

CH0310, ORGANIC CHEMISTRY I
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Quiz 3, Take home, due midnight Monday, Jan 26, 2009

Hand in before/after class
Drop off at 1101 CSC (before 5 pm)
Fax to 412-624-9861 (till midnight)
Email to lynnec@pitt.edu (till midnight)

Calculating Heats of Reaction from Bond Dissociation Energies

To prepare:

- read Chapter 3, pp. 105-117
- review lecture notes from Jan. 21 and 23
- Do problems 3, 4, 6 and 31 in Chapter 3

A table of standard bond dissociation energies will be provided with the exam. You should understand what these values mean and be able to use them, for example, to calculate the ΔH^0 of a halogenation reaction of an alkane.

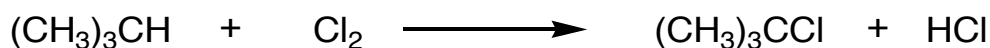
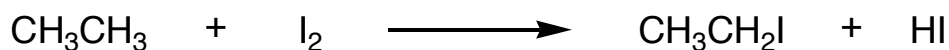
-The quiz is on the other side-

NAME

SIGNATURE

Bond Dissociation Energies

1) Using Table 3-1 of Bond Dissociation Energies on page 98 of the book, calculate the ΔH^0 for the following reactions. For each reaction, state whether the reactants or the products would be favored at equilibrium. (4 pts)



2) Below is an *unlikely* mechanism for chlorination of methane by dichlorine to give chloromethane and hydrogen chloride. (6 pts)



a) Calculate the ΔH^0 for the overall reaction.

b) Calculate the ΔH^0 for each individual step.

c) Why is this mechanism unlikely?