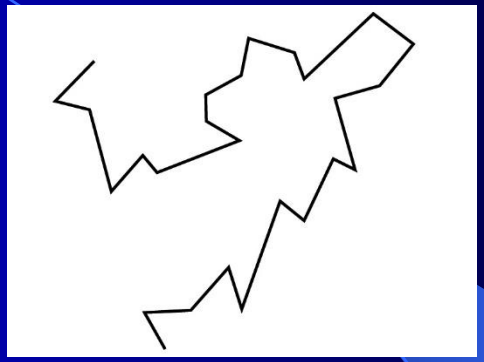
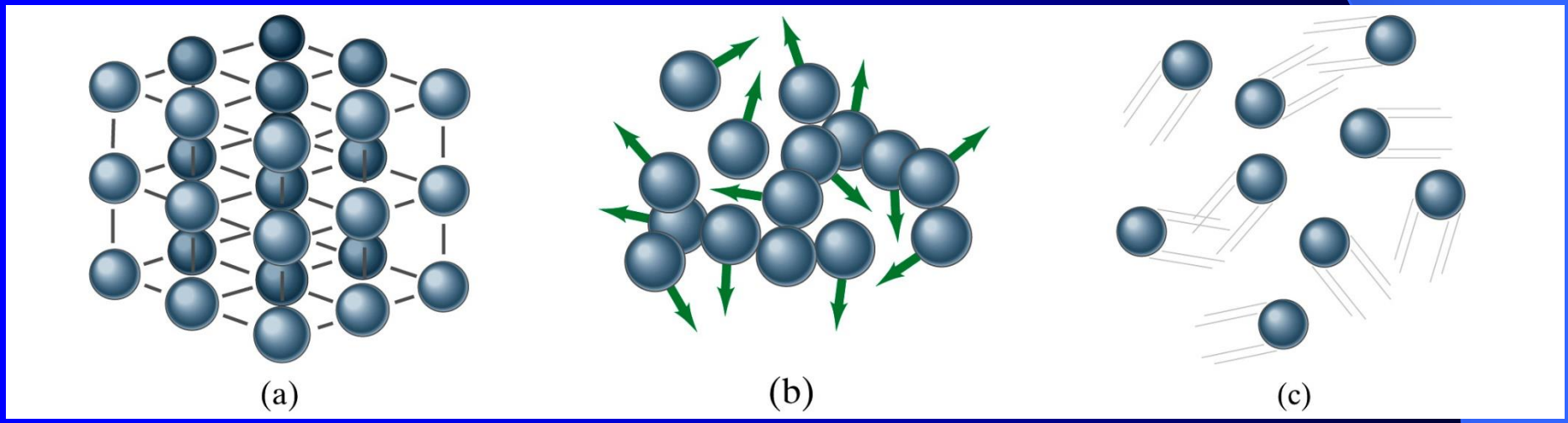
States of Matter

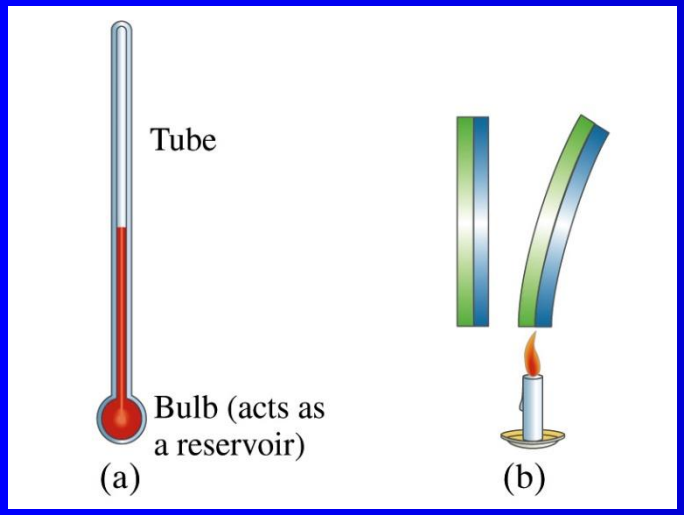
What is temperature?



Solid Liquid Gas

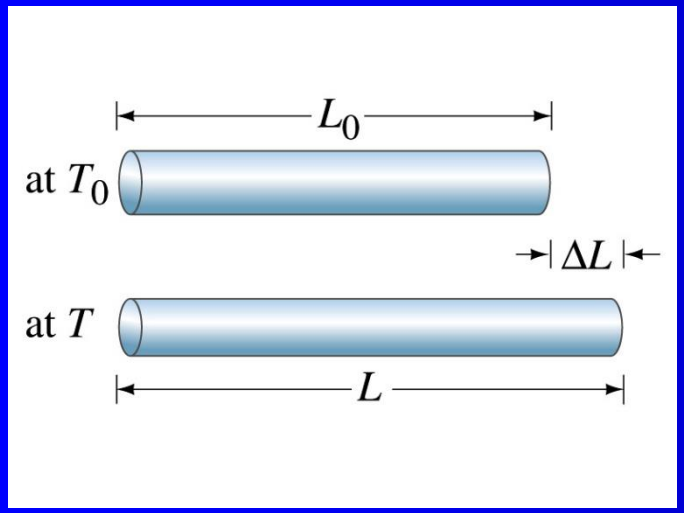


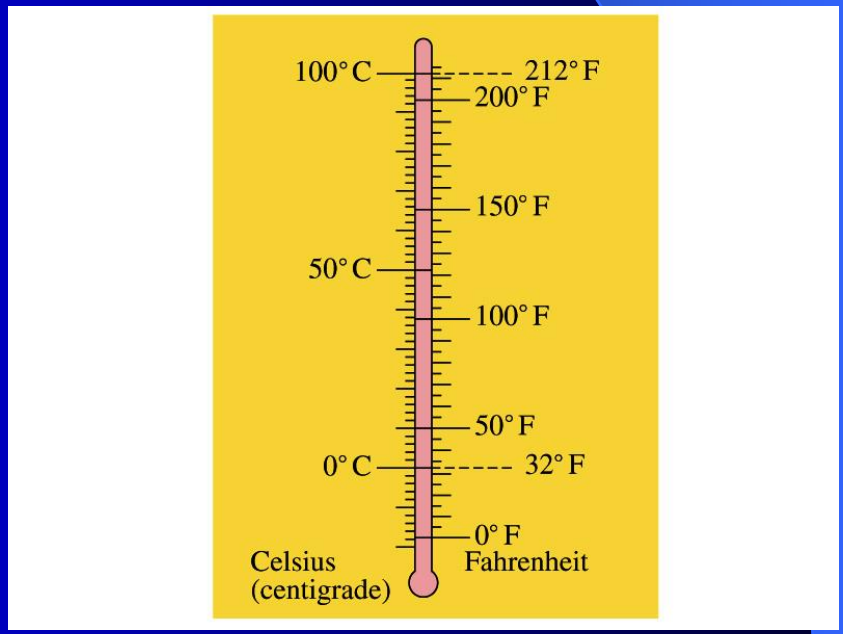
Temperature



$T_F = 9/5\ T_C + 32°$

$T_C = 5/9\ (T_F - 32°)$

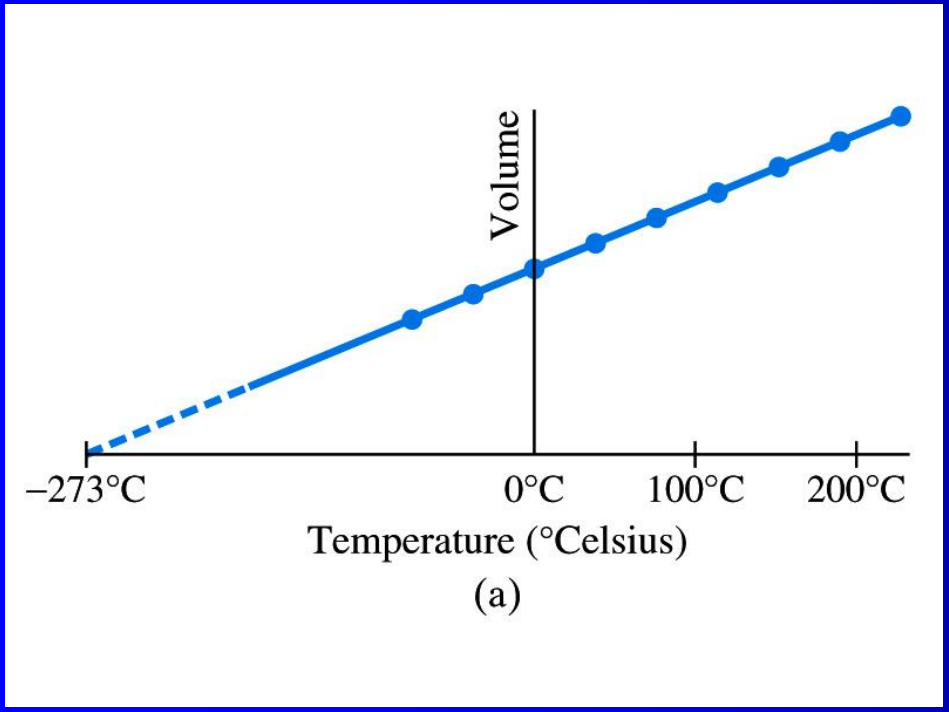


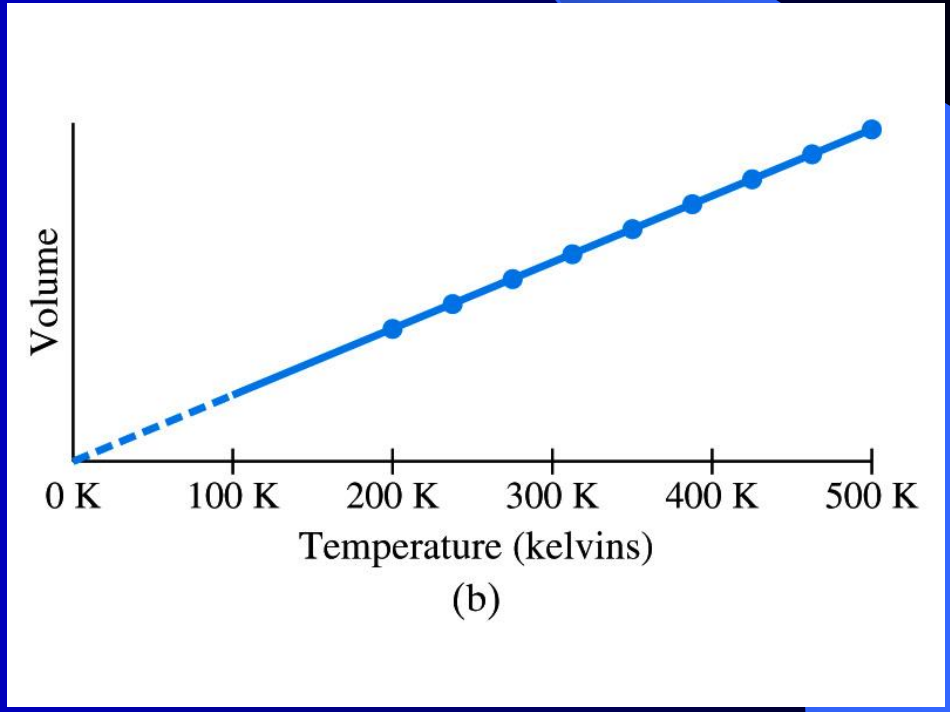


$\Delta L = \alpha L_0\ \Delta T$

Absolute Temperature

$T_K = T_C + 273.15°$





Heat capacity, Latent heat

Calorie is the amount of heat needed to raise the T of 1 gram water from 14.5°C to 15.5°C

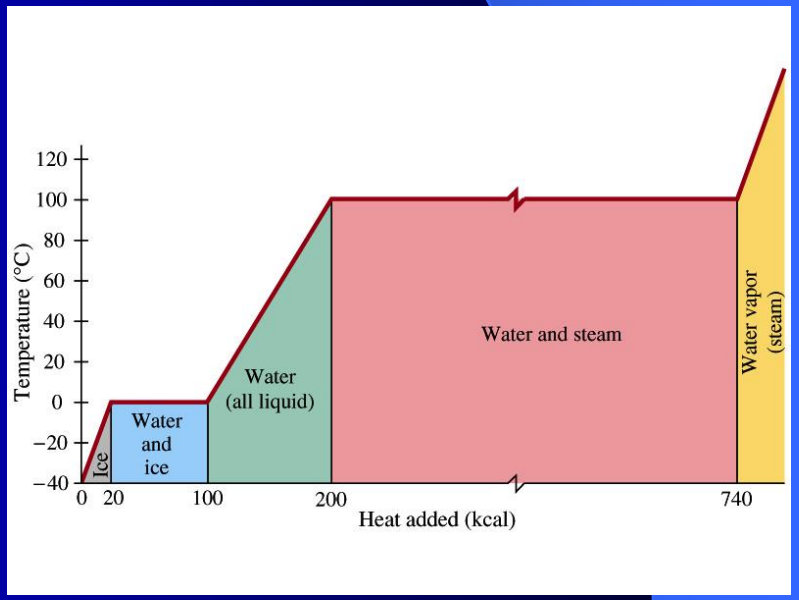
1 cal = 4.186 J, 1 kcal = 4186 J

Specific heat capacity c: $Q = m\, c\, \Delta T$

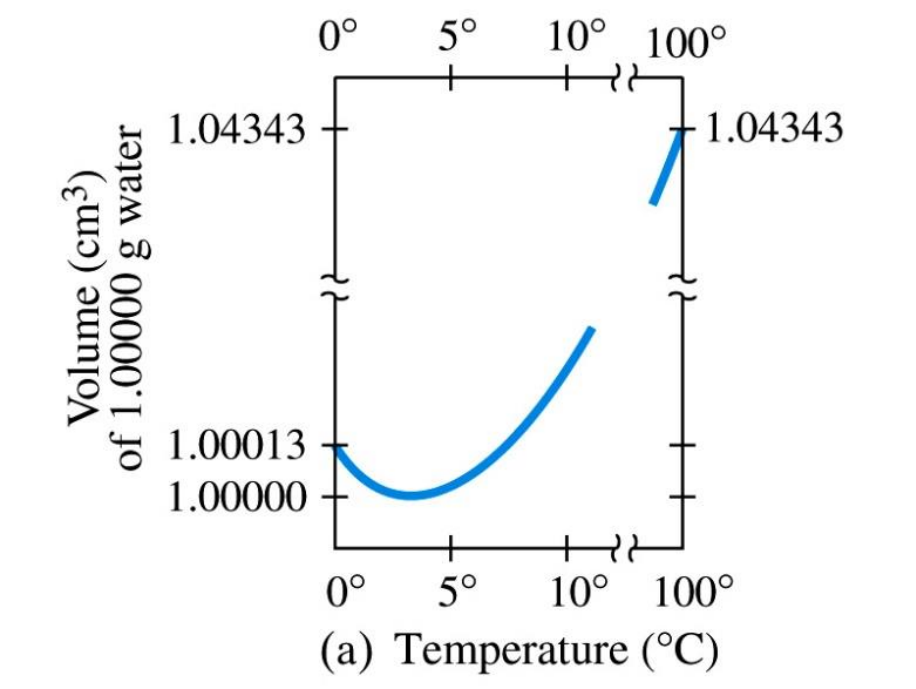
c_{water}=4186 J/(kg K)

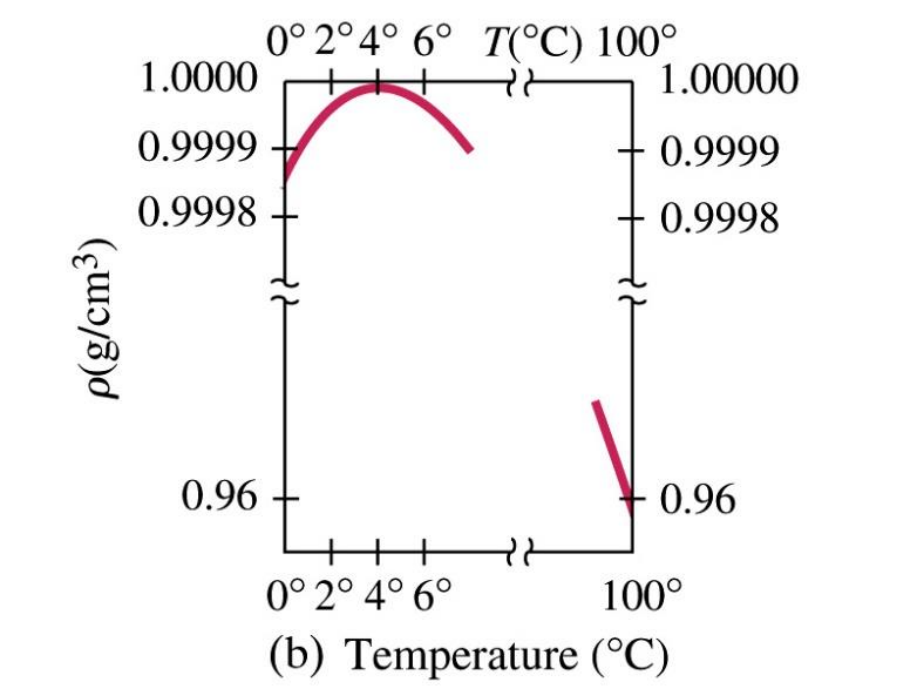
Latent heat L: Q = m L

L_{water}=3.34 10^5 J/kg



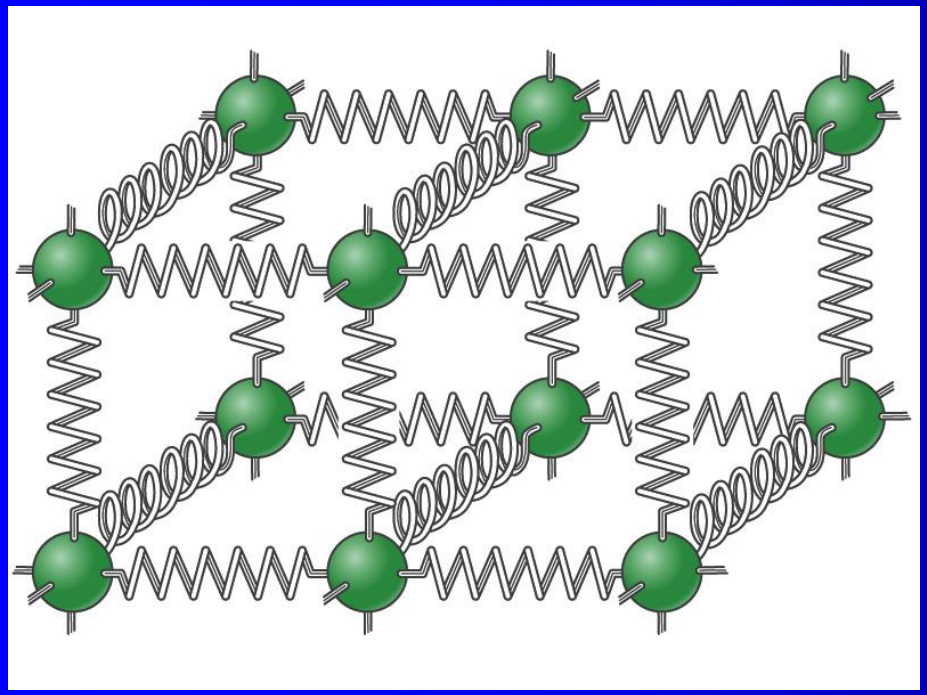
Thermal properties of water

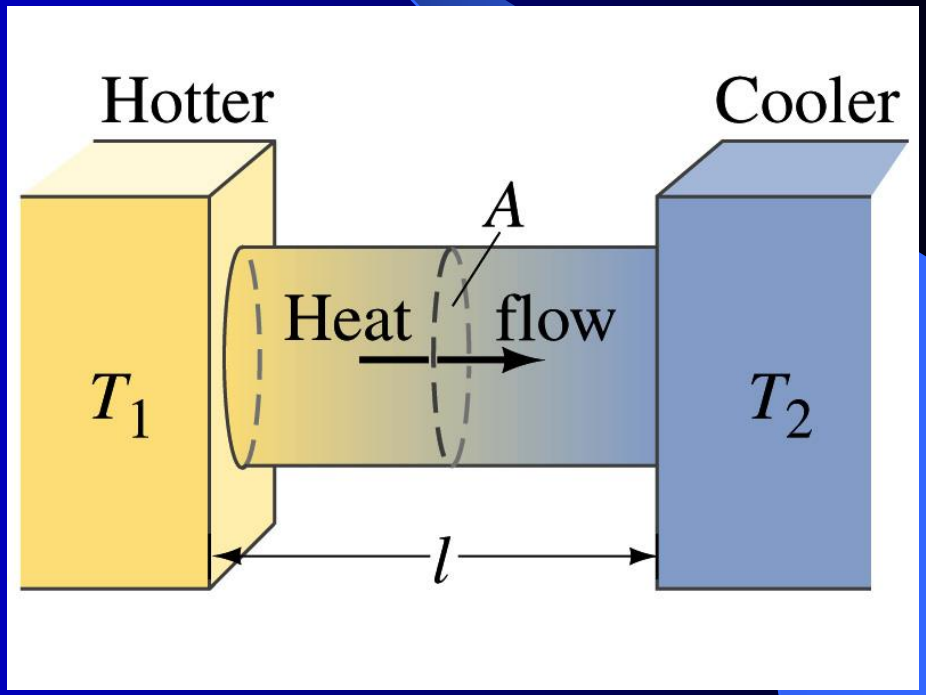




Thermal conductivity

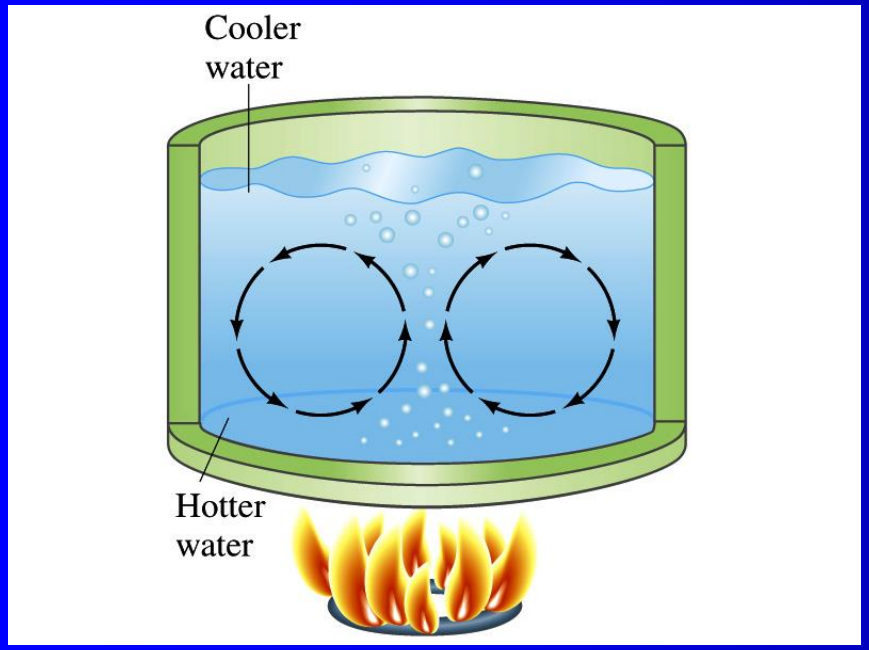
Thermal conductivity k: $H = \Delta Q/\Delta t = kA(T_1-T_2)/l$





Other forms of heat transport

Convection



Radiation