

Chemistry of water

Covalent binding

2 H to 1 O atom

Polar molecule

- O atom's EN is larger than H
- O attracts divide e^- pair stronger
- O $\rightarrow$ 5
- O 2 single pairs
- Charge spread (dipoles) occur
- $\therefore$ polar molecule

Form is angular

Water molecule



Intermolecular forces

$\rightarrow$ strong H- binding force, many E needed to break down.

$\therefore$ high melting and boiling point, high EN

Greenhouse gas

$H_2O \rightarrow$ polêr

$\therefore$ will absorb E_n without a big $\uparrow$ in temperature. Can absorb infrared rays from the sun. The consequence is that the ocean acts as the warm reservoir and regulates the earth's climate.

Characteristics of water

1) Spec warmth capacity: amount E needed to change the temperature of 1kg of a substance with 1°C $\therefore$ water $\uparrow$ warmth capacity $\therefore$ absorbs large quantities of E_w while heating

Latent warmth: when the phase of a substance changes heat is absorbed/ released without changing the temperature $\therefore$ water high latent value $\therefore$ H_2O slowly releases E_H when cooling

Water's high warmth capacity:

- affirms moderate temperature for the earth.
- helps organisms to effectively regulate light temperature.

2) Melting and boiling points: H_2O melting point high, because needs a lot of E to break down bindings. * necessary $\uparrow$ % to be in gas form.

3) Density: Depends on the temperature of H_2O . The more cooled down, the denser, until maximum temperature of 4°C reached then H_2O expands and becomes less dense after 4°C , because hydrogen forms with 4 other H_2O mole forms and a hexagonal open structure forms.

4) Adhesive forces: Forces between two different types of molecules.

5) Cohesive force: same type of particles.

6) Surface tension: cohesive of H_2O mole forces on the surface of water.

7) Capillary action: tendency of a liquid to push up in a tube due to tension adhesive characteristics.