Conformation

Different 3D shapes of a single (the same) molecule obtained by rotation about single bonds

Example: Ethane



At room room temperature (20 °C): 15-20 kcal/mol of energy available. This allows for rotation around C-C to occur rapidly at room temperature. – Important to know

There is a Steric effect between neighboring bonds to hydrogens: Repulsion of filled shells of e

Newman Projections

This is a tool to examine the conformation (rotational 3D geometry) about one specific bond



Staggered conformation (hydrogens are anti) Anti means opposite side -



Rotation around all bonds still very rapid.



Eclipsed conformation (hydrogens are syn) Syn means same side Most stable (most populated conformation) is called anti and has groups as far away as possible.



Butane Conformational Energy Diagram:

Syn Eclipsed



Bond Rotation (Dihedral Angle)