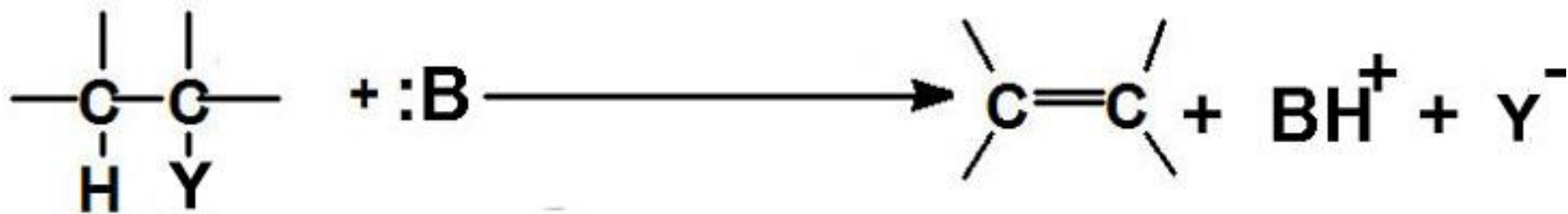


Organic Chemistry Concepts

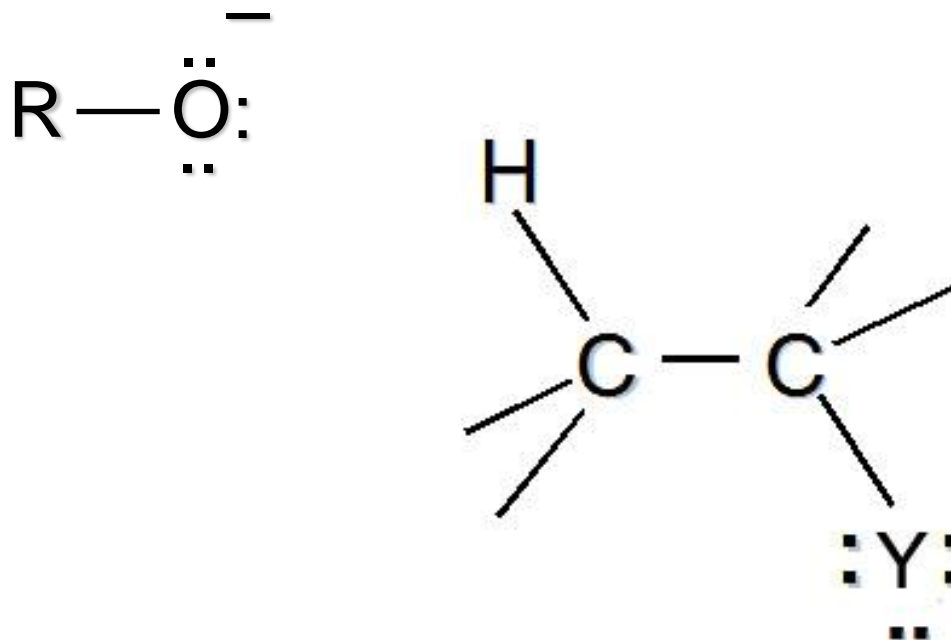
LOKT.09.051

σ -bond reactivity III

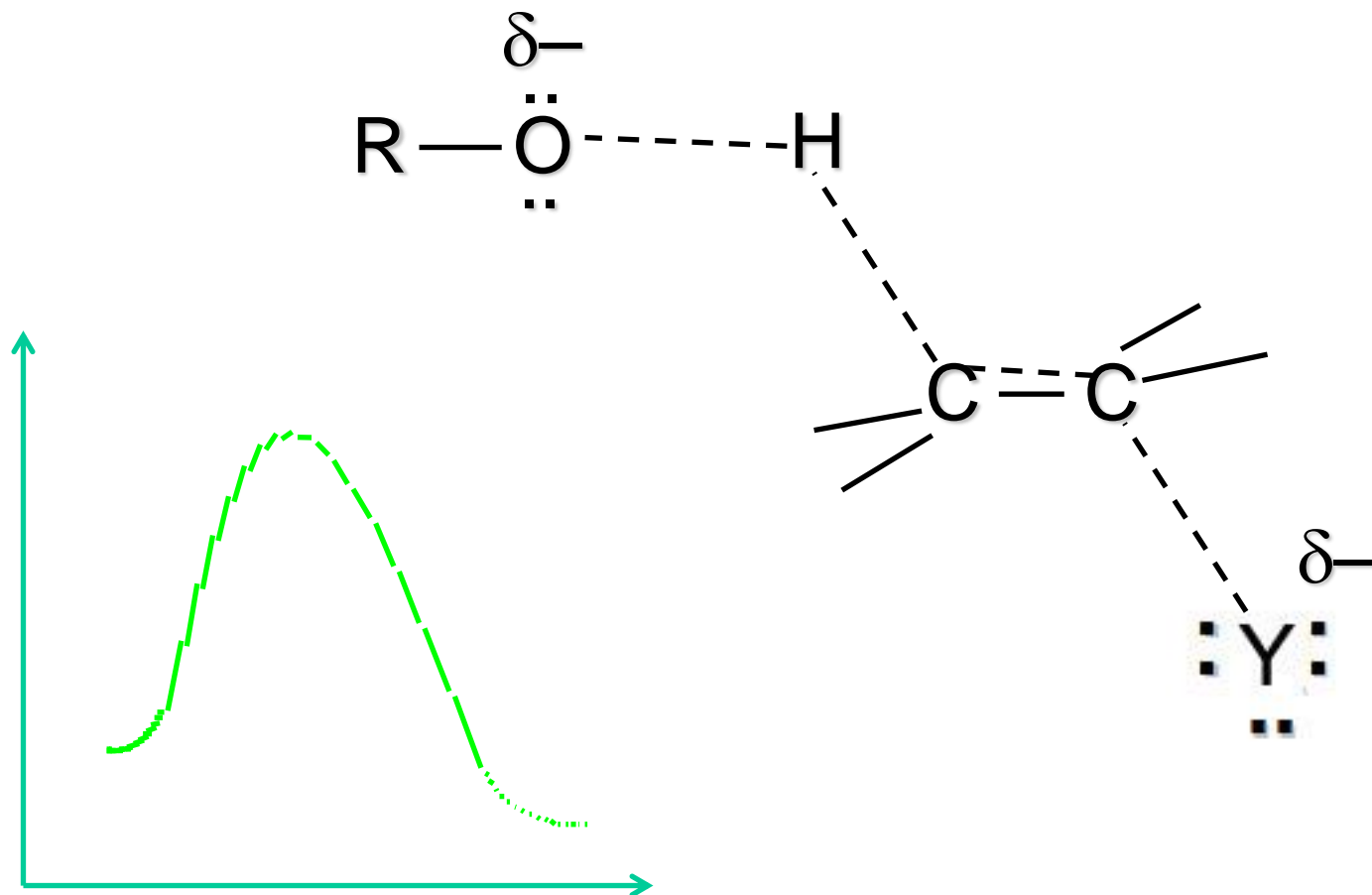
Elimination reactions

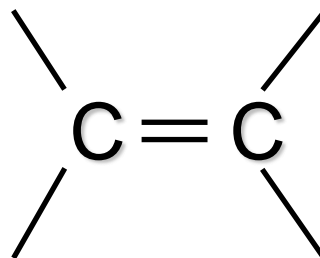
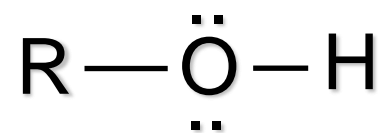


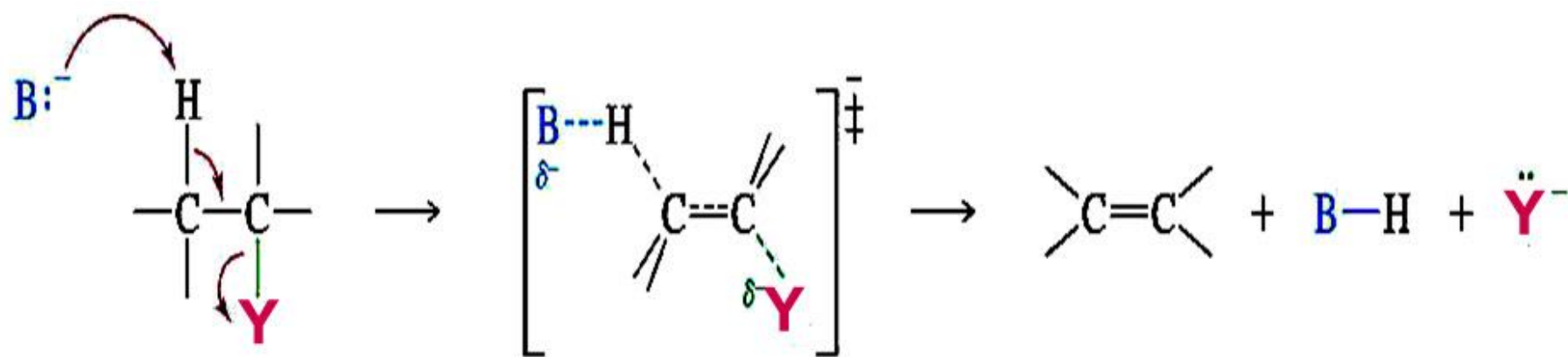
Elimination reaction E2



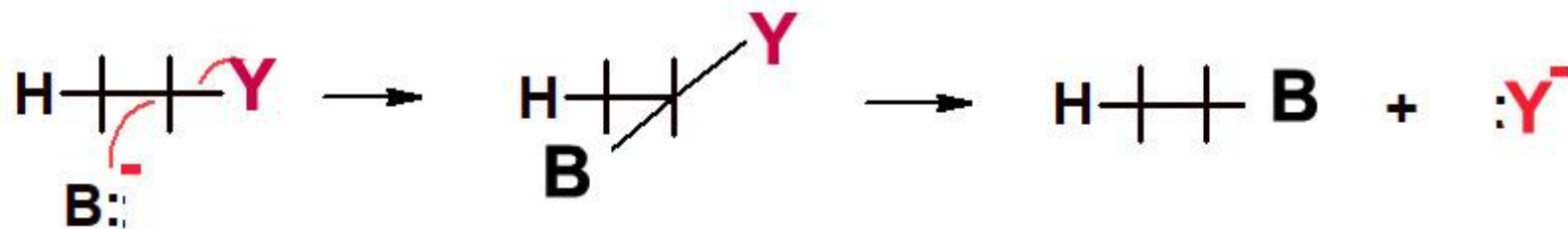
Synchronous transition

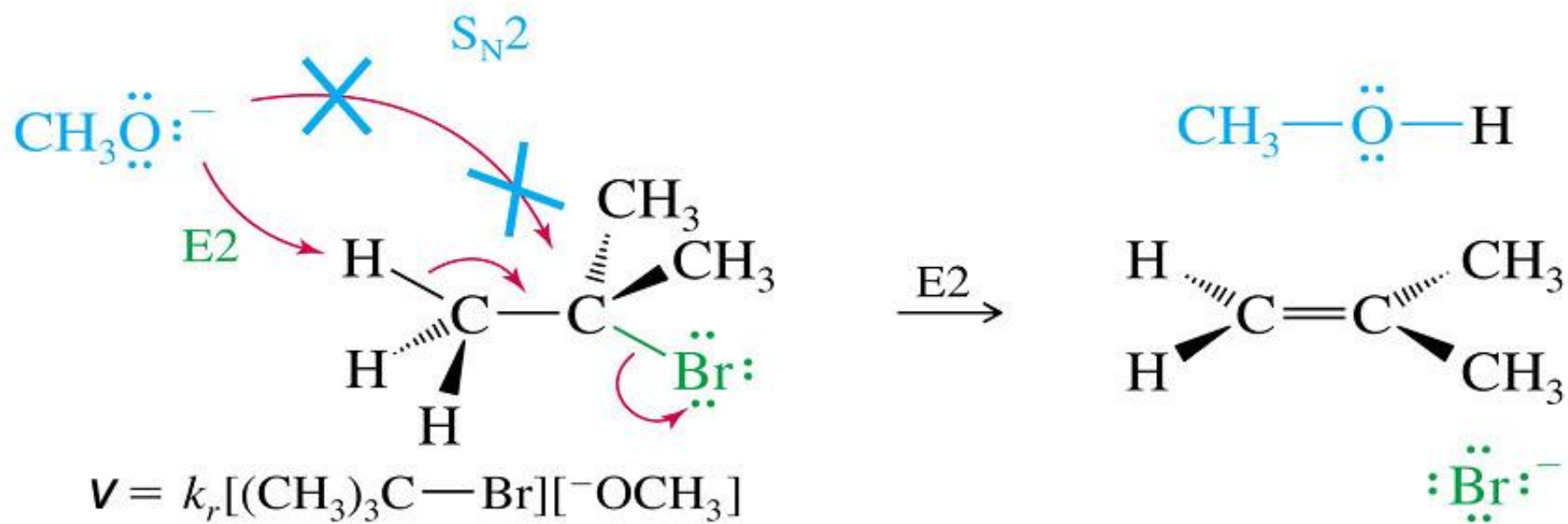






Elimination E2 vs substitution S_N2







Good nucleophile, weak base: **$\text{S}_{\text{N}}2$**



Good nucleophile, strong base: **$\text{S}_{\text{N}}2$ & $\text{E}2$**

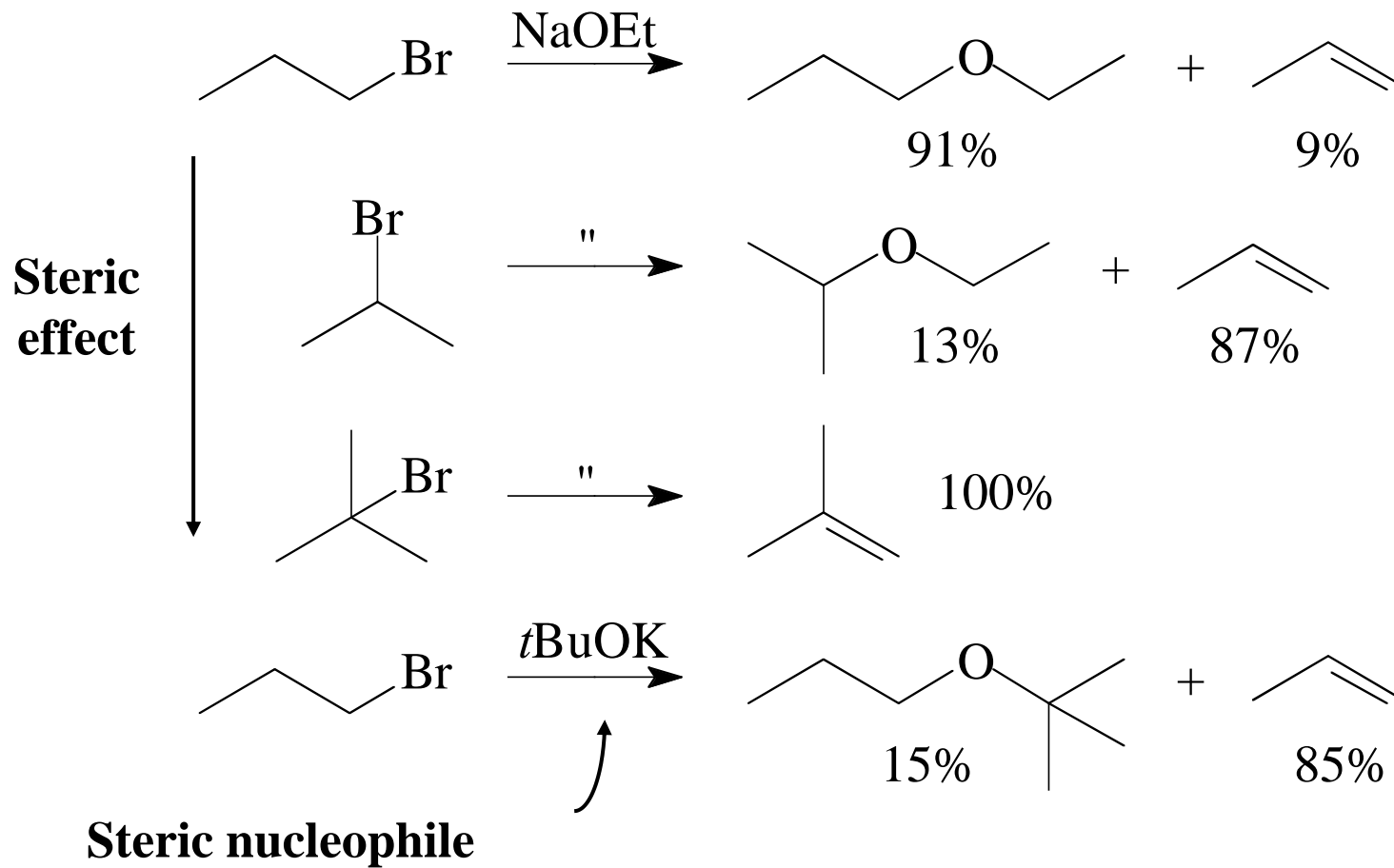


Weak nucleophile, strong base: **$\text{E}2$**

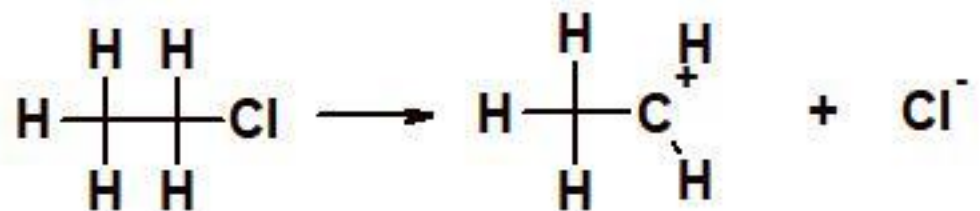
S_N2 or E2

$$v = k_{S_N2}[RY][Y^*] + k_{E2}[RY][B]$$

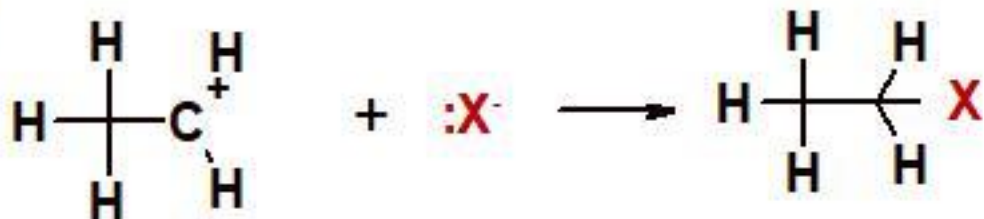
S_N2 and E2 are parallel reactions



Elimination E1



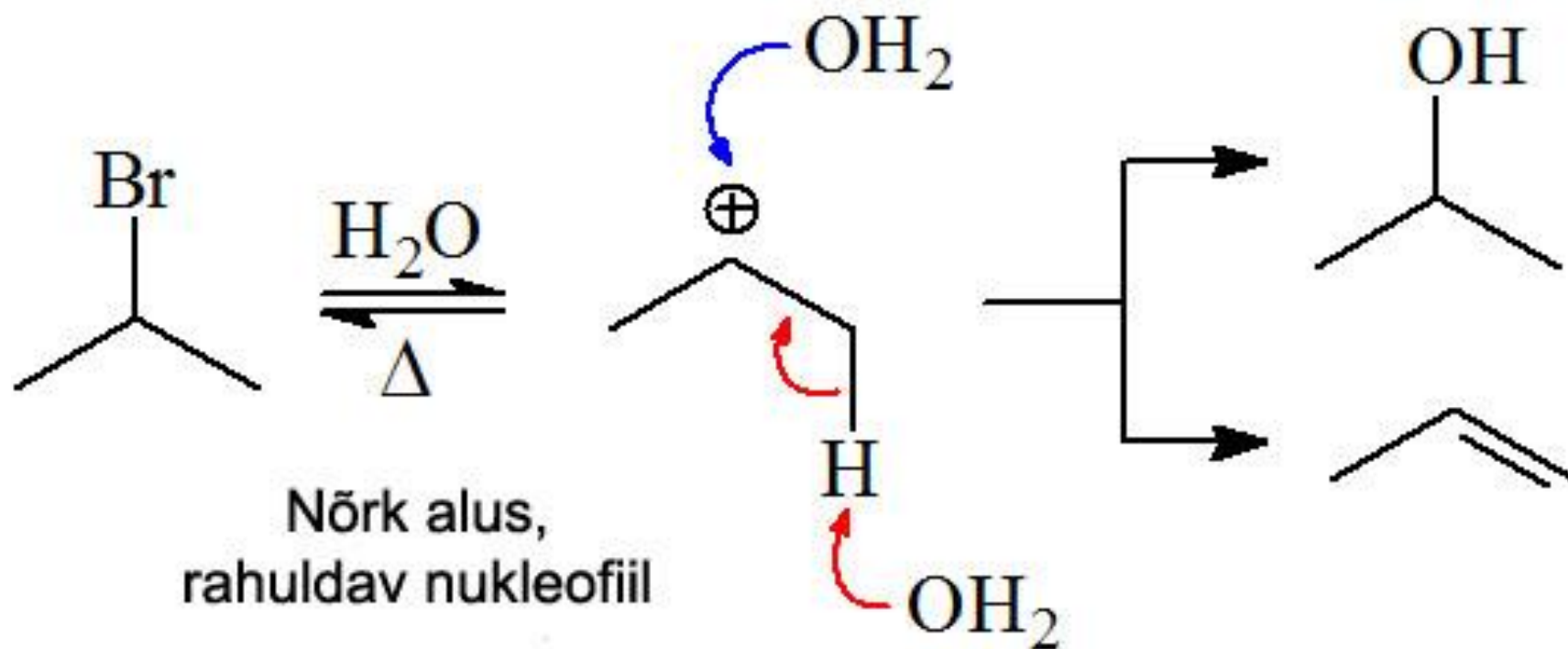
SN1

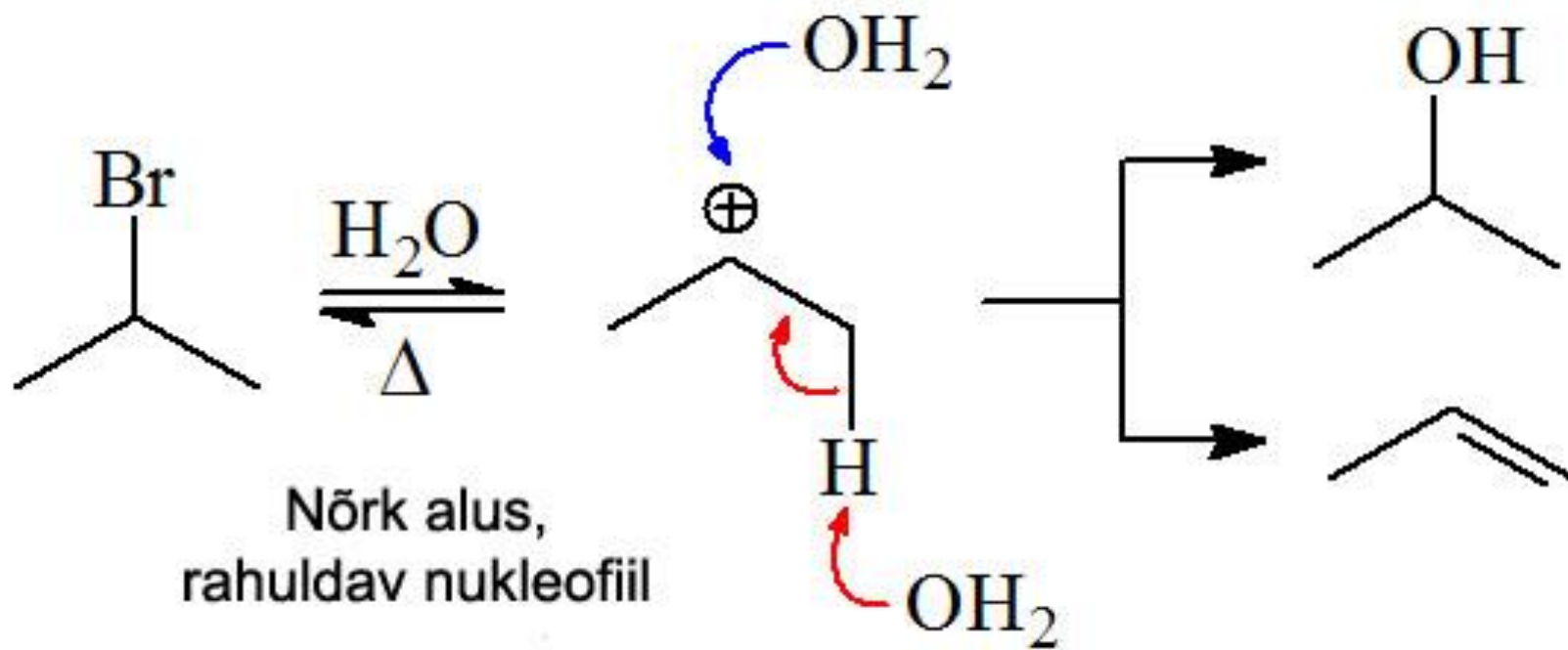


E1



Elimination E1 vs substitution S_N1





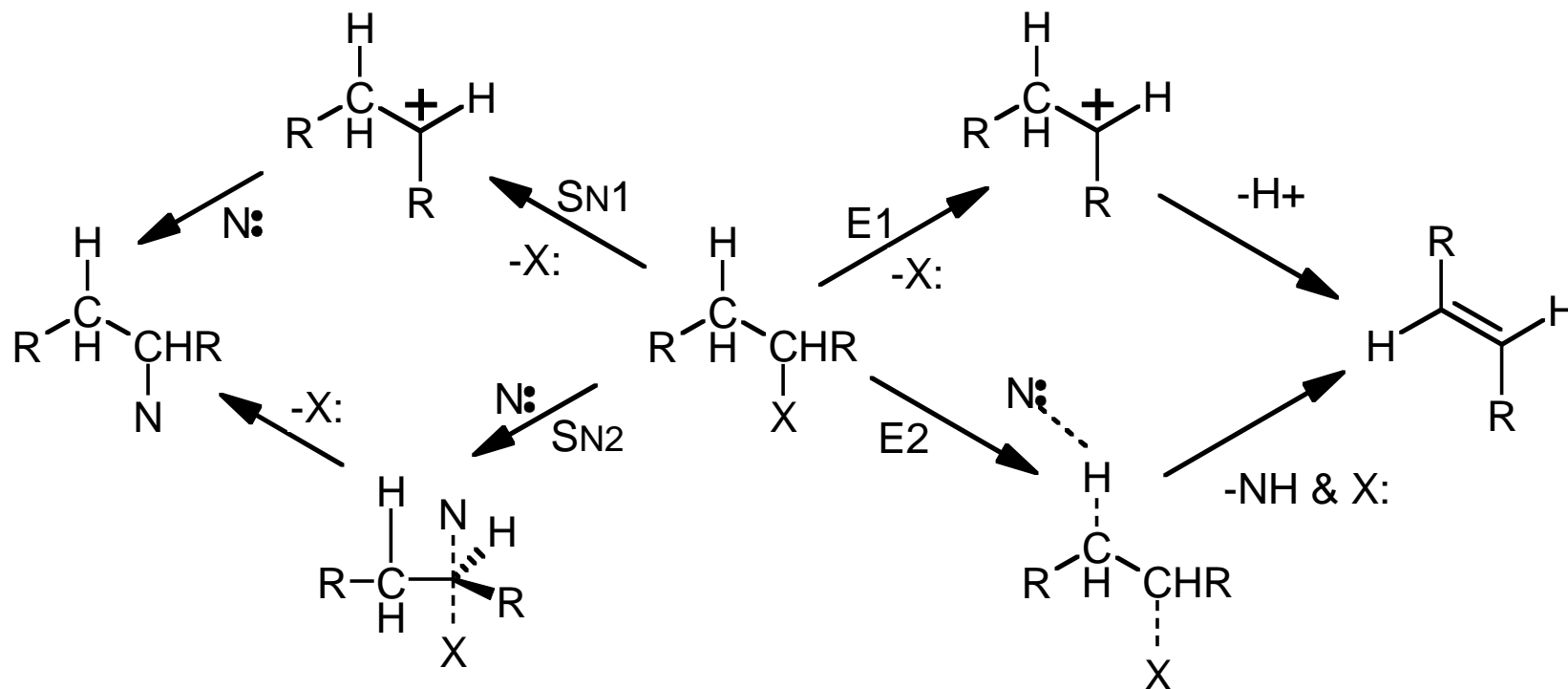
SUBSTITUTION

OR

ELIMINATION?

tertiary substrate
poor nucleophile
polar solvent
low temp

tertiary substrate
poor/bulky nucleophile
polar solvent
high temp



primary substrate
strong nucleophile
aprotic/nonpolar solvent
low temp

hindered/tertiary substrate
hindered+/basic nucleophile
aprotic/nonpolar solvent
high temp

Summary

**Radical mechanism,
substitution reactions**

**Ionic mechanisms,
SN1, SN2, E1 and E2**

See text in Chapter7