Chemistry 235

Comparison and Contrast of E1 and E2 Reactions

	E1	**E2**
1. kinetic order	first order	second order
2. stereochemistry	coplanar conformations are not required	*anti*-coplanar or *syn*-coplanar conformation is required (*anti*- is preferred significantly)
3. transition state(s)?	yes	yes
4. intermediates?	yes	no
5. carbocation intermediates?	yes	no
6. rearrangements (1,2-shifts)	possible	none
7. primary kinetic isotope effects	not observed	observed
8. hydrogen exchange	not observed	not observed
9. leaving group effect	observed	observed
10. product distribution	more substituted alkenes are preferred	more substituted alkenes are preferred, except when a hindered base is used
11. substrate effects		
effect of substitution on reactivity	3^o R-L > 2^o R-L > 1^o R-L	3^o R-L > 2^o R-L > 1^o R-L
better leaving group	increased reaction rate	increased reaction rate
12. base		
more basic reagent	no effect	increased reaction rate
increased [base]	no effect	increased reaction rate