Resonance Structures

Equivalent resonance structures contain the same number of single or multiple bonds and each atom ahs the same formal charge	The best resonance structure has the following criteria:
Non-equivalent resonance structures have different numbers of bonds and different formal charge distribution	1. Smaller formal charges (+ or -) are preferred over larger ones
Formal charge = # of valence electrons - (# bonded electrons + lone pairs)	2. Like formal charges on adjacent atoms are not desirable
Overall charge = sum of formal charges	3. Negative formal charges should reside on a more electrone-gative atom

Intermolecular Forces

Intramolecular forces occur within molecules and are strong forces	London dispersion forces occur in all molecules and get stronger as the length of the molecule increases

Hybridization

Atomic orbitals overlap to form a new orbital with a pair of opposite spin electrons. This is valence bond theory	Sigma bonds are the first single bonds between 2 atoms
Hybrid orbitals can be determined by the VSEPR structure of a molecule, or by looking at the total # of electron groups	Pi bonds are the second or third bonds between 2 atoms
Partially filled orbitals in the hybridized orbitals represent single bonds	Unhybridized p orbitals represent Pi bonds
Filled orbitals represent lone pairs	To create equal orbitals, you may have to promote an ns electron to a np electron
Partially filled s and p orbitals can overlap to share electrons	

Intermolecular Forces

Intramolecular forces occur within molecules and are strong forces	London dispersion forces occur in all molecules and get stronger as the length of the molecule increases

Intermolecular Forces (cont)

Intermolecular forces occur between molecules and are weaker forces	London dispersion forces are caused when an instantaneous dipole attracts another instan-taneous dipole
The strength of an intermolecular force is dependent on the size of the molecule, the surface area of the molecule, and the polarity of the molecule	Created by the constant movement of molecules
Dipole-dipole forces exist in all polar molecules	London dispersion forces are the weakest IMF
A permanent dipole exists in polar molecules due to the difference in electrone-gativity of bonded atoms	Hydrogen bonding occurs when hydrogen bonds with N, F, or O
The positive end of one molecule will attract the negative end of another and vice versa	Hydrogen bonds are very strong IMF
Ion-dipole forces occur between ions and polar molcules	Stronger IMFs lead to higher boiling points and lower melting points

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