Second lecture

Structure of Solid

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Structure of Solid

Introduction

In a solid metals ,principally composed of atoms, molecules, and/or ions but their distribution in the matter depends upon the state it is representing, that is, either solid, liquid, or gaseous. Depending on the state, the molecular structures of solid, liquid, and gases are geometrically and structurally different. This difference in structure is primarily due to the variation of the arrangement of molecules in liquid, solid, and gases The particles in the gases are far away from each other and thus are well separated and do not have a definite shape. Because of the large distance between the molecules of gases, they move quite easily and very fast causing vibration, therefore, possessing high kinetic energy.

On the other hand, liquid molecules are close together but are not tightly packed; they do not show any definite molecular arrangements and have no definite shape of their own. The liquid vibrates and slides across each other with lesser speed as compared to gases and therefore shows less kinetic energy. In solid matters, the molecules are tightly packed with each other in a definite arrangement and thus have a defined structure, shape, and size. Solid vibrates but its molecules do not move from place to place. The molecular structure of solid, liquid, and gas

Properties of Solids

In the solid state, the particles do not have enough energy to overcome the strong intermolecular forces, which means they are tightly held against each other. As a result, solids have a definite shape and volume.

The particles vibrate back and forth within their fixed positions and do not move freely. Solids are incompressible and have high density, compared to liquids and gases. They can be crystalline, like table salt, or amorphous, like glass, rubber or plastic. Many elements exist as solid-state at room temperatures, such as sodium, vanadium and magnesium.