

**Chemistry 218**  
**Study Guide, Exam 2**

Ch. 17: Benzene and Aromatic Compounds

Nomenclature of benzene

Molecular orbital description of aromaticity: inscribed polygon

Hückel's Rule

Aromatic, Non-aromatic, anti-aromatic compounds

Ch. 18: Reactions of Aromatic Compounds

General mechanism for EAS

Halogenation of aromatics

Nitration of aromatics

Sulfonation of aromatics

Friedel-Crafts Alkylation

Friedel-Crafts Acylation

Activating vs. deactivating groups

ortho/para vs. meta directors

Synthesis of multi-substituted benzene rings

Ch. 12.2: Oxidation of Alcohols

"oxidation states" of carbon

oxidation

PCC in  $\text{CH}_2\text{Cl}_2$

$\text{CrO}_3$ ,  $\text{H}_2\text{CrO}_4$ , or  $\text{KCr}_2\text{O}_7$  in  $\text{H}_2\text{O}/\text{H}^+$

Ch. 20: Reduction and Organometallic addition to carbonyls

reduction

$\text{NaBH}_4$ ,  $\text{LiAlH}_4$ , DIBAL-H, DIBAL-H,  $-78\text{ }^\circ\text{C}$

organolithiums and Grignards

formation from alkyl halides

reactions with aldehydes, ketones, esters, acid chlorides,  $\text{CO}_2$ , epoxides

cuprates

formation

reactions with acid chlorides

Conjugate (1,4)-additions

Protecting groups