

**M.Sc. Semester-IV**  
**Core Course-9 (CC-9)**  
**Synthetic Organic Chemistry**



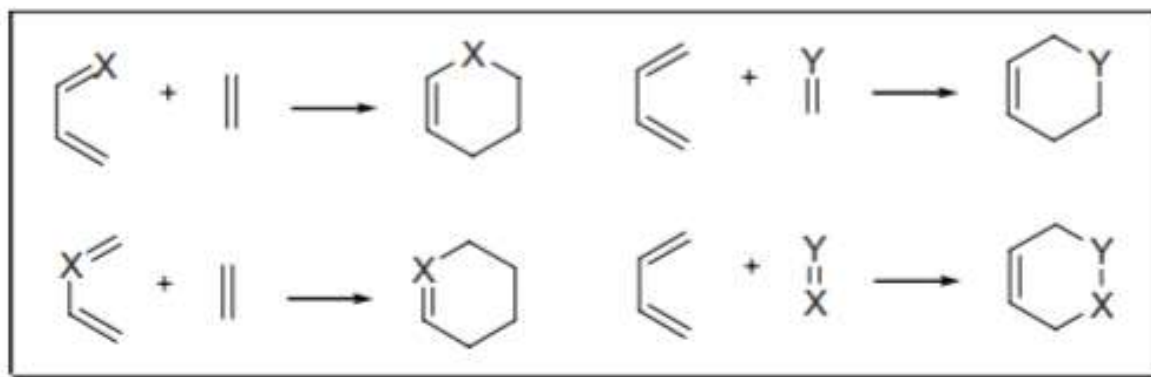
**II. Pericyclic Reactions**  
**13. Hetero-Diels-Alder Reaction**



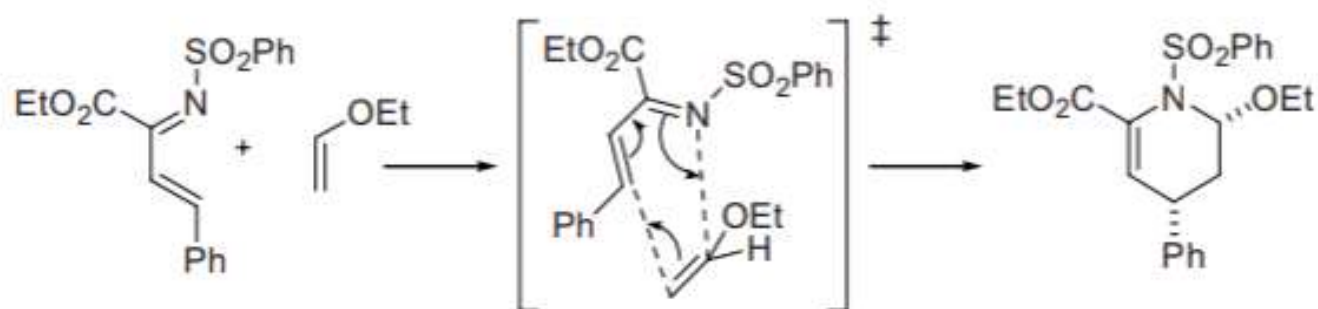
**Dr. Rajeev Ranjan**  
**University Department of Chemistry**  
**Dr. Shyama Prasad Mukherjee University, Ranchi**

## Hetero-Diels–Alder reaction

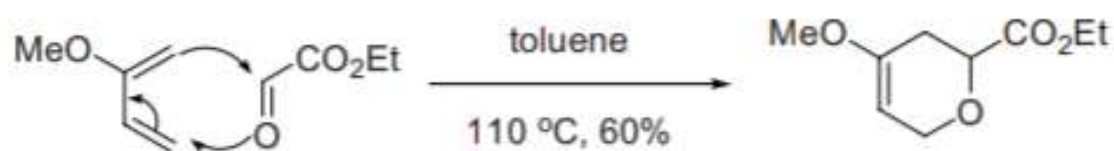
Heterodiene addition to dienophile or heterodienophile addition to diene. Typical hetero-Diels–Alder reactions are aza-Diels–Alder reaction and oxo-Diels–Alder reaction.



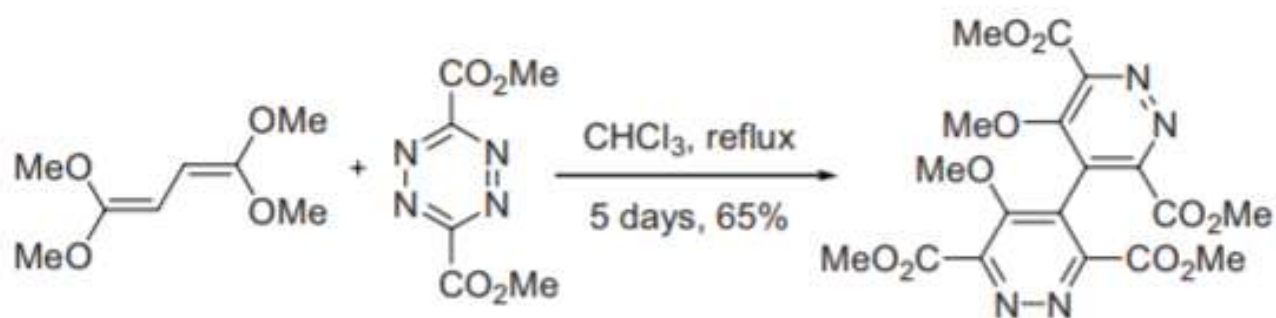
e.g.:



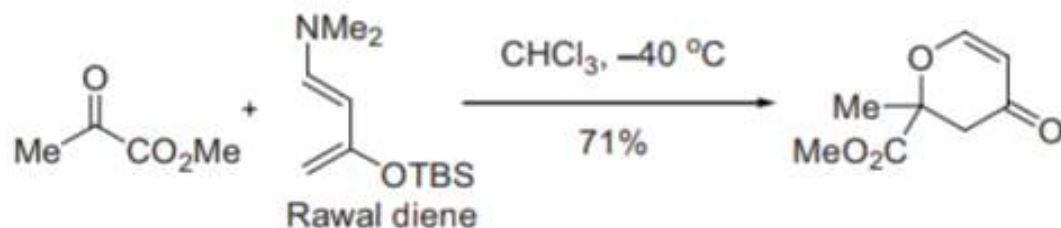
Example 1, Heterodienophile addition to diene<sup>1</sup>



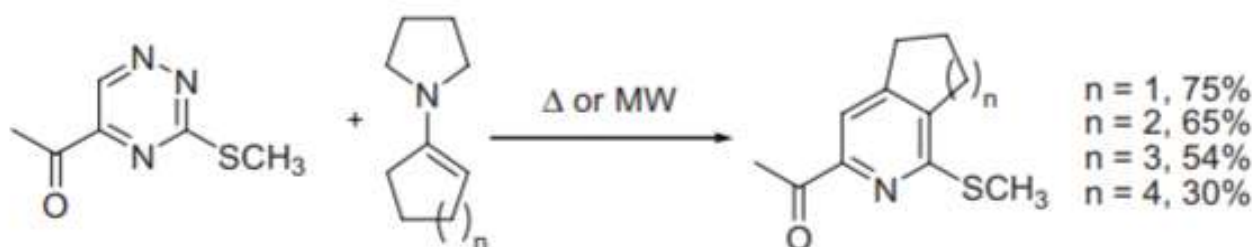
Example 2, Similar to the **Boger pyridine synthesis** (see page 59)<sup>2</sup>



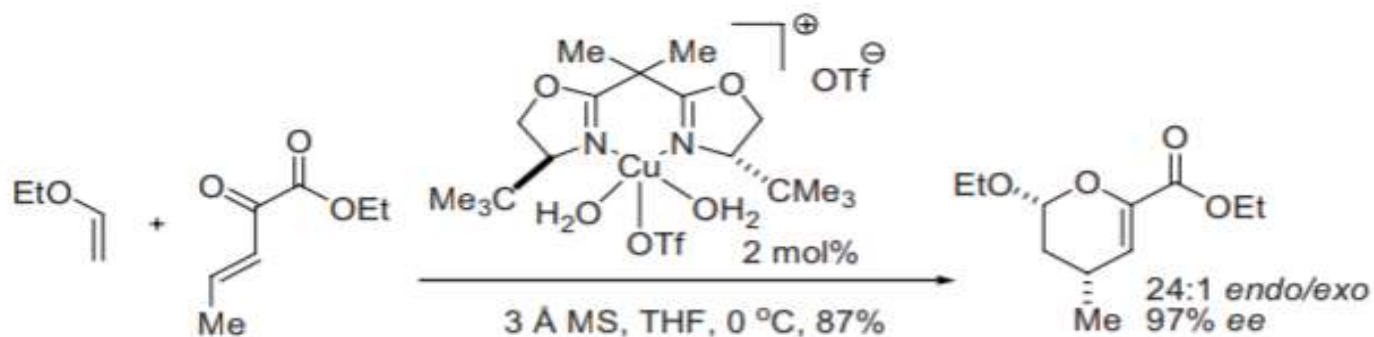
### Example 3, Using the Rawal diene<sup>4</sup>



### Example 4, Also similar to the Boger pyridine synthesis<sup>6</sup>



### Example 5<sup>7</sup>



### References

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2. Boger, D. L. In *Comprehensive Organic Synthesis*; Trost, B. M.; Fleming, I., Eds.; Pergamon, **1991**, Vol. 5, 451–512. (Review).
3. Boger, D. L.; Baldino, C. M. *J. Am. Chem. Soc.* **1993**, *115*, 11418–11425.
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5. Jørgensen, K. A. *Eur. J. Org. Chem.* **2004**, 2093–2102. (Review).
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Dr. Rajeev Ranjan

University Department of Chemistry

Dr. Shyama Prasad Mukherjee University, Ranchi