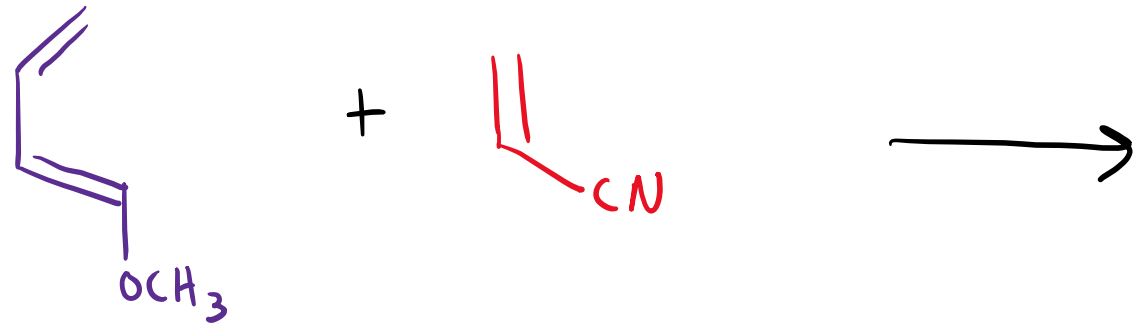
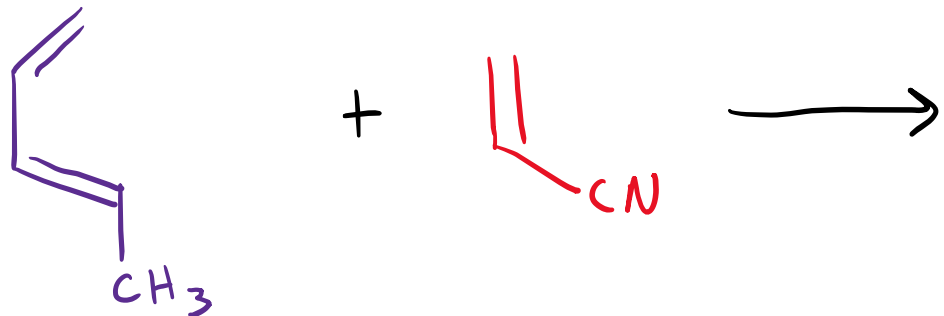
Diels-Alder: Regiochemistry

4/7/2023

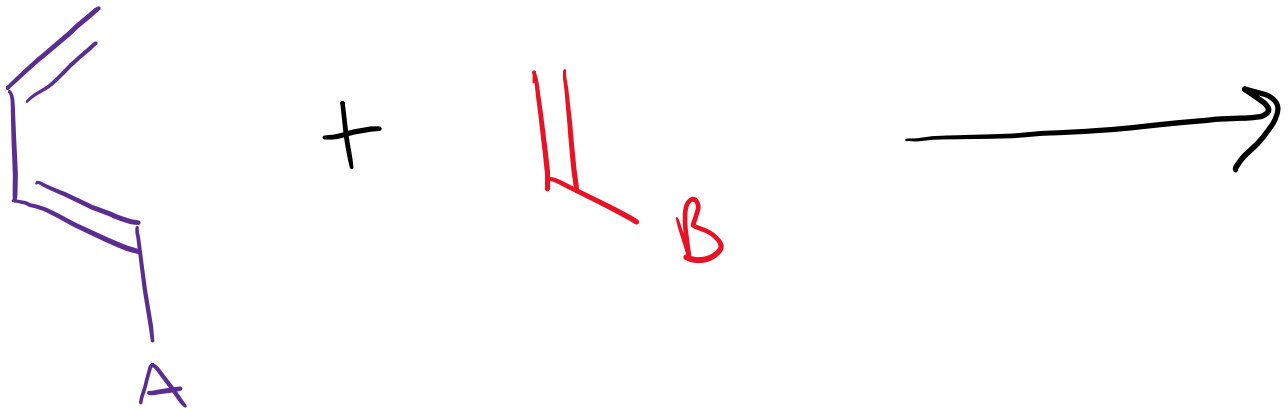
Electronics of Diels Alder

Need one e⁻ rich partner (Nucleophile) and one e⁻ deficient partner (Electrophile)

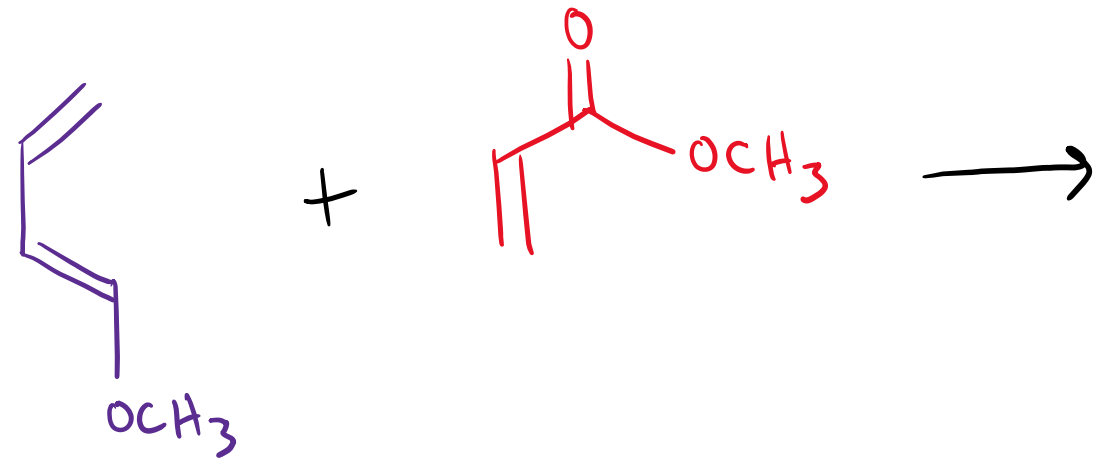




Regiochemistry of Diels-Alder



Regiochemistry of Diels-Alder

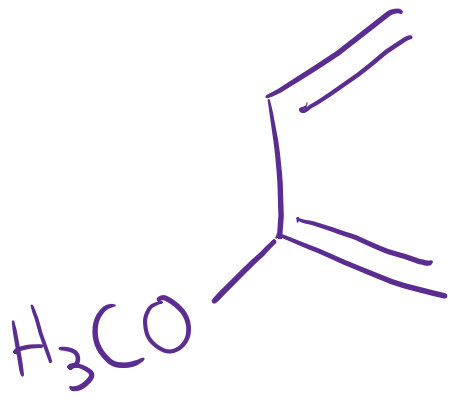


Diene:

Dienophile:

Put them together:

Changing Position of Electron Donating Group (EDG) on Diene

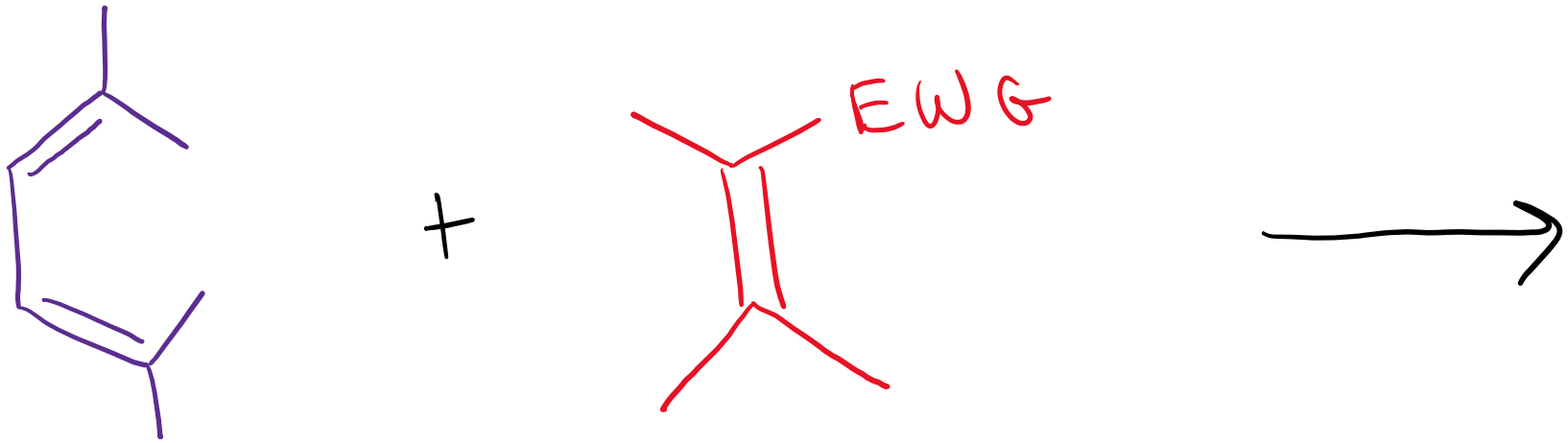


Diels-Alder Regiochemistry: Other Notes

a) EDG + EWG strengths are the same as in Chapter 18 (EAS)

b) Strongest EDG / EWG takes priority when assigning partial charges

Stereochemistry of Diels-Alder



Drawing Diels-Alder Products: Strategy

1. Rotate diene to s-cis conformation
2. Label partial charges & line up regiochemistry
3. Use "In/Out" to determine stereochemistry (wedges + dashes)