

Answer on Question #48333, Physics, Molecular Physics | Thermodynamics

A thermodynamic system undergoes a process in which the internal energy decreases by 500J. If at the same time 220J of work is done on the system, find the energy transferred to or from it by heat.

Solution:

According to the first law of thermodynamics,

$$\Delta U = Q + W$$

where ΔU is the change in the internal energy of the system and W is work done on the system.

From given we have

$$\Delta U = -500 \text{ J}$$

$$W = 220 \text{ J}$$

Thus,

$$Q = \Delta U - W = -500 - 220 = -720 \text{ J}$$

Heat transferred from the system.

Answer: $Q = -720 \text{ J}$. Heat transferred from the system.