

Friedel-Crafts Alkylation of Dimethoxybenzene

Worksheet

Name: _____

Lab Section: _____

1. Draw the mechanism of the reaction between 1,4-dimethoxybenzene, tert-butyl alcohol and acid. Be sure to show all reaction intermediates. (20 points)
2. Why is 1,4-di-*t*-butyl-2,5-dimethoxybenzene the *major* product of reaction between 1,4-dimethoxybenzene, tert-butyl alcohol and acid? Would you expect 1,3-di-*t*-butyl-2,5-dimethoxybenzene or 1,4-di-*t*-butyl-2,3-dimethoxybenzene to form as side products in this reaction? Why or why not? Use structures to help explain your answer. (20 points)
3. On the back of this sheet, draw a reaction energy diagram for the reaction between 1,4-dimethoxybenzene, tert-butyl alcohol and acid to form 1,4-di-*t*-butyl-2,5-dimethoxybenzene. (20 points)
4. Suggest two other possible electrophilic compounds that could be reacted with 1,4-dimethoxybenzene to give 1,4-di-*t*-butyl-2,5-dimethoxybenzene. Explain why you chose these compounds. (20 points)
5. Would you expect benzene or anisole to react faster in a Friedel-Crafts alkylation with aluminum chloride and tert-butyl chloride? Explain your answer. (20 points)