High School Science Virtual Learning

College Chemistry

Internal Energy, Work, and Enthalpy

April 16th, 2020

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Lesson: April 16th 2020

Objective/Learning Target:
The Learner will be able state the First Law of Thermodynamics, and understand the concepts of; State Function, Internal Energy, and Enthalpy.

Bell Ringer

Question 1

What is the unit for Energy used in Chemistry?

Question 2

What is the name of the instrument used to measure heat exchanges?

Bell Ringer Answers:

1. Joule or Kilojoule, j or kj
2. Calorimeter

Read section 9.3 in your textbook. Section 9.3 and watch the videos below.

Internal Energy - Professor Dave Explains

Pay attention to the concept of State Function, this is really a simple concept but is often confusing when read.

The First Law of Thermodynamics: Internal Energy, Heat, and Work - Professor Dave Explains

Thermochemistry: Heat and Enthalpy - Professor Dave Explains

Questions:

1. What is meant by a state function?

2. In essence $\triangle H$ is the same as what other unit?

3. Measuring the actual internal energy (U) is basically impossible. So instead what do we measure?

Answers:

1. A state function just describes a state of being, like location, date, etc. Without concern with how you got there. Example, if you have to get to Independence Center by 5pm, everybody might start at a different point, take a different route, etc. But the point is to be there at 5pm. The location and time would be state functions.

Answers: (cont)

2. $\triangle H$ basicall = q or the amount of heat flowing into or out of a substance.

3. We measure $\triangle U$ or the change in internal energy. If you give somebody $5 you may not know how much they had before, but you know it just went up by $5.

Extra videos

[Enthalpy: Crash Course Chemistry]