


WATER AND PH

Special Features

- Polar:** covalent bond not shared equally - regions are charged.

- Cohesion:** attractive force between like particles
- Adhesion:** attractive forces between unlike substances
- Both forces allow water to move against gravity → **Capillary Action**



Great Solvent

Water dissolves other polar substances

Ex. salt, sugar, proteins

Solvent = what does the dissolving
Solute = what is dissolved

Great Solvent

Solute determines the pH of the solution (sol'n)

Base has more **OH-** floating around;
Acid has more **H₃O+** floating around

Ex. $\text{HCl} \leftrightarrow \text{H}^+ + \text{Cl}^-$

↓
H₃O+


pH scale

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Acid **neutral** Base

Density Anomaly

Solid water is **LESS** dense than liquid ∴ Ice floats!



Air temp: -20°
Ice temp: 0°
Water temp: 4°

High Specific Heat Capacity

- H₂O** resists Δ in temp.
 - Takes a lot of energy to heat up or cool down
- H₂O** moderates temps on Earth



Water Builds/Breaks Down Macromolecules

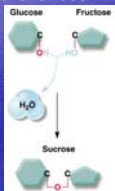
- Large organic compounds are built from smaller ones called monomers
- Many monomers together will form polymers
- Many polymers together are called macromolecules

Building Macromolecules

Dehydration synthesis : build up of molecules	Hydrolysis : break down molecules
<ul style="list-style-type: none">H₂O is released during this process	<ul style="list-style-type: none">H₂O is needed to break bonds

Dehydration Synthesis

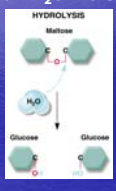
- When 2 monomers are joined, a H₂O molecule is lost



The diagram illustrates the process of dehydration synthesis. At the top, a Glucose molecule (a six-membered ring with an -OH group) and a Fructose molecule (a five-membered ring with an -OH group) are shown. An arrow points down to a Sucrose molecule, which is a disaccharide formed from the two monomers. A water molecule (H₂O) is shown being released from the reaction.

Hydrolysis

- Breaking up polymers by the addition of an H₂O molecule



The diagram illustrates the process of hydrolysis. At the top, a Maltose molecule (a disaccharide) is shown. An arrow points down to two Glucose molecules. A water molecule (H₂O) is shown being added to the reaction to break the bond between the two glucose units.

QUESTIONS? COMMENTS?



IF BINARY HYDROGEN MONOXIDE IS USED IN THIS

WHY WOULD YOU WANT IT IN THIS?