

Chapter 29

Molecules and Solids

From Atoms to Matter

- To form solids, liquids, and gases, atoms have to bond together
- How do they do it?
 - by sharing electrons
- Why do they do it?
 - to form states with lower energy

Covalent Bonds

- Atoms love to see their outer electron shells to be complete – it gives them “stable configuration”
 - noble gases which are made of atoms, not molecules, are very stable
- How can atoms complete their shells?
 - by sharing their electrons
 - if one hydrogen atom will share its electron with another hydrogen atom, each of them can pretend they have two electrons

Ionic Bonds

- If two atoms are very different, one can give all its electron(s) from the outer shell to the other one
 - the atom which gives is left with the previous (complete) shell
 - the atom which accepts completes its outer shell

Bonds and Bands

- What happens to energy levels when atoms share electrons?
 - the levels are split
- If a lot of atoms share their electrons (metals, semiconductors), the energy levels become bands