Answer on Question #57644-Physics-Molecular Physics-Thermodynamics

1) Describe how a system containing 2 gases can be in :

A) Mechanical but not in thermal and chemical equilibrium

B) Thermal but not in mechanical or chemical equilibrium

c) Thermal and mechanical equilibrium but not in chemical equilibrium

Solution

a) A system containing two gases can be in mechanical but not thermal or chemical equilibrium if the gases aren't moving, however the temperature at every point in the system isn't equal and the gases are not finished reacting with each other.

b) A system can be in thermal but not mechanical or chemical equilibrium if the temperature at every point in the system is the same however the gases are moving and they are not finished reacting with each other.

c) A system can be in and mechanical equilibrium but not in chemical equilibrium if the temperature is the same everywhere and the gases are not moving but they are still reacting.

2) On a graph of volume versus temperature draw and label lines indicating the following processes, each proceeding from the same initial state T0, V0:

a) an isothermal expansion

b) an isothermal compression

c) an isochoric increase in temperature

Solution