C/F 3543 & C3545 Fall 1999

FRIEDEL-CRAFTS REACTION

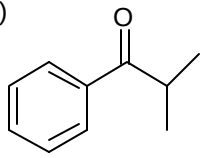
Post-lab questions:

1. Explain why Friedel-Crafts alkylations often yield polysubstituted products, but multiple Friedel-Crafts acylations do not occur. Give an example of each reaction. (6 pts)

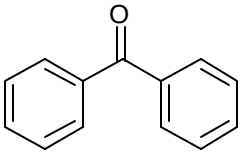
2. Rank the compounds in order of their reactivity to electrophilic substitution: Explain your answer. (6 pts)
   (a). Nitrobenzene, phenol, toluene, benzene
   (b). Phenol, benzene, chlorobenzene, benzoic acid
   (c). Benzene, bromobenzene, benzaldehyde, aniline

3. Identify the carboxylic acid chloride that might be used in a Friedel-Crafts acylation reaction to prepare each of the following acylbenzenes:
   (draw the structure and name the compounds) (2 pts)

(a)



(b)



4. How might the following pairs of isomers be distinguished from their infrared absorption spectra, assuming you have both spectra of each pair? (6 points).

a. 1-phenyl-1-propanone (Propiophenone) PhCOCH2CH3, and phenylacetone, PhCH2COCH3.
b. 2,5-hexanedione and 2,4-hexanedione.
c. methyl benzoate and phenyl acetate.