Properties of water Cheat Sheet

by STEMhighschool via cheatography.com/121412/cs/22241/

Chemistry of water

- H2O molecules form hydrogen bonds with each other. The +Hydrogen is attracted to the -Oxygen which creates a "Sticky Molecule".

Hydrogen Bonds Result in...

- good solvent
- cohesion & adhesion
- lower density as a solid
- high specific heat
- high vaporization rate

High Heat Vaporization

* It takes a long time for water to become vapor

High Specific Heat

H2O resists heat changes in temperature

- High specific heat
- Must add lots of heat to increase temperature
- Likewise must lose lots of heat to cool

H2O moderates earths temperature

Water Dissociation (pH)

Water "Disassociates" meaning that...

+H = -O means water is neutral

+H > -O means water is acidic

+H < -O means water is basic

Lower Density as a solid #1

Most substances become denser when solid BUT NOT WATER!

- Ice floats; Hydrogen bonds create a lattice like structure in ice and becomes less dense than liquid water
- The lattice frame puts space between molecules

Lower Density #2 Why is this important?

* Oceans and lakes don't freeze solid
- Surface ice insulates water below
- This allows life to survive the winter

* If ice sank the lakes would freeze, fish would die in the winter and only the top layer of water would thaw.

Buffers in pH

Buffers: Something that keeps the pH the same or resists change

* pH effects shape and function of enzyme molecules
* pH can be stabilized with buffers. Ex: a reservoir of +H can donate more +H or absorb +H

pH Scale

* Measures the concentration of +H ions
* Measures acidic or basic (0-14)
* Each pH unit = ten-fold change in H+ ions ex: Moving from pH 1 (10^{-1}) to pH 2 (10^{-2}) = ten fewer +H ions

Cohesion and Adhesion #1

Cohesion and adhesion are what get water up a 300ft tree (and water potential and osmosis but that is in another chapter). Cohesion gets the water to stay together. Adhesion gets the waters to stick to the glucose and "climb".

Cohesion & Adhesion #2

Cohesion; sticking together and to itself	Adhesion; sticking to something else
- caused by the polar molecules	- attraction of water between other molecules
- causes surface tension	- Capilary Action; water "climbs" up a cotton paper towel
	- water likes/ climbs glucose and glass

Good Solvent #1

- polarity makes H2O a good solvent
- Polar H2O molecules surround + and - ions along with polar molecules (ex: carbohydrates & protiens)

Good Solvent #2

What dissolves in water?	What doesn't dissolve in water?
* Hydrophilic or "-water loving" substances	* Hydrophobic or "-water fearing" substances
*They are attracted to water and are often polar	*They are not attracted to water and are often non polar

By **STEMhighschool**

cheatography.com/stemhighschool/

Published 1st April, 2020.
Last updated 1st April, 2020.

Sponsored by **Readable.com**
Measure your website readability!
https://readable.com