

**The regiochemistry and stereochemistry of 1,3-dipolar cycloaddition of cyclic nitrones.**

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**Abstract**

A comparative study of the regio- and stereochem. behavior in the 1,3-dipolar cycloaddn. of alkenes with 1-pyrroline 1-oxide and 2,3,4,5-tetrahydropyridine 1-oxide has been carried out. The high degree of both regio- and stereochem. control obsd. in these reactions has been explained in terms of frontier orbital interaction, steric factors, and secondary orbital interaction in the transition state. While most common alkenes (both mono- and 1,1-disubstituted) gave 2-substituted cycloadducts, the highly polarized alkene di-Me methylenemalonate afforded mainly regioisomeric 3-substituted cycloadduct. Significant secondary orbital interaction is obsd. with the nonconjugated substituents, hydroxymethyl and its derivs.