Chemistry 342
Spring, 2001
Problem Set 4

Due Friday, September21

Read Chapter 3 and "Further Information 1".

Answer the following questions in Chapter 2: Exercises 29, 33, 37; Problems 9, 11, 17, 21, 22. Note that in problem 22, the enthalpies of formation of SiH_2O and SiH_3OH are −98.3 and −282 **kcal/mol**, respectively.

Also, answer the following questions:

1. One mole of argon (treated as an ideal gas) has an initial temperature of 300K and a volume of 10 liters. This gas undergoes an irreversible, adiabatic compression, under constant external pressure of 10 atm, to a final volume of 4 liters. How much work is done? What is the final temperature? How much heat is absorbed or released? What is ΔU? What is ΔH?

2. One mole of argon (treated as an ideal gas) has an initial temperature of 300K and a pressure of 1 atm. This gas undergoes an irreversible, isothermal compression, under constant external pressure of 10 atm, to a final pressure of 10 atm. How much work is done? What is the final temperature? How much heat is absorbed or released? What is ΔU? What is ΔH?

3. One mole of argon (treated as an ideal gas) has an initial temperature of 300K and a pressure of 1 atm. This gas undergoes a reversible, isothermal compression to a final pressure of 10 atm. How much work is done? How much heat is absorbed or released? What is ΔU? What is ΔH?