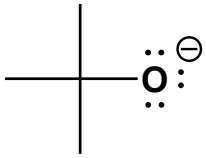
Substitution vs. Elimination reactions:

S_N1 and S_N2 compete with E1 and E2

Substitution (S_N1 and S_N2)	Elimination (E1 and E2)
Replace leaving group	Form an alkene
Use a nucleophile: - Attacks electrophilic carbons (δ^+) or other electrophilic centers.	Use a base: - Attacks an H^+

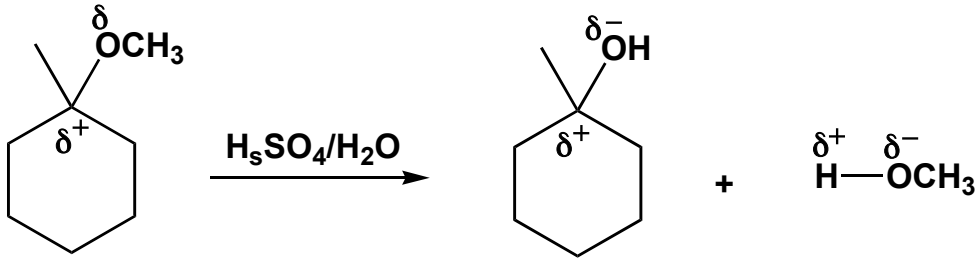
Small good base /But also a good nucleophile



Good base (Even better then $^{\ominus}OH$)
Promote E reaction (often E_2)
However, is a poor nucleophile as it is too bulky

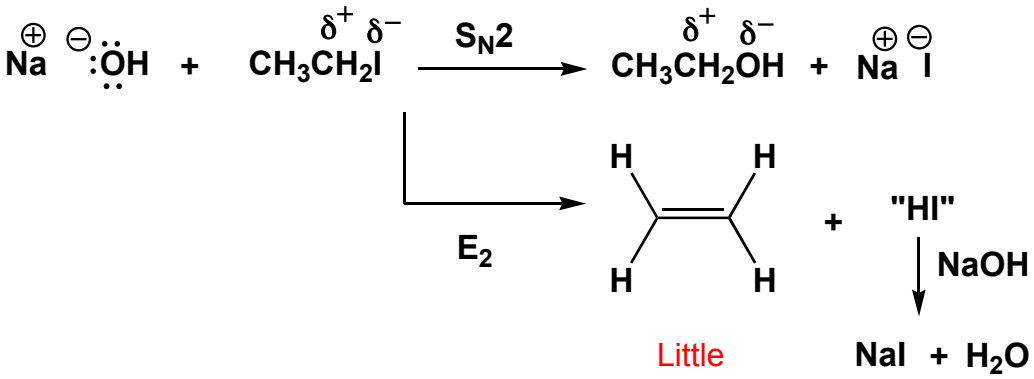
Examples:

1.

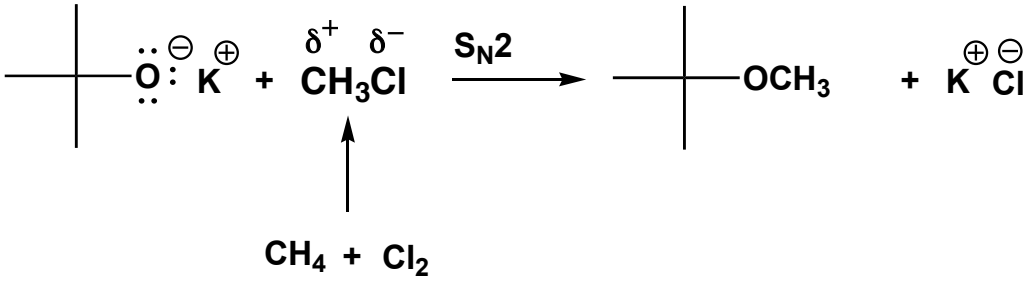


Require acid to proceed as $^{\ominus}OCH_3$ is a poor leaving group

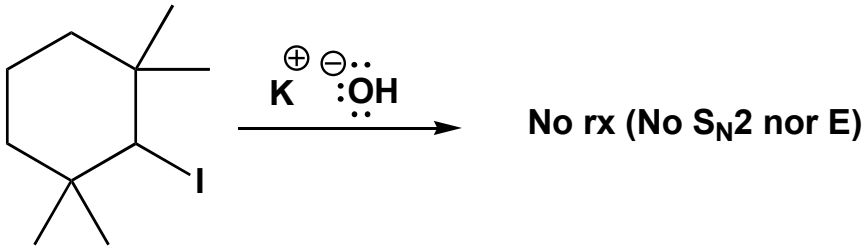
2.



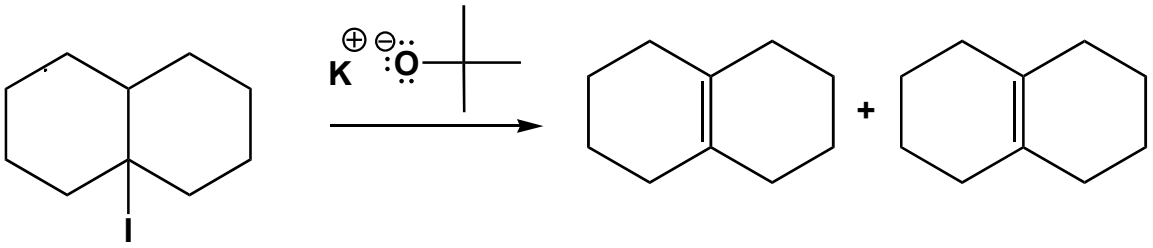
3.

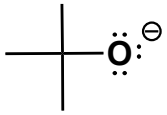


Limitations

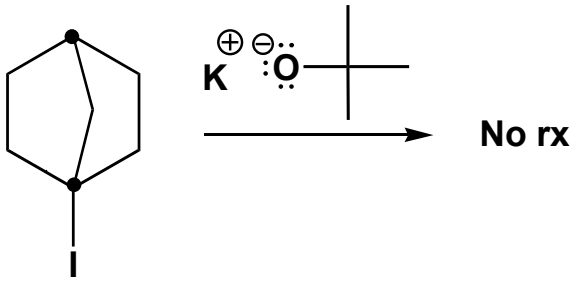


-The carbon is too crowded to undergo a substitution reaction (sterically hindered)
- No adjacent H to favored a dehydrohalogenation

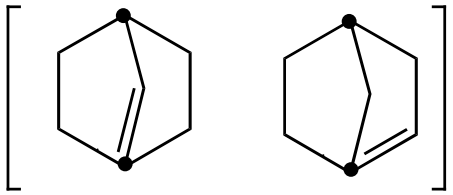




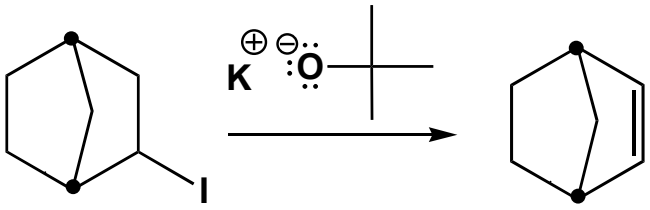
Too bulky to favor S_N2 rx.

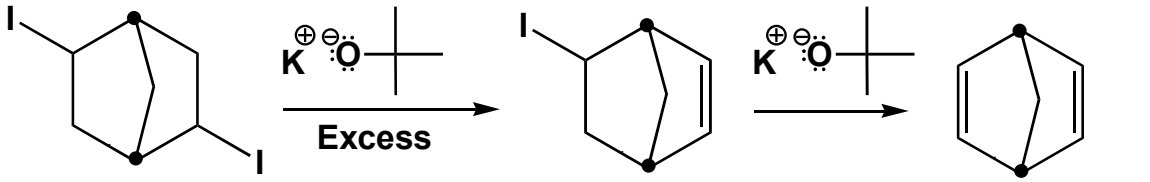


Bret's rule: No C=C can be formed to a bridge head if all bridges are >0 and small size rings.

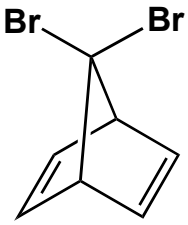


Very unstable as the C=C geometry is constrained (angles lower than 120^{o})





Norbonadiene



Very toxic norbonadiene derivative