## Supplement 3 Organic Chemistry II CHEM 4524 SUNY Alfred State

# Examples Of Conjugated Diene Reactions

There are three main conjugated diene addition reactions of the general form below:



 addition products

1. AB = X2 , a halogen
2. AB= HX, a hydrogen halide





1. AB= a ***dienophile=***
2. AB=X2…Halogenation

***(bridgehead route ~carbocation***

***route)***

1. AB= HX…hydrogen halide addition via carbocation route: allylic effects





 ***favored***

 ***☺***

 ***Not favored***

 ***☹***

***supplement #3: conjugated diene reactions (continued)***

3) AB= dienophile...Examples of Diels-Alder Cyclo-Additions



**1) Basic reaction is alkene + conjugated diene-->cycloalkene**

**(**a-1,3-cycloaddition)

(dienophile)

**2) Stereochemistry is retained**



**3) Provides route to `bridgehead’ sites**



**4) complex cyclic molecules easy to make**



 **5) Provides key route to insecticides (neurotoxins) and BIG $$$$$**

**Examples of effective insecticides derived from 1,3 Diels-Alder cycloadditions**

