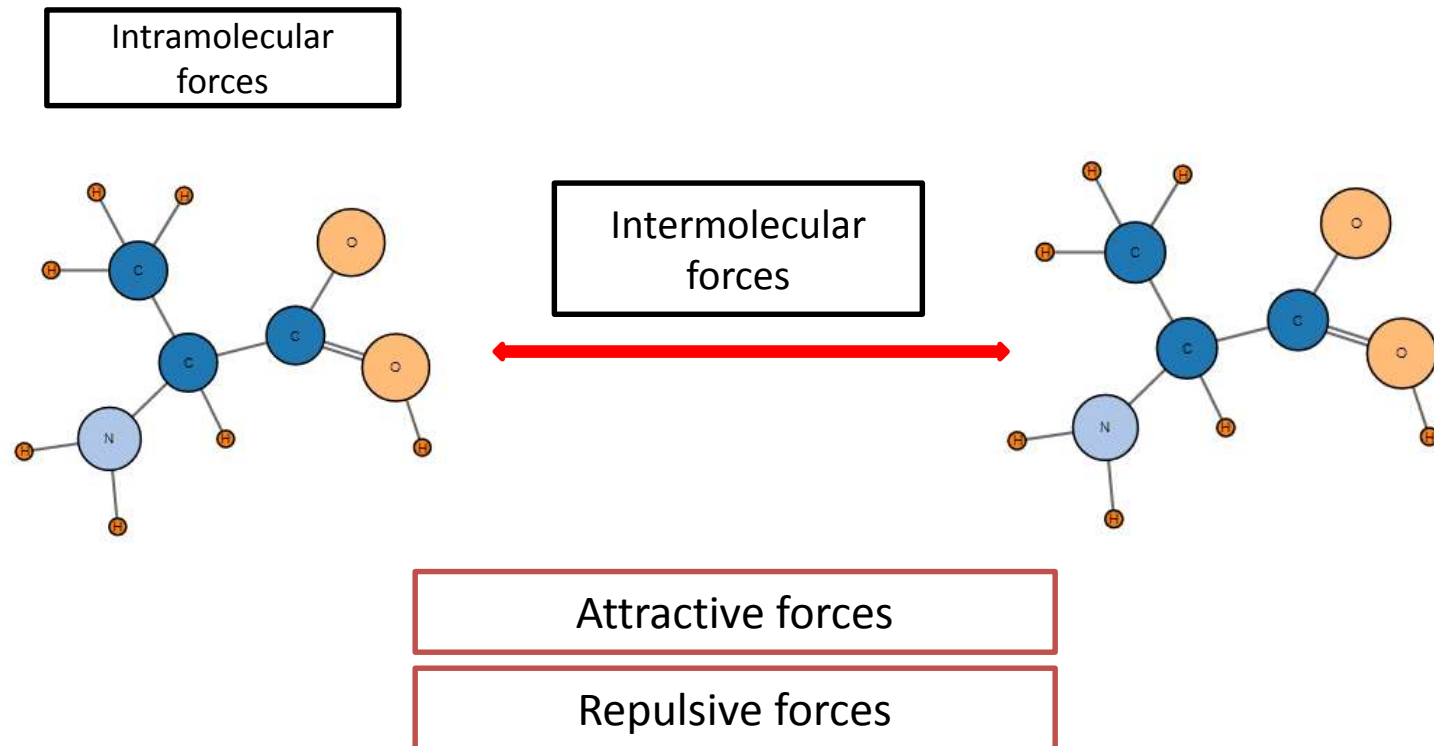
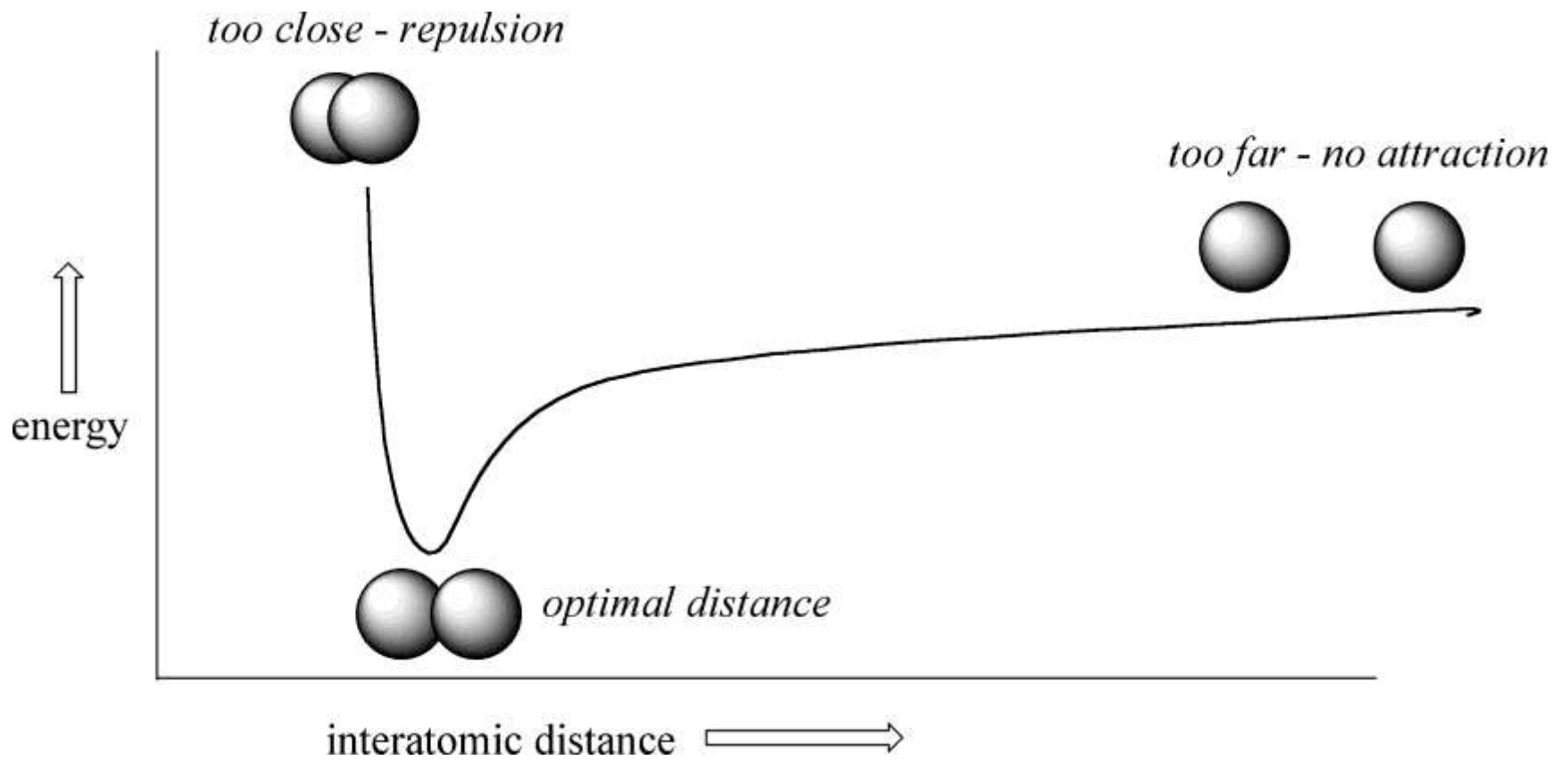
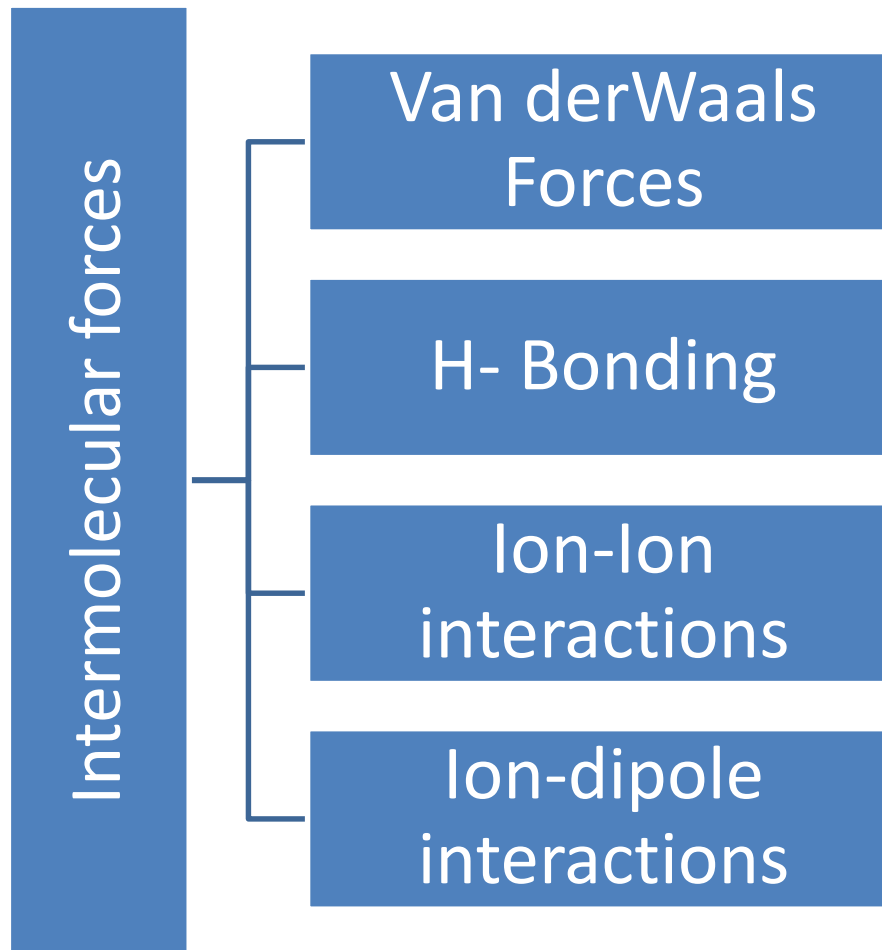


Bonding forces

In order for molecules to exist in aggregates in gases, liquids, and solids, intermolecular forces must exist.



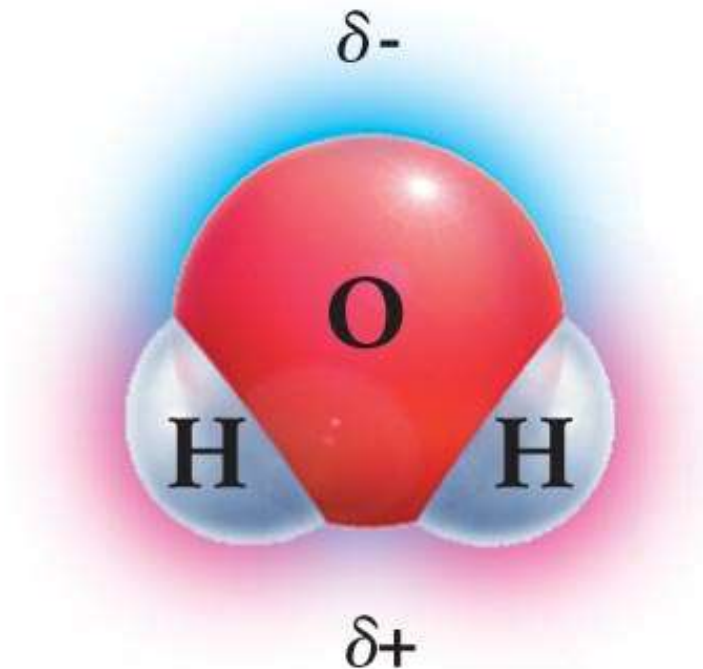
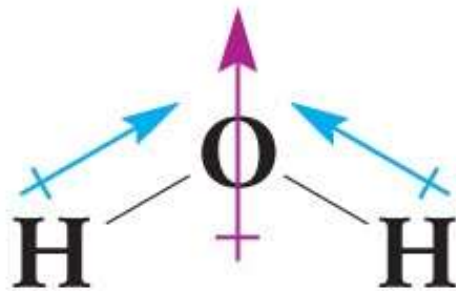




Van derWaals Forces

Dipole

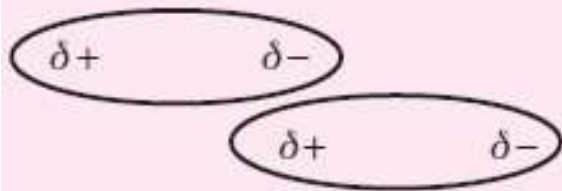
- A polar molecule that has two poles.



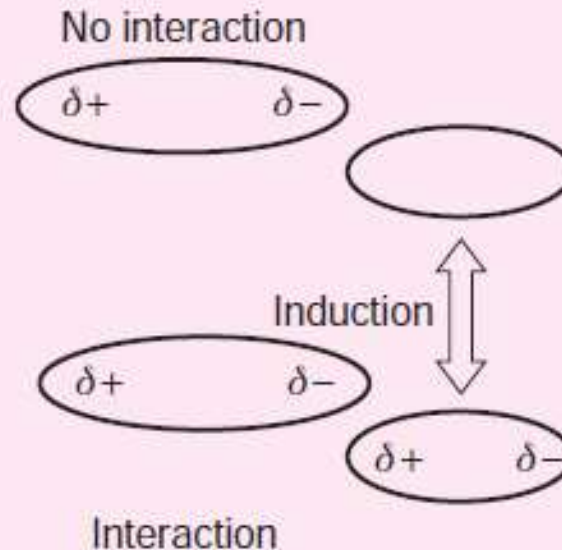
Van der Waals Forces

- nonionic interactions between molecules, yet they involve charge–charge interactions

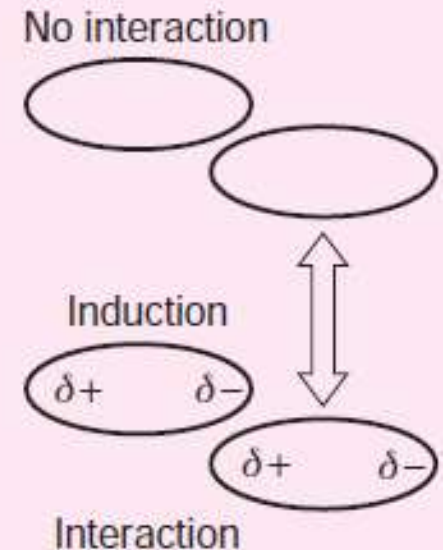
Keesom forces



Debye forces

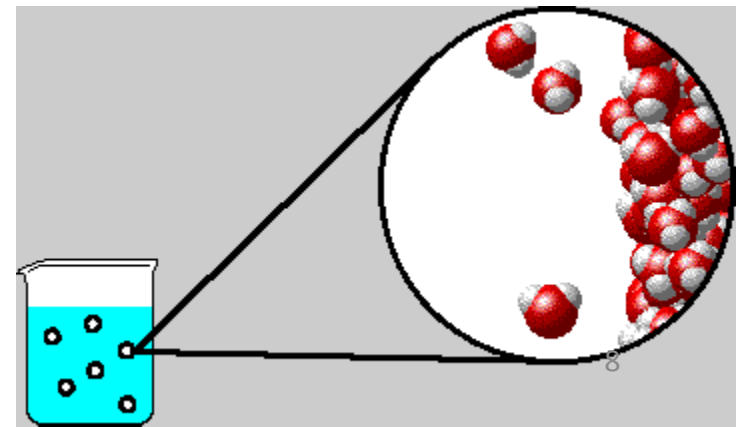
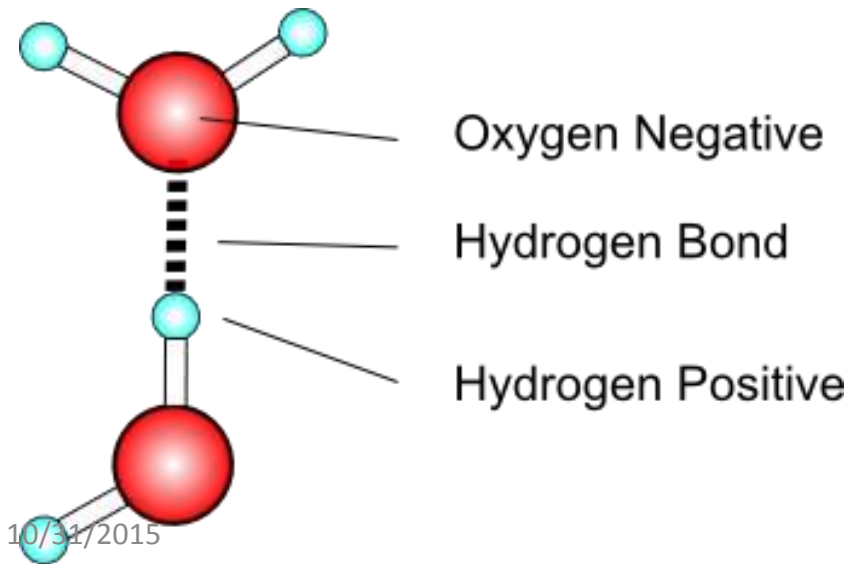


London forces



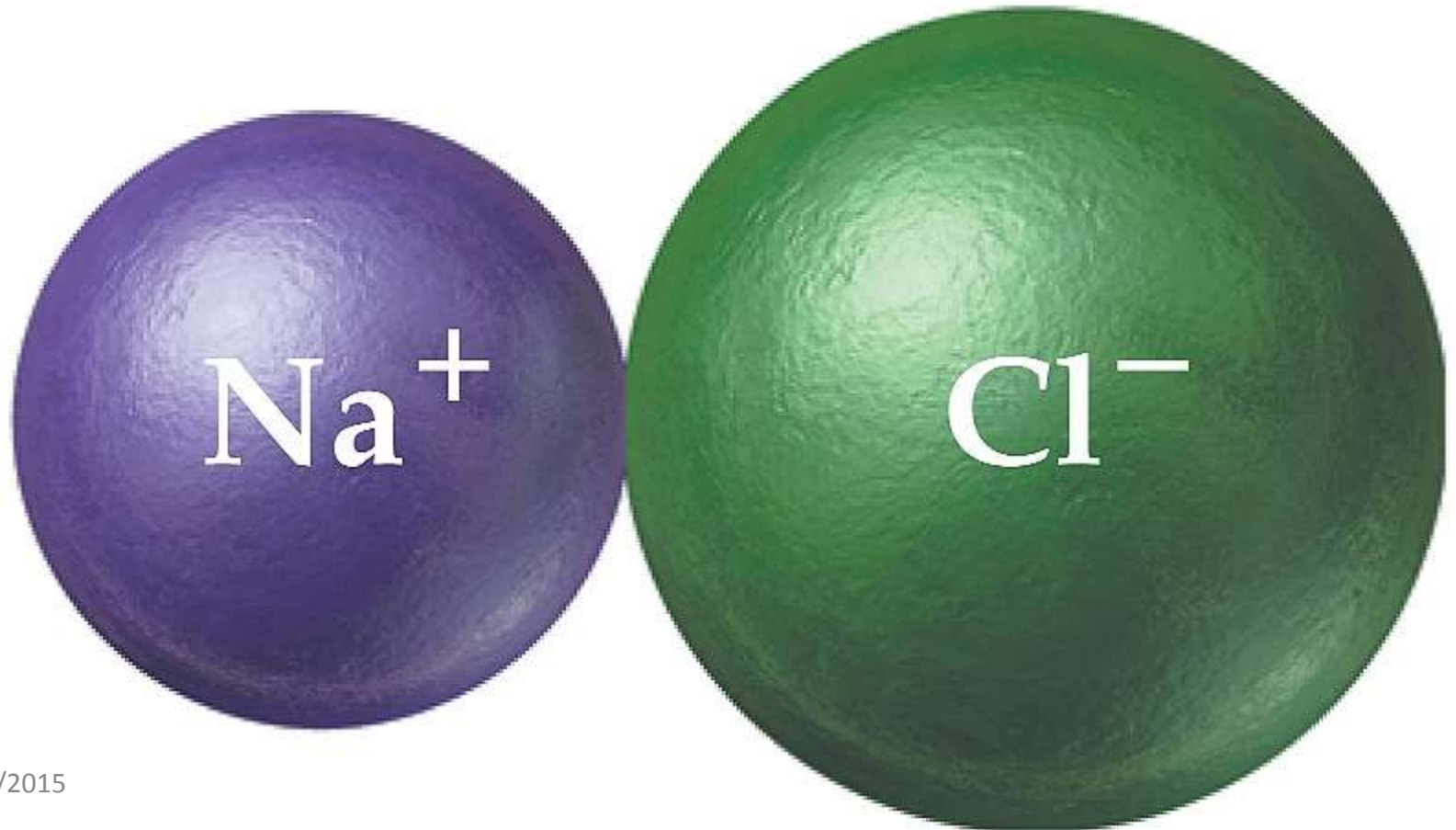
Hydrogen bond or hydrogen bridge

- Because of the small size of a hydrogen atom and its large field, it can move in close to the electronegative atom (fluorine, oxygen, or nitrogen) and form an electrostatic connection.



Ion-Ion Interactions

Strong forces between counter ions.



Ion-dipole and ion-induced dipole forces

