Welcome to Chem 341!
- Make a few friends and work together!
- For next time: Read and understand Chapter 1 of Hart Craine & Hart. It should be mostly review.

**Line Structures**

- Write in all atoms + lone pairs

**Lewis Structures**

\[
\begin{array}{c}
G! \\
\text{H}_3^+ - \text{C} = \text{CH}_3
\end{array}
\]

**Functional Groups** - Table 1.6
- Groups of atoms with predictable reactivity. Above is a ketone. For example:

\[
\begin{array}{c}
\text{H}_3\text{C} = \text{CH}_3
\end{array}
\]
What do we really need to know? (emphasis)
- Matter consists of atoms
- Atomic structure accounts for periodicity
- Bonds form by electron pair sharing
- Shape is of paramount importance
- There are residual forces between molecules
- Energy is conserved - Entropy
- Energy and matter tend to disperse - Entropy
- There are barriers to reaction - that's why you are not on fire
- There are only four types of reaction - from a physical chemist's perspective

Powerpoint will be on the website.
- Energy Related Problems
  - Nuclear waste
  - Hydrogen
  - Ecologically Compatible Chemistry
  - Sustainable development
  - Green Chemistry
  - Interface of Chemistry + Biology
Five Major Advances needed in Chemistry
- Conquer Disease
- Solve Energy Problems
- Clean the Environment
- Deter Terrorism
- ?? ?? - you tell us Wednesday

Ok... Now a bit of organic chemistry "Organic" because these types of compounds come from living things.

\[ \text{Urea} \quad \text{NH}_2\text{CONH}_2 \]

- one of the first compounds made synthetically - from \[ \text{NH}_4^+\text{ and } \text{O} = \text{N} \]
Natural Products
Muscovite
-a perfume

Chiral Center "Handedness"

Unnatural Products

Avo Benzene in Sunscreen

Why Carbon?
1) Electronegativity
Li<sup>+</sup> C (1.5) F<sup>-</sup>

- Carbon can make covalent bonds with just about anything

2) Strong bonds to itself
H<sub>3</sub>-CH<sub>3</sub> 88 kJ/mol
H<sub>3</sub>-O<sub>2</sub>-H 35 kJ/mol
Not very stable
3) Multiple Bonds

\[ \text{C-C} \ 	ext{and C-H} \]

and itself or other atoms (mostly O + N)

4) Kinetic Stability

5) Chirality (or handedness) - More Later