

Allylic + Benzylic Reactivity

- allylic group: group on C next to 2x bonds
- benzylic group: group on C next to benzene ring
- such groups $\rightarrow$ really reactive
- rxns only happen @ such groups

Reactions w/ such groups

- allylic/benzylic cations: resonance stabilized
- stabilizations of diff. types $\sim$ equal
- rxns w/ allylic/benzylic cation intermediates $\Rightarrow$ faster
- due to higher stability
- for benzylic groups: ortho/para substitutions $\rightarrow$ activating effect
- substitutions can increase # of resonance structures
- rxn rate increases
- such rxns can make multiple products
- due to shared +ve charge
- when Cs are nonequivalent $\rightarrow$ diff. products
- when benzylic $\rightarrow$ nonaromatic products may not
- less stable

Reactions w/ Radicals of Such Groups

- allylic/benzylic radicals: resonance stabilized
- less E needed to maintain than reg. radical
- readily formed as intermediates
- reacting alkene w/ Br₂ can cause addition or substitution
- free radical substitution if certain conditions (heat, light etc) are met
- addition with absence of such conditions
- free radical substitution can also occur if Br modified stock/concentration low
- difficult $\rightarrow$ N-bromosuccinimide (NBS) has similar effect
- also works as benzylic bromination
- keeps Br concentration low

Reactions of Anions of Such Groups

- more stable than regular anions
- resonance stabilization
- polar effect of 2x bonds
- more acidic than alkenes w/o allylic/benzylic Hs

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