

10/17 Lecture outline

Many examples of entropy changes, illustrating 2nd law.

- Carnot cycle for general substance. Picture in $T - S$ diagram. Case of ideal gas.
- Free expansion of ideal gas. ΔS and wasted energy.
- ΔS_{mixing} .
- ΔS for two systems of different temperature, placed in thermal contact and reaching equilibrium.
 - ΔS for system of temperature T_i in thermal contact with reservoir at temperature $T_o < T_i$, reaching isobaric equilibrium.
 - Another example of entropy measuring degraded energy, forever after unavailable for useful work.