Finishing Aromaticity/Beginning EAS

January 27, 2020

- Aromatic, Antiaromatic, and Nonaromatic compounds.
- Aromatic heterocycles and a word on basicity.
- Harnessing aromaticity: NADH/NAD+.
- NMR spectroscopy of aromatic compounds.
- Electrophilic Aromatic Substitution-the mechanism.

110b Teaching Fellows: Felipe Becerril, Christina Beck, Isabelle Cheng, Junha Gu, Nathalie Hong, Shy Lavasani, Allison Liu, Casey Morrison, Jerusalem Nerayo, Eric Tang, Baili Zhong, Martín Acosta Parra.

Chemistry Seminar! Prof. Arsalan Mirjafari, Florida Gulf Coast University, "(Dis)solving the World's Problems." Tuesday, January 28, 11:00 AM, Seaver North Auditorium.

O'Leary office hours: T/Th 9:00-10:00 am, SN 208.

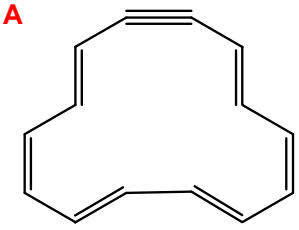
O'Leary's evening review session: Wednesdays 7:00 PM, SN Aud. **Course website:** http://pages.pomona.edu/~djo04747/110/

Suggested Problems for Exam 1. 10e/11e/Chapter 14: 18, 24, 26, 27, 28, 31, 33, 35. 10e/Chapter 15: 24, 25, 27, 28, 34abc, 43, 51. 11e/Chapter 15: 22, 23, 25, 26, 32abc, 41, 49.

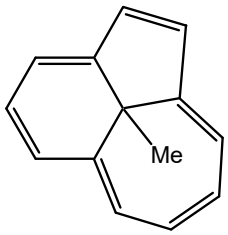
Practice

Classify **A** , **B**, and **C** as either aromatic, antiaromatic, or nonaromatic:

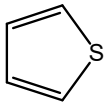
A



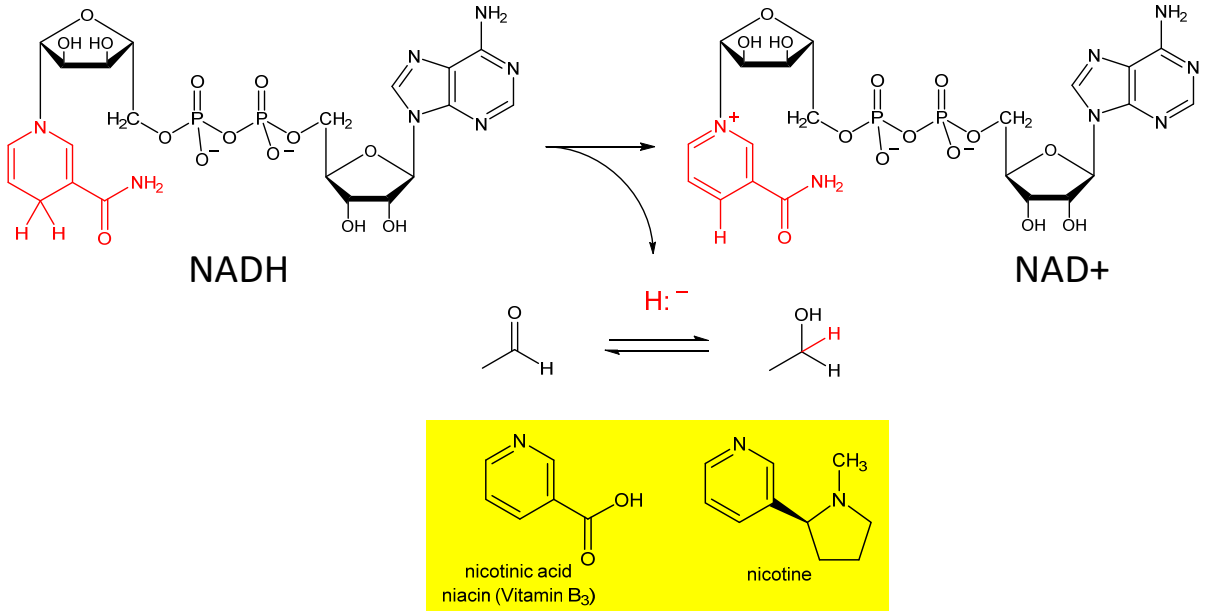
B



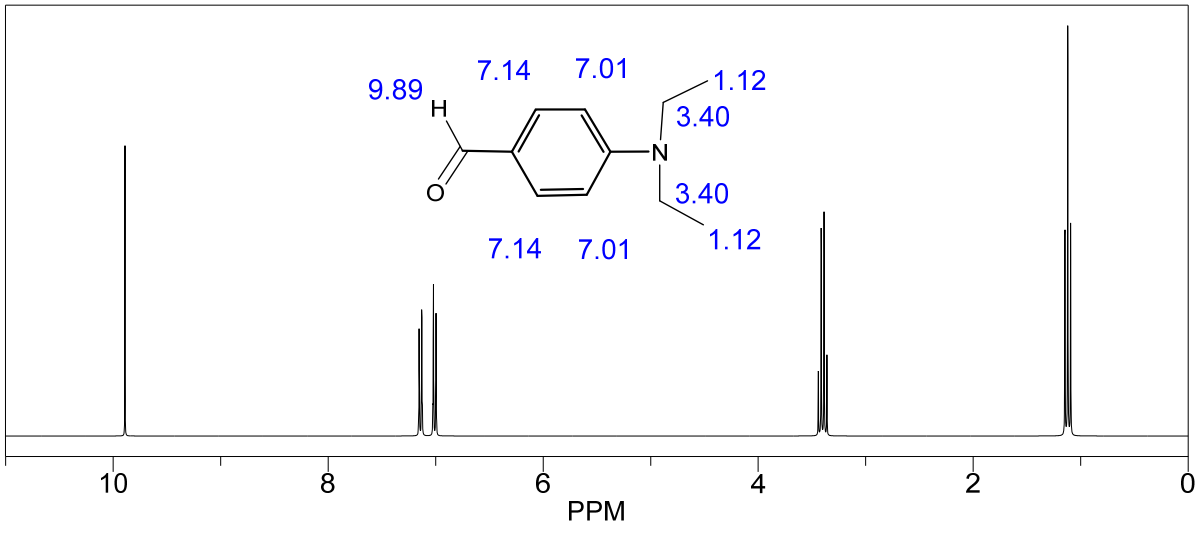
C



Nicotinamide Adenine Dinucleotide (NADH/NAD+)



^{1}H NMR Chemical Shift Prediction Tool in ChemDraw 16.0



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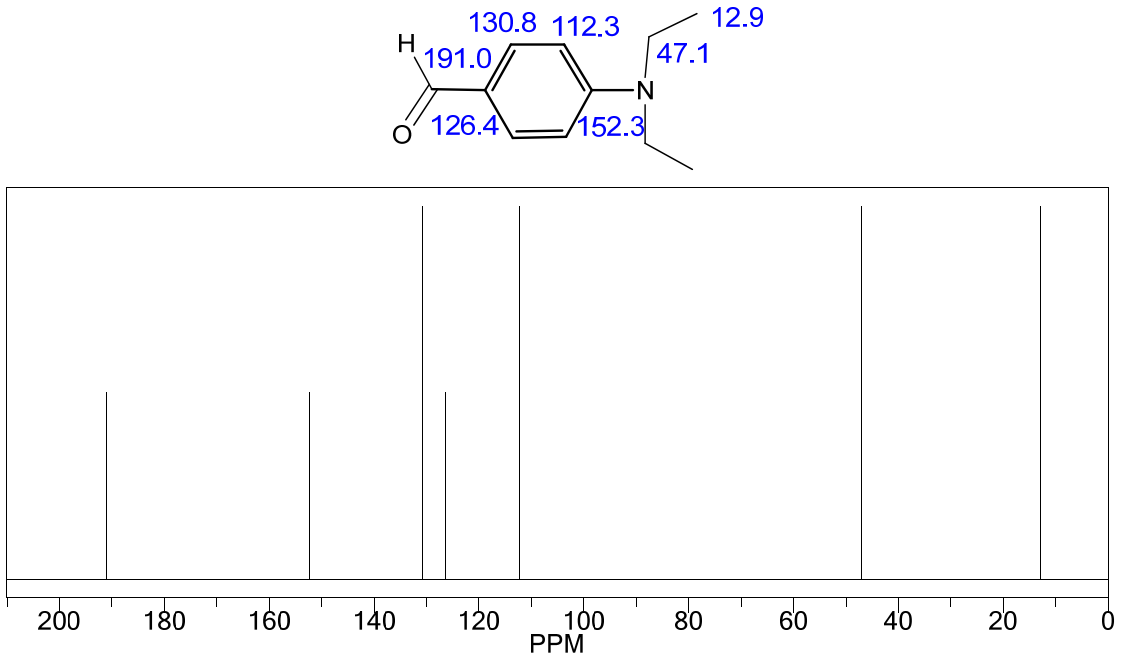
^{13}C NMR Chemical Shift Prediction Tool in ChemDraw 15.1



EAS Free-Energy Diagram

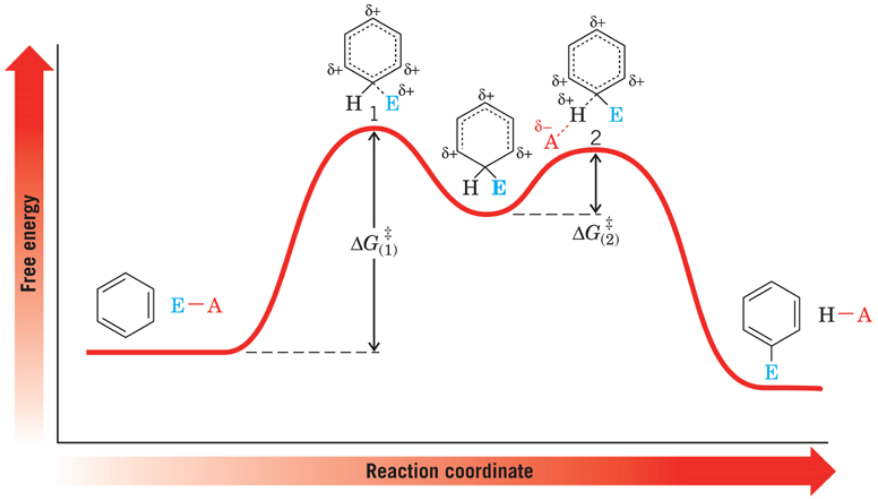


FIGURE 15.3 The free-energy diagram for an electrophilic aromatic substitution reaction. The arenium ion is a true intermediate lying between transition states 1 and 2. In transition state 1 the bond between the electrophile and one carbon atom of the benzene ring is only partially formed. In transition state 2 the bond between the same benzene carbon atom and its hydrogen atom is partially broken. The bond between the hydrogen atom and the conjugate base is partially formed.