

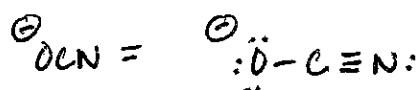
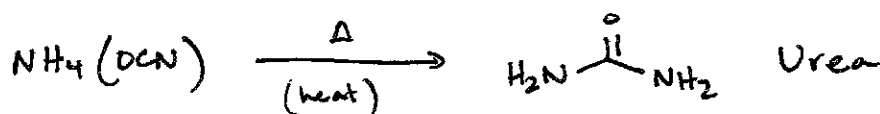
Course 343Lecturer HackenbergerDay WedDate 9/24/2013Notes Taken By AdamsTotal # of Pages 2

Submit a *Single-sided Copy* to the Undergraduate Office
NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

• Grandfathers of Organic Chemistry ~~XXXXXXXXXX~~

- Jons Jakob Berzelius (1779-1848)

- Friedrich Wöhler (1800-1882) - Urea synthesis



- Justus von Liebig

1840: synthesis of acetone, chloroform

- August Kekule

1860: structure of organic compounds

• Why is the chemistry of carbon so special?

Element	Li	Be	B	C	N	O	F	Ne
# of compounds	1	1	36	>5000	11	2	1	0
Electronegativity	1.0	1.6	2.0	2.6	3.0	3.4	4.0	

H=2.2

~~Carbon forms~~

- Carbon forms lots of covalent bonds

Submit a *Single-sided Copy* to the Undergraduate Office
NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

Chapter 1 book problems: 1, ~~2~~, 3-10, 12-18, 18-22, 24-2a,
31, 33, 34, 41, 42, 45

• Bonding properties of carbon

- Atomic number = 6 \longrightarrow 6 electrons

- $2e^-$ in 1s orbital

- $4e^-$ in 2s/2p orbitals

Quantum numbers
refer to atomic
orbitals

1, 2 : principle quantum number

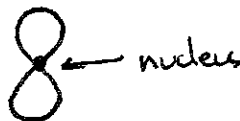
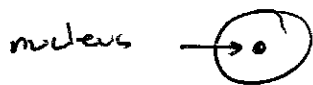
- energy state of the orbital

• Focus on valence electrons (i.e.: electrons in outer shell)

s, p : refers to shape of atomic orbital

s = spherical

p = directional



Orbitals define the
3D space in which
an electron is
likely to be found

• Atomic orbitals for carbon: (for valence e^-)

2s, 2p_x, 2p_y, 2p_z

Why is chemistry with carbon so special?

Number of compounds with elements (X) of the 2nd period with hydrogen (H)

Element (X)	Li	Be	B	C	N	O	F	Ne
# of compounds	1	1	36	>5000	11	2	1	0
Electronegativity	1.0	1.6	2.0	2.6	3.0	3.4	4.0	

H: 2.2

Observation: Very many compounds known!