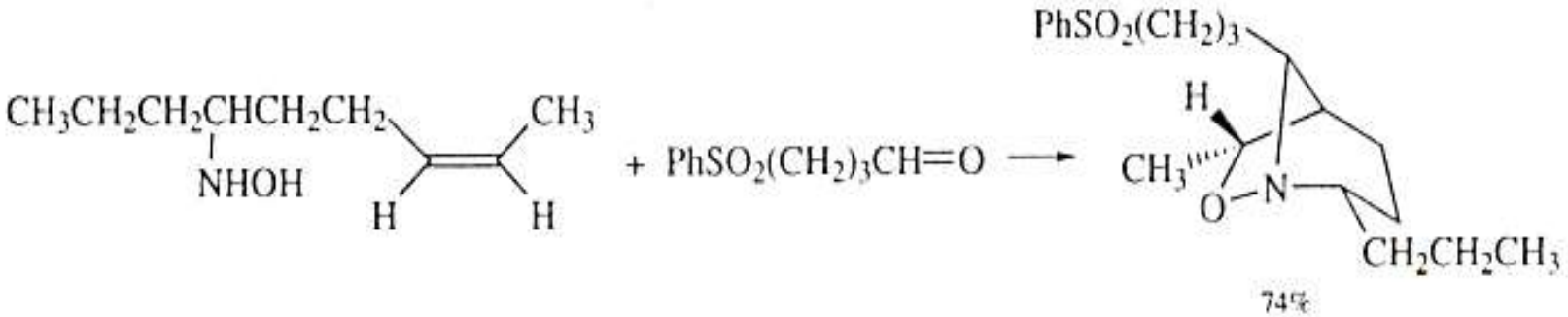


R = $-(CH_2)_6CO_2(CH_2)_3CH_3$

1,3-Dipolar Cycloaddition Reaction (Intramolecular)

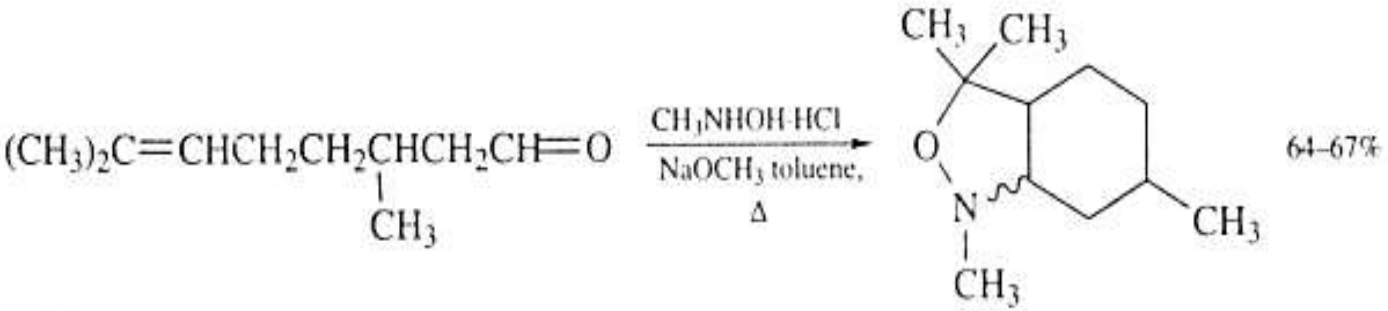
B. Intramolecular cycloaddition

6[f]



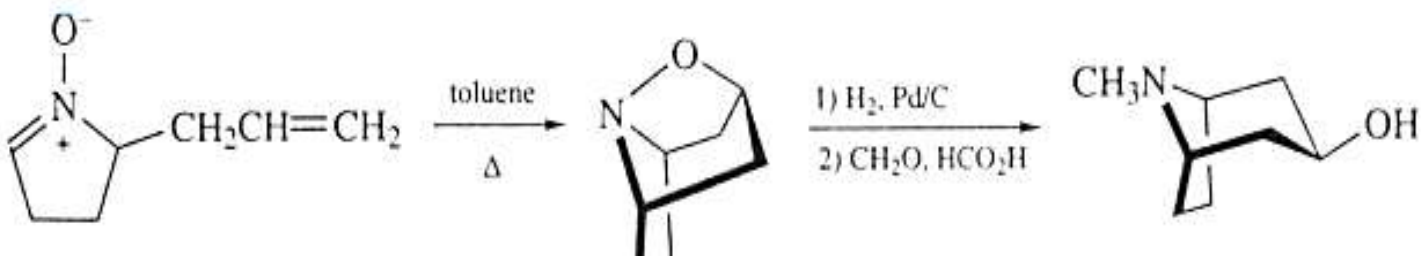
74%

7[g]

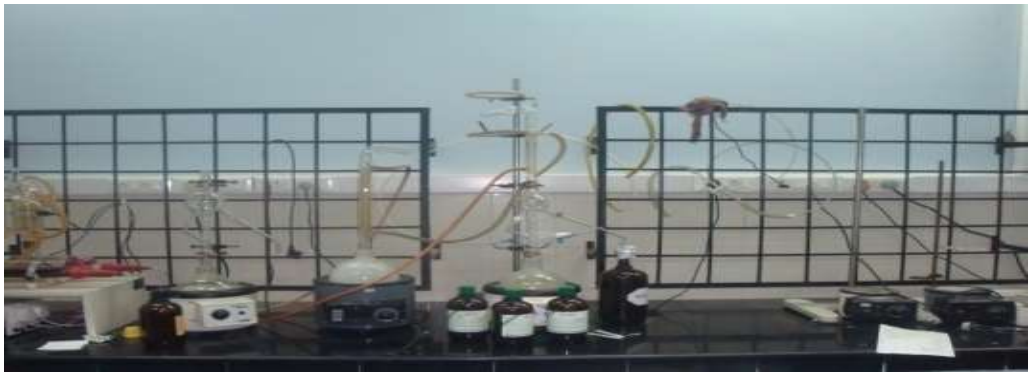


64–67%

8[h]



Thank You



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