In thermodynamics, thermal energy refers to the internal energy present in a system due to its temperature.

The average translational kinetic energy possessed by free particles in a system of free particles in thermodynamic equilibrium (as measured in the frame of reference of the center of mass of that system) may also be referred to as the thermal energy per particle.

In thermodynamics it is often most convenient and precise to think of heat as the transfer of energy, just as work is also a transfer of energy. Heat and work therefore depend on the path of transfer and are not state functions, whereas internal energy is a state function.

see Thermal injury

see Radiofrequency ablation