(27) **Today**

Chap 15.2 – 15.6: Aromaticity

Next Class (28)

Chap 15.2 – 15.6: Aromaticity

Chap 16.1 - 16.5: Electrophilic Aromatic Substitution

(29) **Second Class from Today**

Chap 16.1 - 16.5: Electrophilic Aromatic Substitution

Third Class from Today (30)

Chap 16.1 - 16.5: Electrophilic Aromatic Substitution

Please hand in reworked test 2.

Senior Composition Recital, 7:00 pm Dower Center (134?)

Criteria for Aromaticity

1.Uninterrupted π cloud
- •cyclic
- •p orbital on every atom
- •planar

2. odd number of pairs of electrons or 4n+2 e^-'s

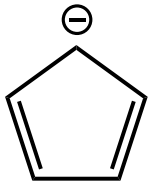
Criteria for Antiaromaticity

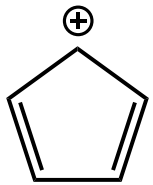
1. Uninterrupted π cloud
- •cyclic
- •p orbital on every atom
- •planar

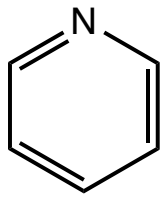
2. even number of pairs of electrons or 4n e^-'s in the π system

n is just a number not the number of C, H's or anything else

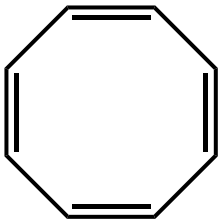
Aromatic, Antiaromatic, Resonance Stabilized, or None of the Above

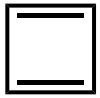


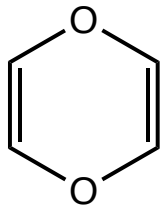




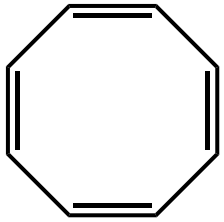
Aromatic, Antiaromatic, Resonance Stabilized, or None of the Above

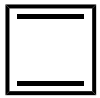


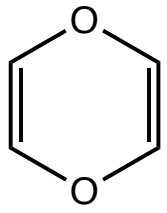




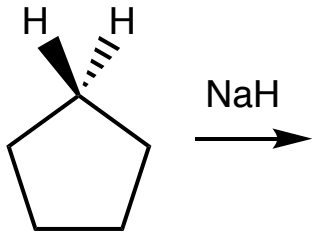
More on Antiaromaticity







Aromaticity: encouraging and discouraging reactions



NaH

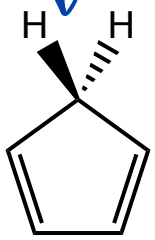
NR

~1.1 ⊕ ⊖ 2.2

$NaH + H^+ \rightarrow Na^+ + H_2$

$NaH + H_2O \rightarrow NaOH + H_2$

why is it easier to pull H+ off of this ?



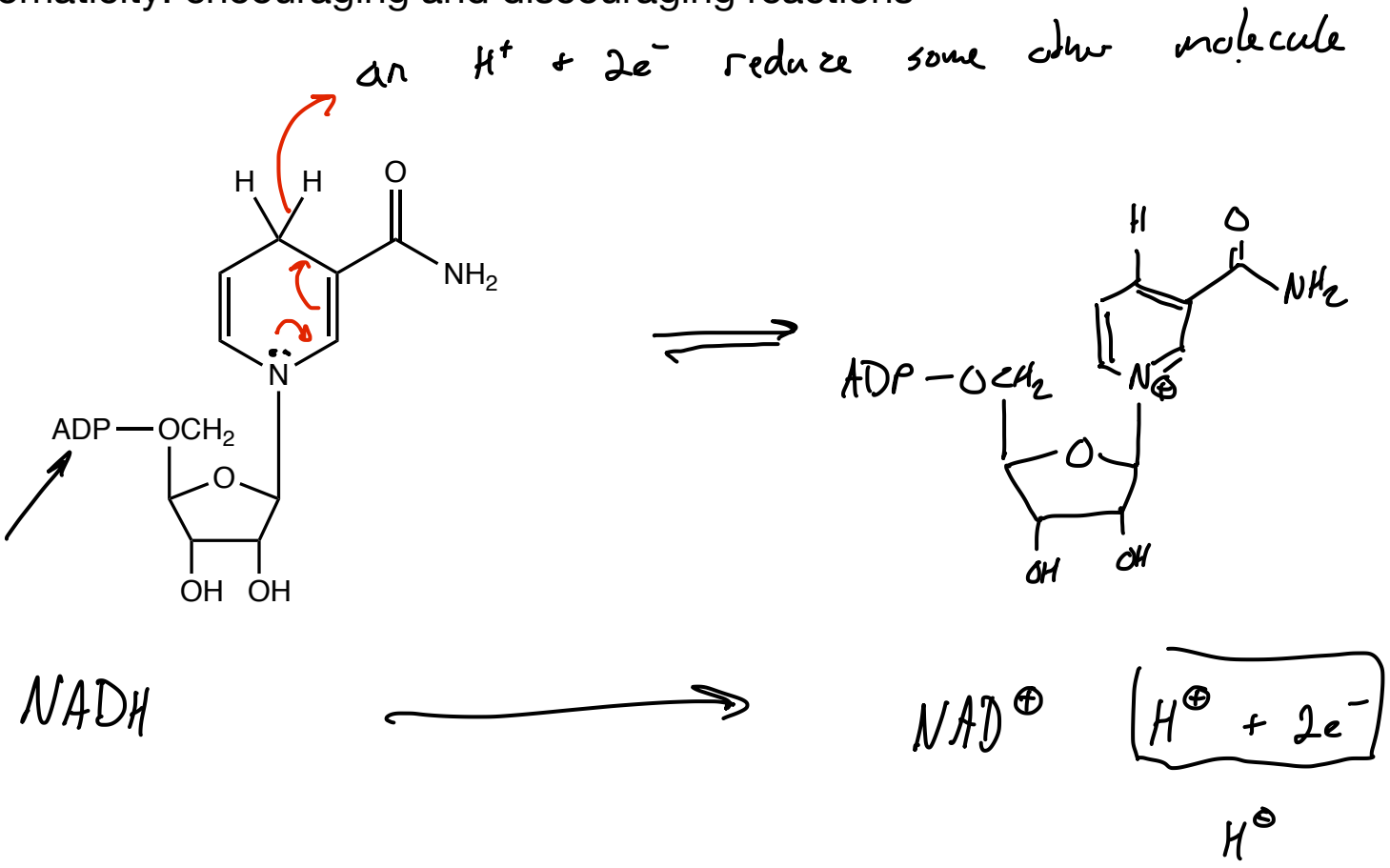
$Na^+ :H^\ominus$

NaH

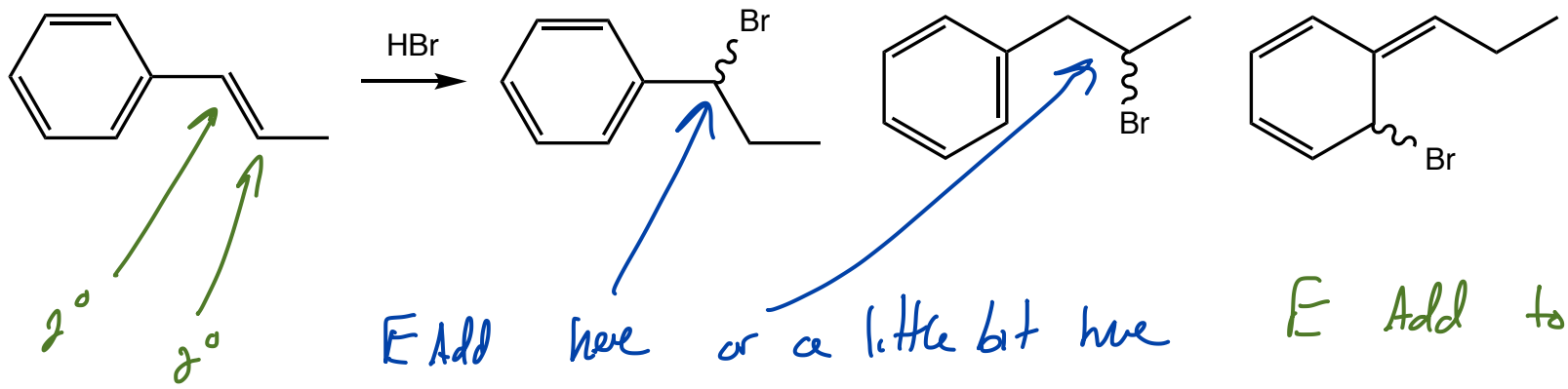
$Na^\oplus + H_2$

because the anion is aromatic.

Aromaticity: encouraging and discouraging reactions



Aromaticity: encouraging and discouraging reactions

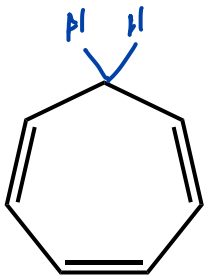


E Add here or a little bit here because the molecule retains aromaticity

E Add to the = in the benzene ring? Nope loss of aromaticity. Higher E pathway

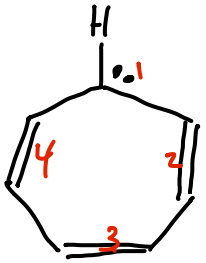
Aromaticity: encouraging and discouraging reactions

Sample question: Explain why NaH can deprotonate 1,3-cyclopentadiene but it cannot deprotonate 1,3,5-cylcoheptatriene.



NaH →

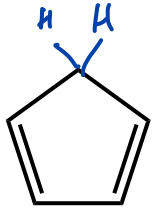
NR



if planar .... antiaromatic

creation of antiaromaticity

makes the rxn harder to do



NaH →

$Na^{\oplus}$

gained aromaticity (made it easier to do rxn)

Aromaticity: encouraging and discouraging reactions

Sample question: Explain why solutions of 7-bromo-1,3,5-cycloheptatriene can conduct electricity when dissolved in polar solvents.