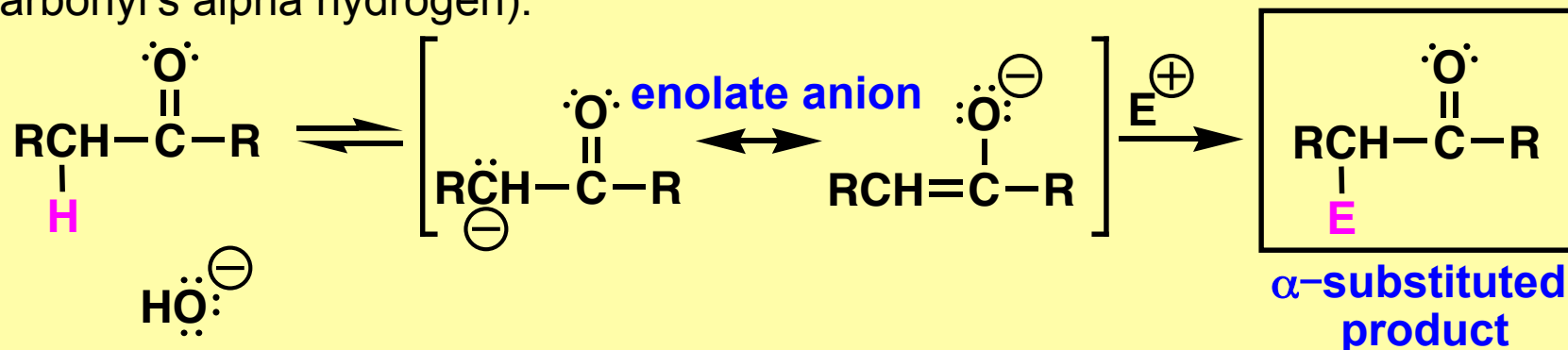
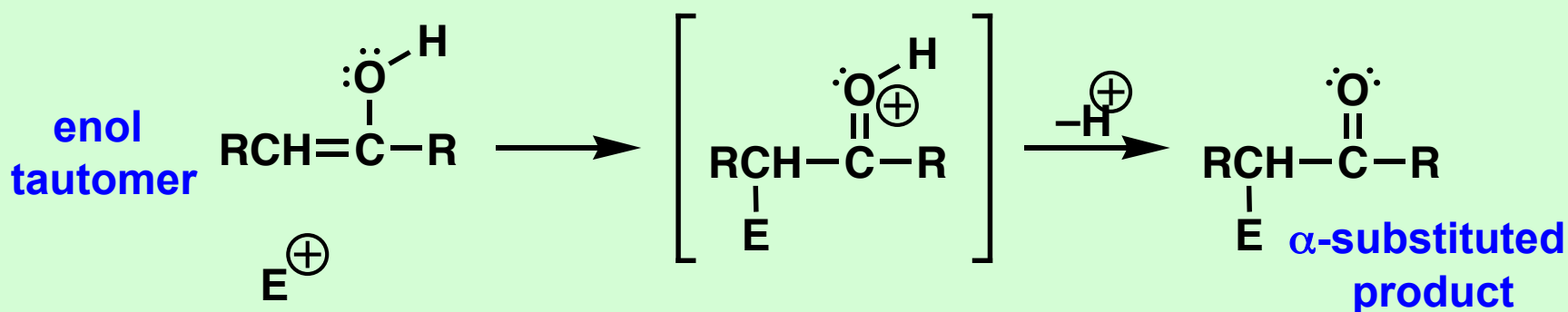


Enolate and Enol Nucleophiles

The enolate anion is as an **ambident** nucleophile (two nucleophilic sites, carbon and oxygen). Electrophiles generally add to carbon rather than oxygen. The net result of a reaction at C-alpha is **substitution** (the electrophile, E⁺, replaces the carbonyl's alpha hydrogen).



The **enol** is nucleophilic too

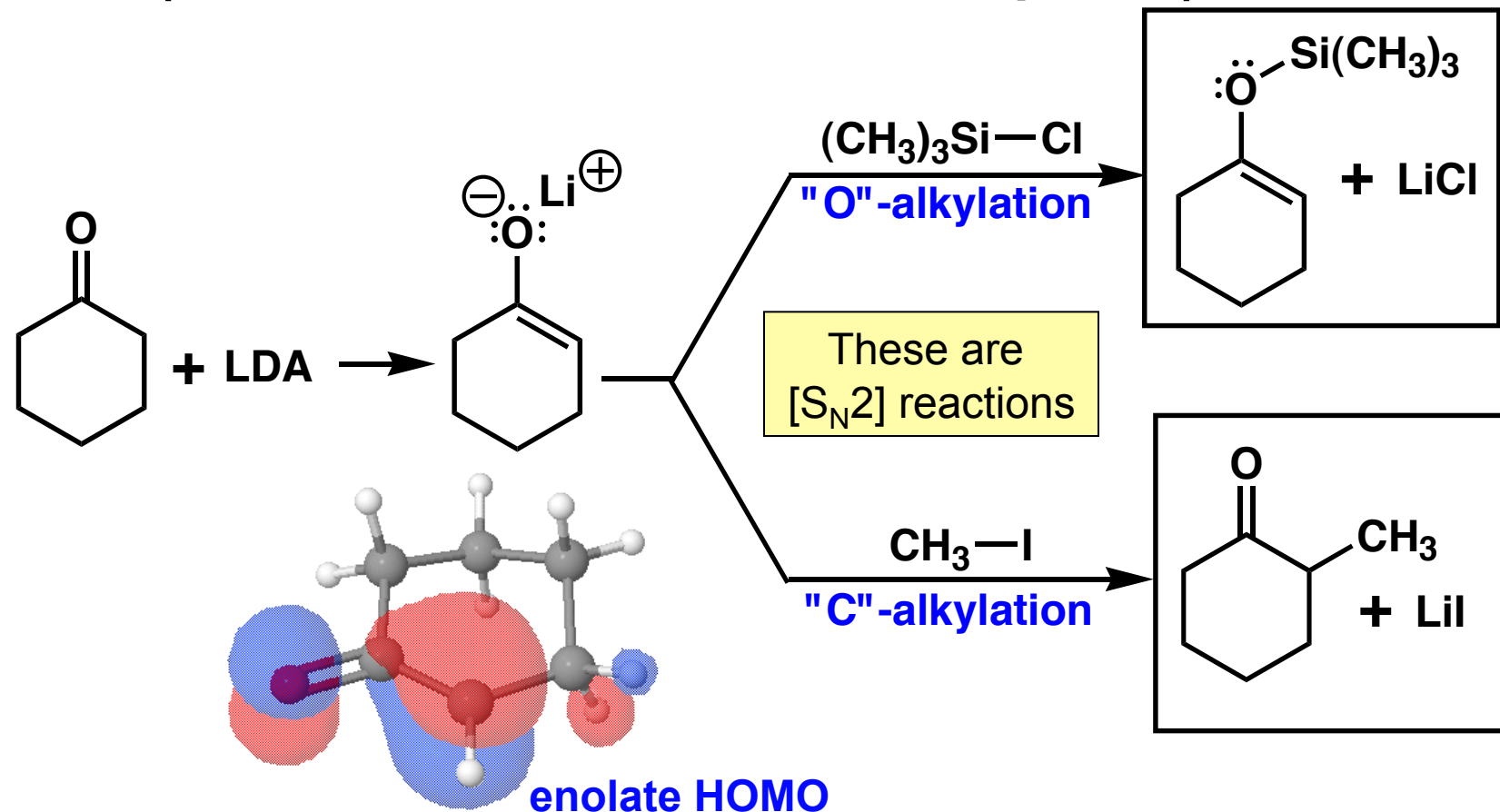


- Under basic conditions, the nucleophilic form will be the **enolate anion**
- Under acidic conditions, the nucleophilic form will be the **enol**



Alkylation of Enolate Anions

(Enolates are Ambident Nucleophiles)



As the HOMO indicates, enolates are ambident nucleophiles, being reactive at both C_{α} and oxygen. Consistent with the largest lobe of the HOMO being on C_{α} , most electrophiles react at carbon; some very powerful electrophiles (and oxophilic electrophiles) react mainly at oxygen (e.g., silicon is strongly oxophilic).