Chemical Thermodynamics

Iclicker

- For an isothermal compression of an ideal gas, what is the change in internal energy, DU.
  - A – positive
  - B – negative
  - C – 0

Internal energy

- Change in internal energy

- Need to distinguish between exact and inexact differentials

Internal energy

- Internal energy change for reversible expansion of an ideal gas
- Start at
  - n = 1 mol　　　　　　n = 1 mol
  - T_1 = 300 K　　　　　T_2 = 200 K
  - V_1 = 10.0 L　　　　　V_2 = 20.0 L
  - P_1 = 2.5 bar　　　　P_2 = 0.83 bar
- Change along a specified path

Internal energy

- Determine w

- To get q need to evaluate ΔU

Exact vs. Inexact

- Mathematical definition.

Exact vs. Inexact

- Application to simple case - volume

Internal Energy

- Change in internal energy is a function of temperature and volume.

- $(dU/dT)_V$

- $(dU/dV)_T$