

CHAPTER OVERVIEW

3: Enthalpy, Legendre Transforms, and Thermodynamic Proofs

In the previous chapter you learned about a molecule's internal energy (U) and how it is defined from the Equipartition theorem. However, there are three more types of energy, each of which is applicable depending on the nature of the system and transition under study. For example, the change in internal energy (U) is equal to heat exchange under conditions of constant volume because no PV work can be done. Thus, U does not describe heat exchange in systems where the pressure is held constant, whereas another definition of energy called the Enthalpy serves this role. This chapter begins by further studying heat, which is important because electricity is generated by burning fuel that turn the turbines, rather than from work using a team of donkeys. At least, **not now**.

[3.1: Enthalpy and Changing Functions](#)

[3.2: Heat Capacities](#)

[3.3: Natural Variables and Legendre Transforms](#)

[3.4: The Joule and Joule-Thomson Experiments](#)

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