"Excuse me... I just want to check how many hits I've had on my web site."

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Dr. Adcock Has a Web Page

http://web.utk.edu/~adcock00

Look there for All Informational Needs

This class will use a Classroom Response System by TurningPoint. Register your “ResponseCard” at your Blackboard Site.

Abbv. Lecture Notes Can Be Downloaded from Any Internet Enabled Computer!

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Lewis and VSEPR Bonding

The Octet rule & Predicting Bond Angles

- Carbon has 4 covalent bonds & no unshared pairs!
- Nitrogen has 3 covalent bonds & one unshared pair!
- Oxygen has 2 covalent bonds & two unshared pairs!
- Halogens have 1 covalent bond & three unshared pairs!

If all bonds are single, angles are $\sim 109.5^\circ$
VSEPR Model and Predicting Bond Angles

- Ethane, 109.5°
- Ethylene, 120°
- Acetylene, 180°
- Methylamine, 109.5°
- Methyleneimine, 120°
- Methanol, 109.5°
- Formaldehyde, 120°
- Ethyl chloride, 109.5°
Functional Groups

Functional Groups determine reactivity!

- They are sites for chemical reaction. A particular functional group undergoes the same type of chemical reaction, in any compound!

- They are the units by which we divide organic compounds into classes.

- They serve as the basis for naming organic compounds.
Functional Groups

Functional Groups determine reactivity!

methanol, 109.5

the alcohol functional group

a primary alcohol

a secondary alcohol

a tertiary alcohol
Functional Groups

Functional Groups determine reactivity!

- **Methyl amine**, 109.5
  - ![Methyl amine structure](image)

- **Primary amine**
  - ![Primary amine structure](image)

- **Secondary amine**
  - ![Secondary amine structure](image)

- **Tertiary amine**
  - ![Tertiary amine structure](image)
Functional Groups

The Carbonyl Group, 120° angles

\[
\begin{array}{c}
\text{O} \\
\text{C} \\
\end{array}
\]

Aldehydes and Ketones
Functional Groups
Aldehydes & Ketones

Aldehydes

\[ \text{methanal} \quad \text{ethanal} \]

formaldehyde acetaldehyde

Ketones

\[ \text{propanone} \quad \text{dimethyl ketone} \]

acetone
Functional Groups

The Carboxyl Group, 120° & 109° angles

Carboxylic Acids and Esters
Functional Groups

The Carboxyl Group, $120^\circ & 109^\circ$ angles

- $\text{-COOH}$
  - Carboxylic acid
  - Acetic acid

- $\text{-COOCH}_3$
  - Carboxyl group
  - (methyl) ester
  - Methyl acetate
Writing Chemical Formulas

![Lewis Structures](image)

**CH₃CH₂CH₂CH₃**  **CH₃CH₂OH**  **CH₃COOH**

Condensed Structural Formulas