CHEM 1311- Thermochemistry Cont.

Ch.5 Formula Dump:

When 12.0 g of fructose, C6H12O6, is burned with oxygen in a calorimeter, the temperature of the calorimeter increases by 2.58 °C. If the heat capacity of the calorimeter and its contents is 9.90 kJ/°C, how much heat was produced by this reaction?

B2H6 (g) + 3O2 (g) → B2O3 (s) + 3H2O(l)

Calculate the enthalpy change for the reaction above using the following data.

2B(s) + 3H2 (g) → B2H6 (g) ΔH = 36 kJ/mol

H2 (g) + ½O2 (g) → H2O(l) ΔH = −286 kJ/mol

2B(s) + 1½O2 (g) → B2O3 (s) ΔH = −1274 kJ/mol

A system does 30.4 kJ of work and absorbs 73.0 kJ of heat from the environment. What is the change in internal energy of the system?

Calculate the energy (E) and wavelength (λ) of a photon of light with a frequency (ν) of 6.165 x 1014 Hz.

C6H12O6 (s) +6O2 (g) 🡪 6CO2 (g) + 6H2 O (l)

Using the equation above and the relative ∆H values, calculate the change in enthalpy for the overall reaction.

∆H*f* for the following:

C6H12O6 (s) -1260 kJ/mol

CO2 (g) -393.5 kJ/mol

H2O (l) -285.8 kJ/mol

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Description automatically generatedCalculate the enthalpy change for the reaction below using the average bond enthalpy information.