Lecture Notes: Introduction To Thermodynamics

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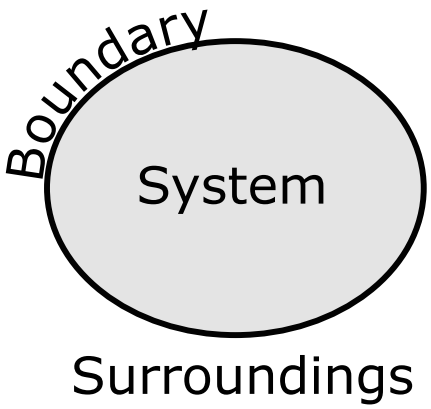

Figure 1: Schematic outline of a typical thermodynamic system composing of the system of interest, the surrounding environment and the boundary between the two. These general characteristics are used to define quantities and laws in thermodynamics.

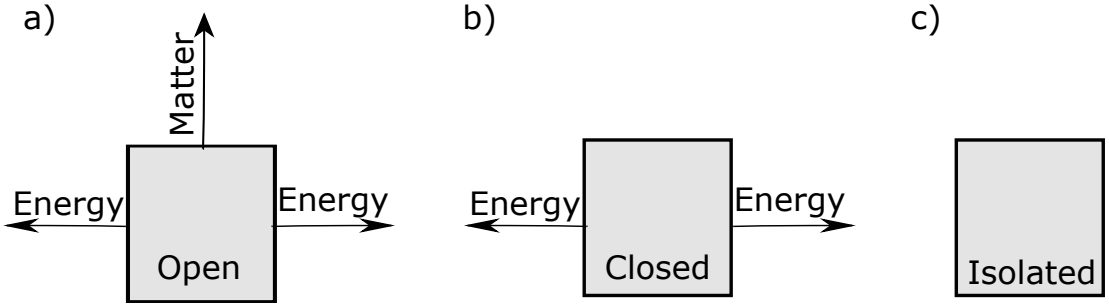

Figure 2: Different types of thermodynamic systems based on the ability of energy and/or matter to flow freely between system and surroundings for an a) Open system b) Closed system and c) Isolated system.

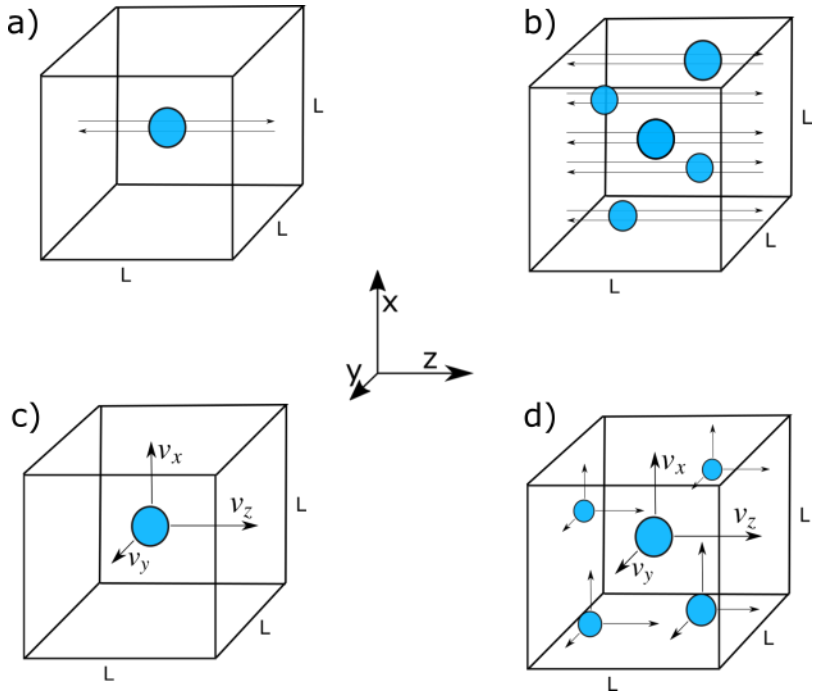

Figure 3: Schematic to guide our derivation of the ideal gas law: a) A single gas particle in a box moving in one direction along the z-axis. b) Multiple gas particles confined to move in one direction along the z-axis. c) A single gas particle allowed to move anywhere in 3D space. d) Many gas particles allowed to move anywhere in 3D space.

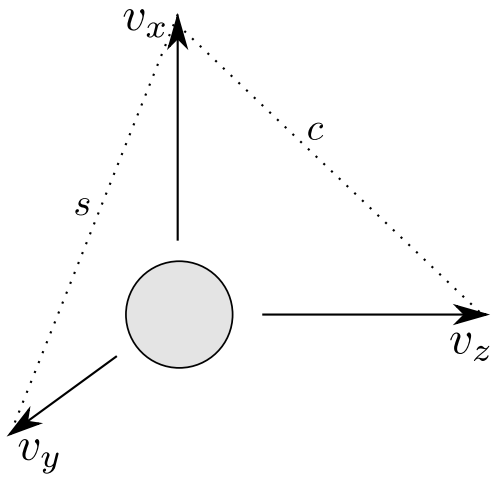

Figure 4: Application of the 3d pythagorean theorem for the average velocity of the particle.