

# Lecture “Modern Synthetic Methods”

## Take-home messages from Week 4

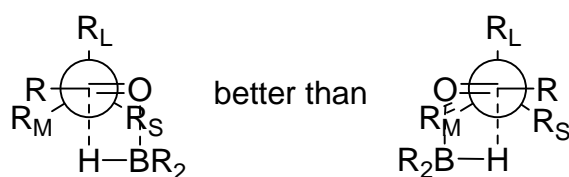
### 2.2. Diastereoselective additions to carbonyl compounds

**Extended Felkin-Anh model:** - Includes modifications to explain a broader scope of Reactions



1. Conformer leads to fully staggered product (Houk's rule)
2. Minimize Nu – R<sub>S</sub> interaction instead of Nu – R<sub>M</sub> repulsion
3. Nu attacks along Bürgi-Dunitz trajectory

**Internal vs. external Nu-delivery:** - Important, when nucleophile and Lewis acid are linked covalently (i.e. boranes).



### Corollary to Felkin-Anh model:

„When a polar, electronegative substituent is present a stereoelectronic effect can become dominant over steric effects. In such cases the polar substituent is placed in the position normally reserved for R<sub>L</sub>”

**“Normal Felkin-Anh versus Chelate-Felkin-Anh:** - If substituents with donor atoms are present (and sterically accessible)  
 - Chelate case also works for donor atoms in β-, γ-position etc.

