

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



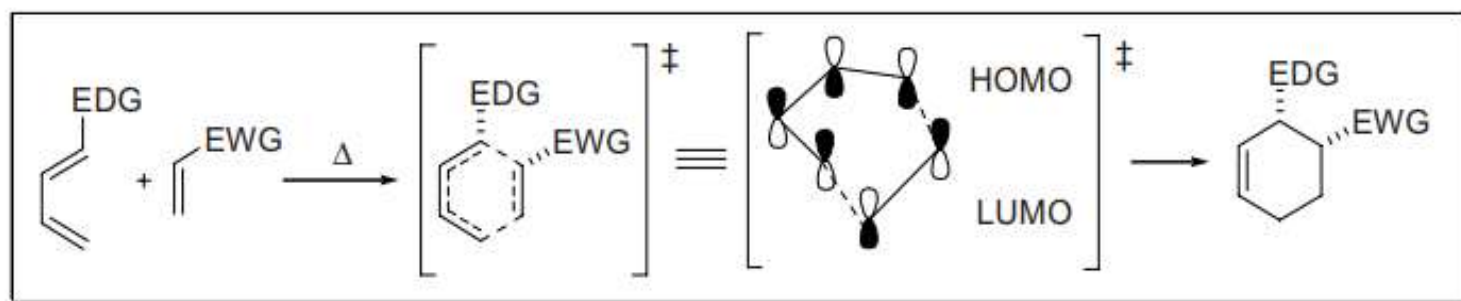
II. Pericyclic Reactions
12. Diels-Alder Reaction



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Diels–Alder reaction

The Diels–Alder reaction, inverse electronic demand Diels–Alder reaction, as well as the hetero-Diels–Alder reaction, belong to the category of $[4+2]$ -cycloaddition reactions, which are concerted processes. The arrow pushing here is merely illustrative.

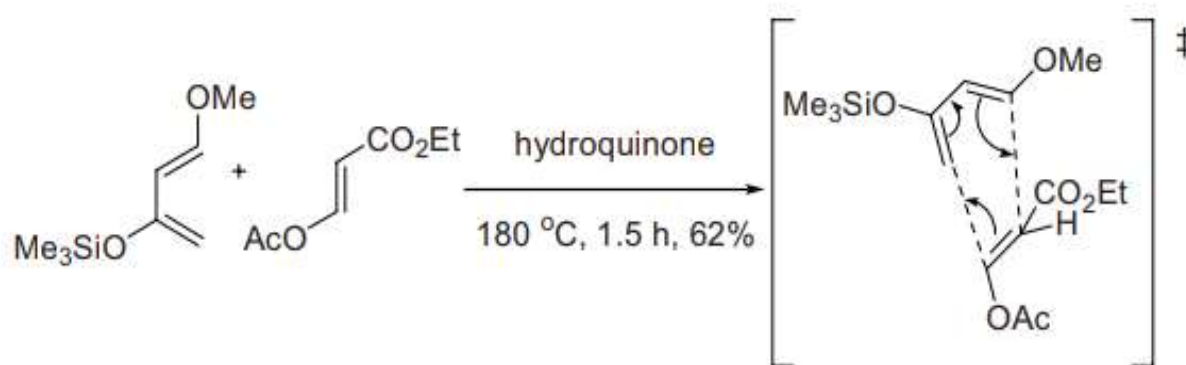


diene dienophile

adduct

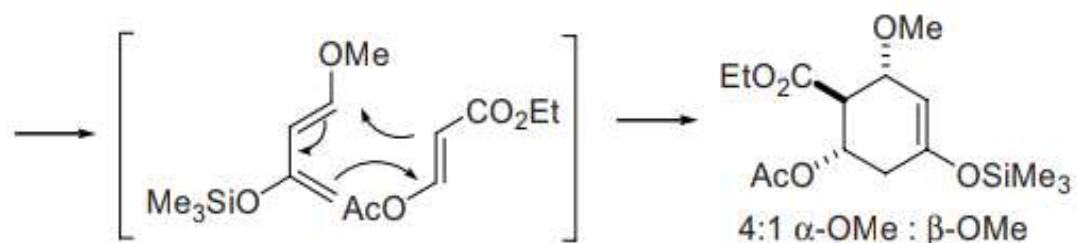
EDG = electron-donating group; EWG = electron-withdrawing group

Example 1⁶

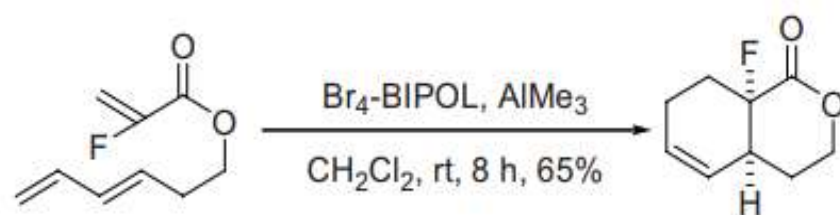


The Danishefsky diene

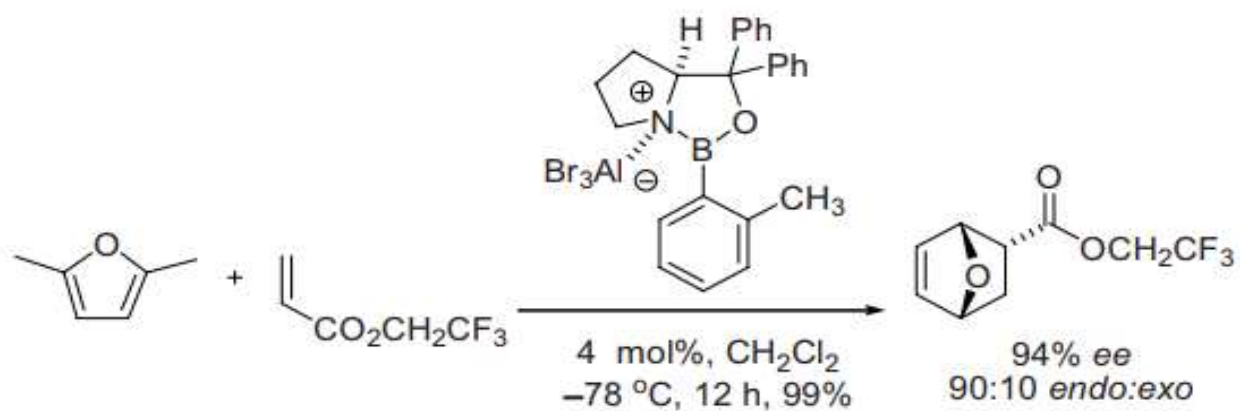
Alder's *endo* rule



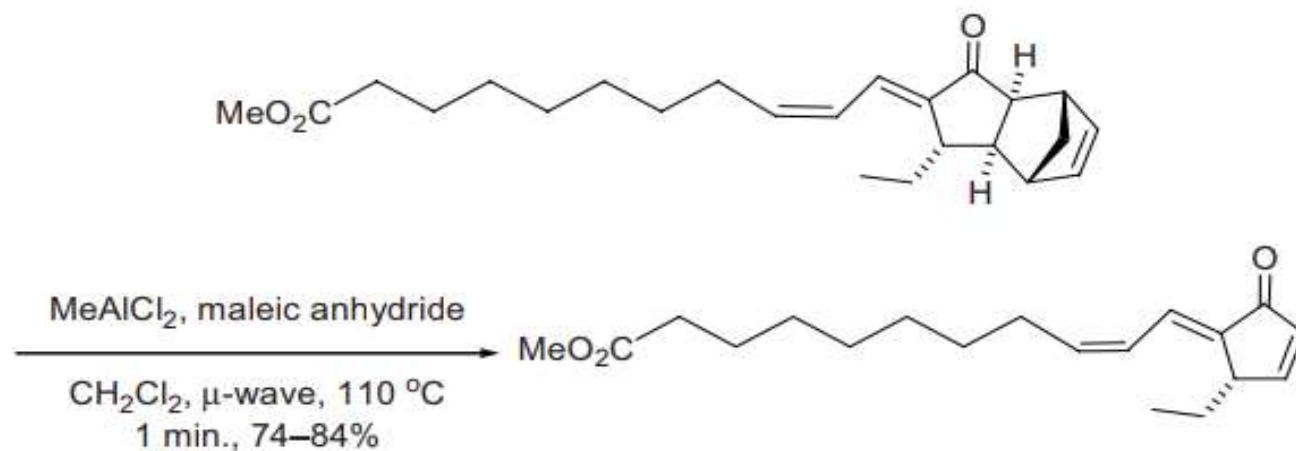
Example 2, Intramolecular Diels–Alder reaction⁷



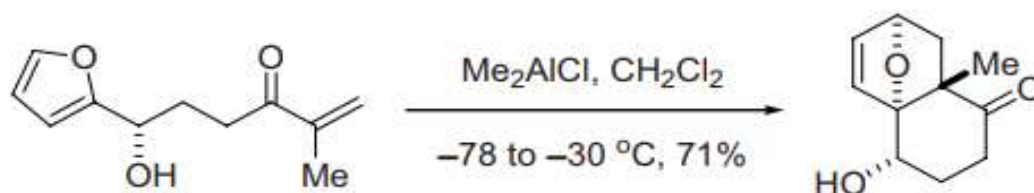
Example 3, Asymmetric Diels–Alder reaction^{5,8}



Example 4, Retro-Diels–Alder reaction^{4,9}



Example 5, Intramolecular Diels–Alder reaction¹¹



References

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