

Chapter 4 Homework-Organic Chemistry Basics

PROPERTIES OF CARBON:
 4 valence e's
 Forms 4 covalent bonds
 CARBON CHAIN: VARIES IN LENGTH, #, LOCATION OF BONDS

FORMS ISOMERS
 C₆H₁₂O₆ → EAN. FOR...
 GLUCOSE, FRUCTOSE &
 GALACTOSE

FUNCTIONAL GROUP	DRAWING/FORMULA	PROPERTIES & COMPOUNDS
Hydroxyl	-OH	POLAR WATER-SOLUBLE Alcohols ↓ HYDROPHILIC
Carbonyl	$\begin{array}{c} \text{O} \\ \parallel \\ \text{C} - \text{C} - \text{C} \\ \parallel \\ \text{O} \end{array}$ Ketone $\begin{array}{c} \text{O} \\ \parallel \\ \text{C} - \text{H} \end{array}$ Aldehyde	POLAR WATER-SOLUBLE HYDROPHILIC ↓
Carboxyl	$\begin{array}{c} \text{O} \\ \parallel \\ \text{C} - \text{OH} \\ \parallel \\ \text{O} \end{array}$ Carboxylic acid $\begin{array}{c} \text{O} \\ \parallel \\ \text{C} + \text{H}^+ \\ \mid \\ \text{O}^- \end{array}$ Carboxylate ion	POLAR WATER-SOLUBLE ACID ↓ HYDROPHILIC

Identify the four most common elements in living things. Give the most common valence for each element and explain the value of the valence in terms of the element's electron configuration.

H → +1
 C → +4 or -4
 O → -2
 N → -3

<p>Amino</p>	$\begin{array}{c} \text{-NH}_2 \\ \\ \text{-N}^+ \text{H} \leftrightarrow \text{-N}^+ \text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$	<p>Polar- WATER-SOLUBLE WEAK BASE AMINES</p>
<p>Sulphydral</p>	-SH	<p>DISULFIDE BRIDGES STABILIZE PROTEIN SHAPE THIOLS</p>
<p>Phosphate</p>	$\begin{array}{c} \text{O} \\ \\ \text{-O-P-OH} \leftrightarrow \text{-O-P-O-} \\ \quad \\ \text{OH} \quad \text{O-} \end{array}$	<p>Polar- WATER-SOLUBLE ACID IMPORTANT IN E TRANSFER (ATP)</p>
<p>Methyl</p>	$\begin{array}{c} \text{-CH}_3 \\ \\ \text{H} \\ \\ \text{-C-H} \\ \\ \text{H} \end{array}$	<p>NONPOLAR NOT SOLUBLE IN WATER</p>

Identify, define, and provide examples of the three major types of isomers.

STRUCTURAL
DIFFERENT ARRANGEMENT OF ATOMS

GEOMETRICAL
DIFF ARRANGEMENT AROUND ACFC

ENANTIOMERS
DIFF ARRANGEMENT ON ASYMMETRICAL CARBON