

Summary

• Covalent bonds

polar covalent bonds: electrons are shared unequally between atoms due to difference in electronegativities, Example: H_2O

nonpolar covalent bonds: electrons are shared equally between two atoms with similar or identical electronegativities, Example: O_2

• Noncovalent interactions:

Electrostatic interactions: Attraction or repulsive forces between charged particles (Include interactions between (Real+Real), (Real+partial), (partial+partial))

- According to what Dr. Diala said

Dipole-Dipole interactions: Attractive forces between the positive end of one polar molecule and the negative end of another polar molecule. Example: the interaction between HCl molecules (polar molecules)

Hydrogen bonds: a special type of dipole-dipole interaction between a hydrogen atom bonded to a highly electronegative atom (N, O, F) OR another electronegative atom.
Example: Hydrogen of one water molecule and the oxygen of another water molecule (Should be 2 molecules)

London dispersion forces: caused by the momentary distribution of electrons in nonpolar molecules, leading to temporary dipoles.
Example: (see the figure in the slide)

Types of Van Der Waals interactions

Ionic bonds: Attraction between oppositely charged ions formed by transfer of electrons from one atom to another.
Example: $NaCl$, where Na loses an e^- to Cl forming Na^+, Cl^-