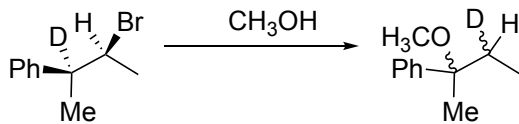
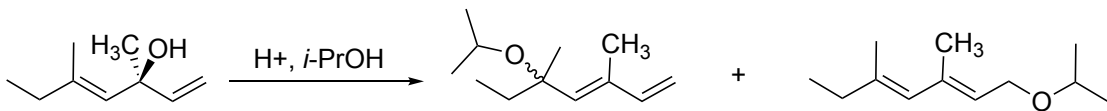


S_N1

- ① rate = $k[\text{substrate}]$ stepwise reaction
- ② carbocation stability determines the rate of reaction (more stable = faster reaction)
- ③ racemization occurs because of the carbocation intermediate
- ④ because of the carbocation, watch out for rearrangements



- ⑤ some reagents (i.e. AgNO₃ or acids) favor S_N1 over S_N2

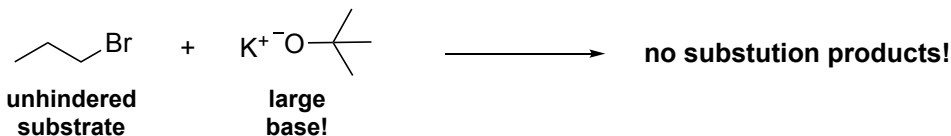


this is an excellent reaction to practice drawing the mechanism

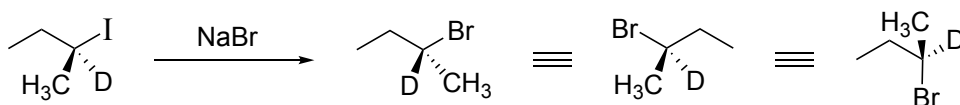
- ⑥ when the solvent is also the nucleophile, the reaction is called solvolysis
- ⑦ polar (usually protic) solvent is needed
- ⑧ will not occur if there are strong bases around (e.g. NaOH, NaOMe, NaNH₂, Et₃N, etc.)
- ⑨ will not occur on 1° carbon (unless that carbon is benzylic or allylic—important exceptions!)

S_N2

- ① rate = $k[\text{substrate}][\text{nucleophile}]$ **concerted** reaction
- ② steric interactions will slow the reaction down



- ③ reaction is stereospecific (gives inversion only!)



- ④ polar aprotic solvents are best, but often completed in/presented in polar protic solvents
- ⑤ does not occur at a/on a 3° carbon.