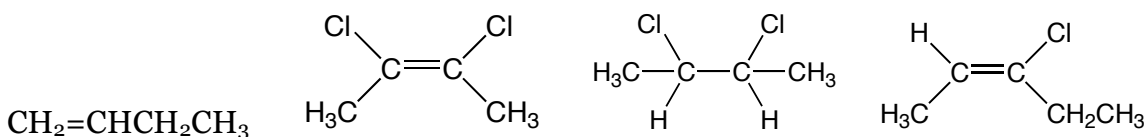


Recitation Week 3

1/30/13

1. Which of these compounds exist as cis/trans isomers?



2. Rank these elements in order of increasing electronegativity:

(a) F, Cl, Br, I (b) C, Si, N, O, F, Cl

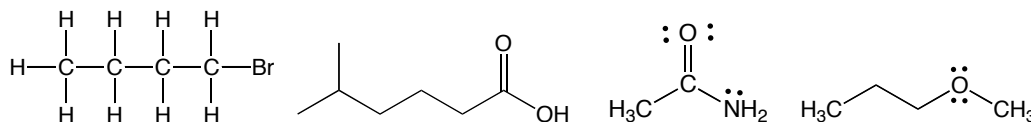
3. Rank these bonds in order of increasing polarity: C–N, C–O, C–C, C–F, C–H

4. Draw 3D representations of these molecules and determine if each molecule is polar. If it is polar, draw an arrow to indicate the direction of the dipole moment.

(a) CH_4 (b) CH_2Cl_2 (c) NF_3

(d) H_2O (e) CF_4 (f) CH_3OCH_3

5. What “family” of molecules is each of these (*i.e.* what functional group is present)?



6. Draw examples of:

(a) an alkene

(b) a ketone

(c) an ester

6. (contd) (d) an amine

(e) an aldehyde

(f) an alkyne

7. Draw a primary, a secondary, and a tertiary alcohol with the formula $C_5H_{11}OH$.

1°

2°

3°

8. Rank each set of molecules by their boiling points.

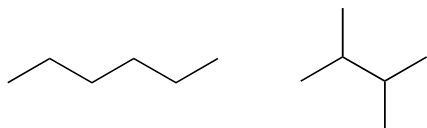
(a) NH_3 , CH_4

(b) CF_4 , CCl_4 , CBr_4 , Cl_4

(c) $CH_3CH_2CH_3$, $CH_3CH_2CH_2CH_3$, $CH_3CH_2CH_2CH_2CH_3$

(d) CH_3OCH_3 , CH_3CH_2OH , $CH_3CH_2CH_3$

(e)

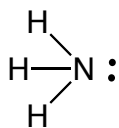


(f)

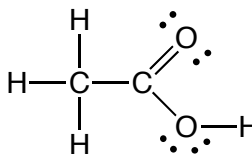


9. In each case draw a hydrogen bond from the molecule shown to another molecule of the same compound.

(a)



(b)



10. Which of these substances would you expect to be soluble in water?

(a) CCl_4

(b) CH_3OH

(c) $CH_3CH_2NH_3^+$

(d) $CH_3CH_2CH_2CH_2CH_2CH_2OH$

(e) $HOCHCH_2CH_2CH_2CH_2CH_2OH$

(f) octane [$CH_3(CH_2)_6CH_3$]

11. Label the portions of this molecule that are **hydrophobic** and **hydrophilic**:

