

Bonding in Solids

*** Chemists often divide solids into two types:**

*** Crystalline solids**

*** Amorphous solids**

Amorphous Solids

- * Have indistinct shapes because their structural units lack order.
- * Example: Glass and rubber

Crystalline Solids

- * Have organized structural units and distinct shapes
- * Example: Garnet

Crystalline Solids

- * Chemists classify crystalline solids into five categories

Crystalline Solids

- * Atomic Solids - Covalent Non-polar
- * Individual atoms held together by London Dispersion Forces
- * Very low melting and boiling points
- * Very rare (Noble gases in solid state)

Crystalline Solids

- * Molecular Solids- Covalent Polar
- * Stronger dipole-dipole forces giving them higher melting and boiling points than atomic

Crystalline Solids

- * Network Solids
- * Covalently bonded to form 3D structures.
- * Often form crystalline structures in carbon-based solids

Crystalline Solids

- * Ionic Solids

- * Array of ions, arrange in a crystal lattice structure.

Crystalline Solids

- * Metallic Solids

- * Free electrons pool around metal cations.

- * Strong bonding leads to high boiling and melting points.