

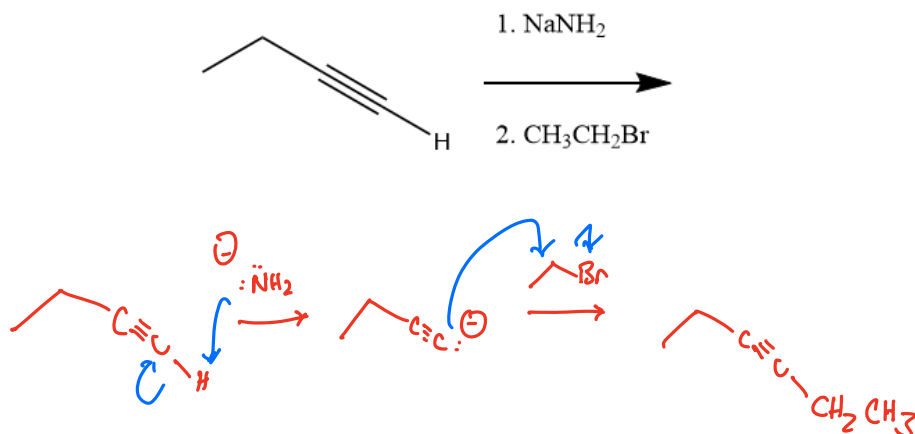
## CHEM 223 (2024) SI Session #18

**Learning Objectives:** By the end of this session, students should be able to:

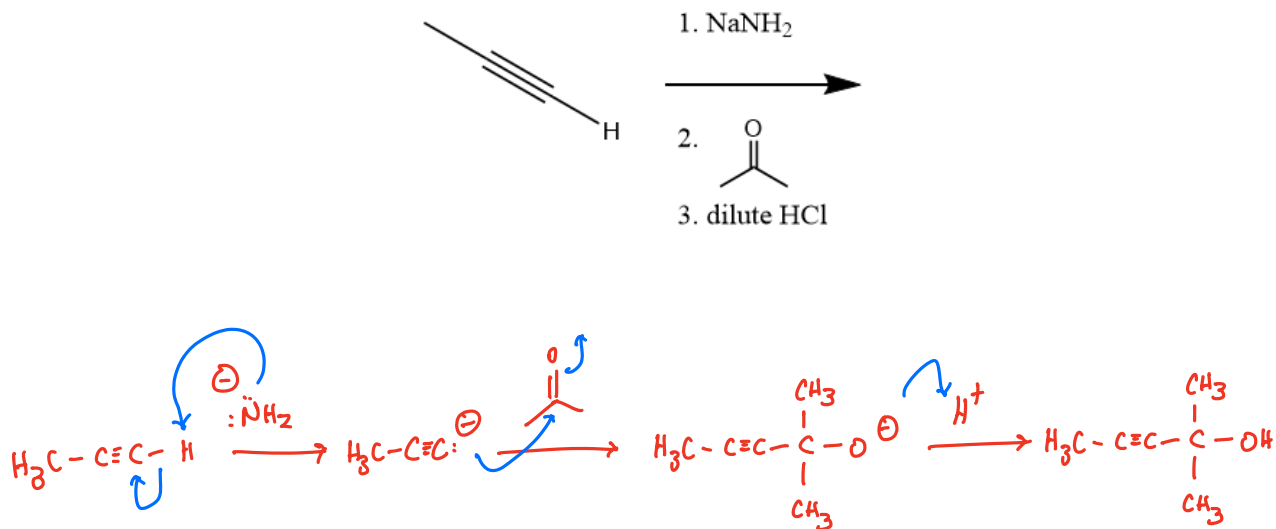
- Predict products and draw mechanisms for alkyne reactions

### Section 1: Reviewing basic alkyne reactions

1. Draw a mechanism for the following reaction.

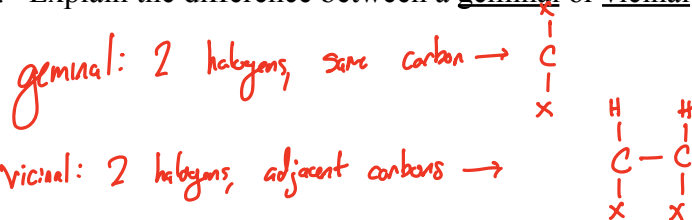


2. Draw a mechanism for the following reaction.



## Section 2: Making alkynes

3. Explain the difference between a geminal or vicinal halide



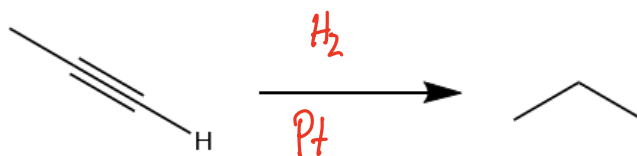
4. Explain how to turn the halides above into alkynes (hint: there are 2 ways!). Which way favors a terminal alkyne? How about an internal alkyne?

#1: Molten KOH @ 200°C favors internal

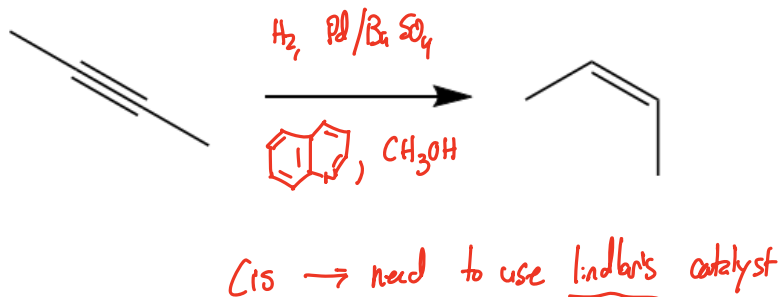
#2: NaNH<sub>2</sub> @ 150°C, favors terminal

## Section 3: Catalytic Hydrogenation

5. Provide the reagents required to perform the following reaction



6. Provide the reagents required to perform the following reaction

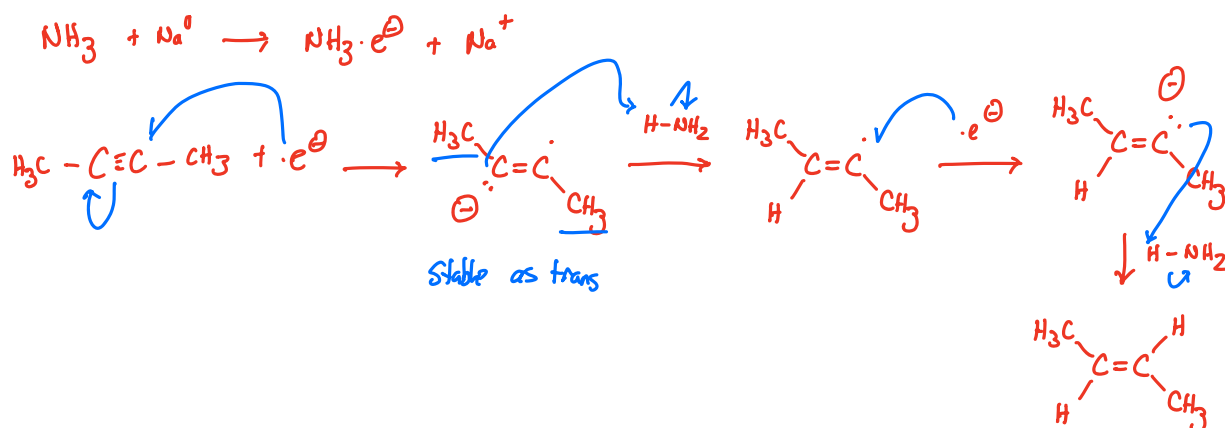


7. Provide the reagents required to perform the following reaction



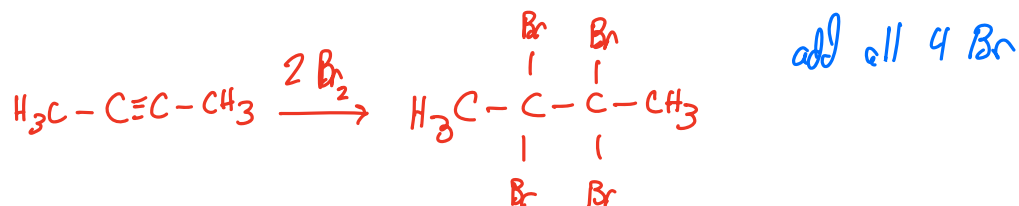
trans  $\rightarrow$  use sodium w/ ammonia

8. (Usually isn't tested, but) provide a mechanism for the reaction in #7.



#### Section 4: Halogen Addition

9. 2 moles of  $\text{Br}_2$  are added to the alkyne in #7; draw the product of the reaction.



10. Only 1 mole of  $\text{Br}_2$  is added to the alkyne in #7; draw the products, and point out which one is more stable

