

## Chapter 15: Aromaticity, Reactions of Benzene

### Learning Objectives:

1. Recognize and distinguish between aromatic and antiaromatic compounds by their structures.
2. Know the properties of aromatic and antiaromatic compounds, and the chemical consequences of aromaticity.
3. Recognize and be able to write the mechanism of electrophilic aromatic substitution
4. Be able to outline the completed electrophilic aromatic substitution reactions of the following types: halogenation, nitration, sulfonation, and Friedel-Crafts acylation & alkylation

### Sections to be covered (in the order of delivery):

- 15.1 Criteria for Aromaticity\*
- 15.2 Aromatic Hydrocarbons
- 15.3 Aromatic Heterocyclic Compounds
- 15.4 Some Chemical Consequences of Aromaticity\*
- 15.5 Antiaromaticity
- 15.6 A Molecular Orbital Description of Aromaticity and Antiaromaticity
- 15.8 How Benzene Reacts\*
- 15.9 General Mechanism for Electrophilic Aromatic Substitution Reactions\*
- 15.10 Halogenation of Benzene\*
- 15.11 Nitration of Benzene\*
- 15.12 Sulfonation of Benzene\*
- 15.13 Friedel-Crafts Acylation of Benzene\*
- 15.14 Friedel-Crafts Alkylation of Benzene\*
- 15.15 Alkylation of Benzene by Acylation-Reduction\*

\* Sections that will be focused

### Recommended additional problems

15.25 – 15.40