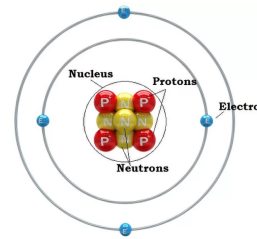


## Objectives:

- Students will be able to describe the charge distribution and properties of polar molecules.
- Students will be able to compare the properties of polar and non-polar molecules.
- Students will be understand the relationship between polarity and electronegativity.
- Students will be able describe the properties of water and explain how they are related to polarity.
- Students will be able to explain hydrogen bonds, adhesion, and cohesion and how these concepts are evidenced by water molecules.

## Why learn about atoms?

It helps us understand how chemical bonds form and function.



## Why learn about bonds?

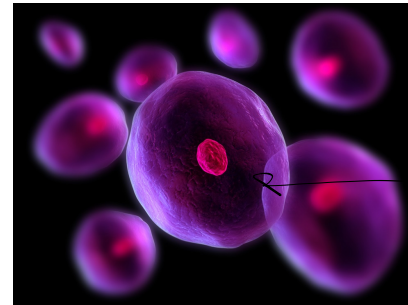
Chemical bonds give us structure to keep from melting into blobs of goo or piles of atoms.



## Why learn about polarity?

· Polarity causes another kind of chemical bond

· Polarity gives water properties that make it the ideal substance to fill up our cells!

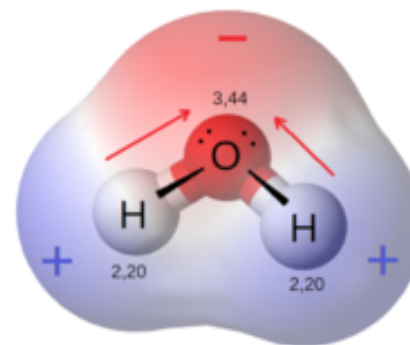


**Polar Molecule:**

has areas that are a little bit positive and other areas that are a little bit negative.

less electronegative

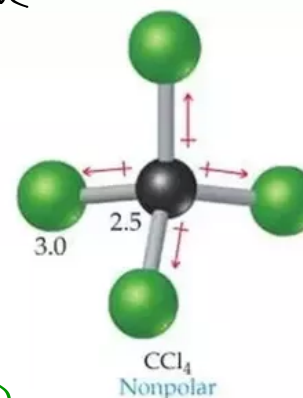
more electronegative atoms

**Non-Polar Molecule:**

· Completely uncharged  
or

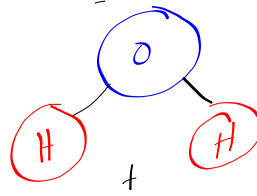
· Might have some  $\ominus$  spots  
or

· Might have some  $\oplus$  spots

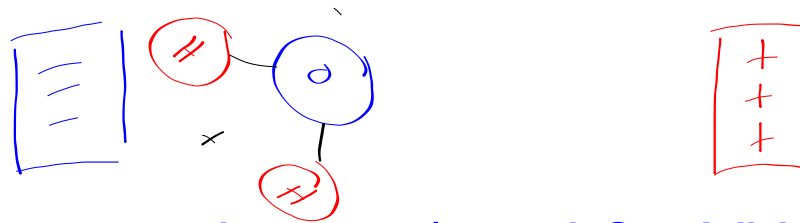


not both...

Water is polar! So one side is slightly positive and the other is slightly negative.



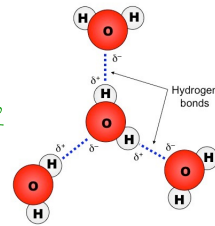
Like charges (+ and + or - and -) repel while unlike charges (+ and -) attract.



So: <https://www.youtube.com/watch?v=VhWQ-r1LYXY>

## Hydrogen bonding:

When the + side of water (H) comes close to the - side of another water (O), they stick together! (weakly)



### Cohesion:

A group of water molecules will stick together in drops



### Adhesion:

Water can stick to other, charged objects/surfaces



### Surface tension:

The water molecules at the surface of a group of water molecules stick together because of cohesion.

1. This makes it hard for some things to get past the surface
2. Water can push up/out on things at the surface

