Enthalpies

Thermodynamics Spring 2021

College of the Atlantic.

Suppose you burn a mole of methane:

$$CH_4(gas) + 2O_2(gas) = CO_2(gas) + 2H_2O(gas)$$
. (1)

- 1. Suppose you converted a mole of methane into its elemental constituents (graphite and hydrogen gas). What is ΔH for this process?
- 2. Now suppose you formed a mole of CO_2 and two moles of water vapor from their elemental constituents. What is ΔH for this process?
- 3. What is ΔH for the reaction of Eq. (1)?
- 4. If the water ended up as liquid instead of gas, how do you think ΔH would change?

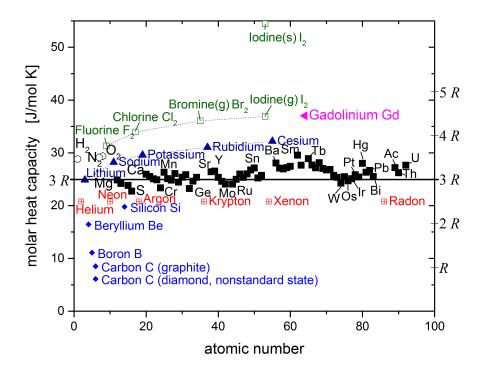


Figure 1: Btw, here's a graph of the specific heat of a bunch of solids. Figure source: https://en.wikipedia.org/wiki/Dulong--Petit_law#/media/File: GraphHeatCapacityOfTheElementsI2s.png. Image created by wikipedia user Nick B. CC BY-SA 4.0.