LIMNOLOGY 6

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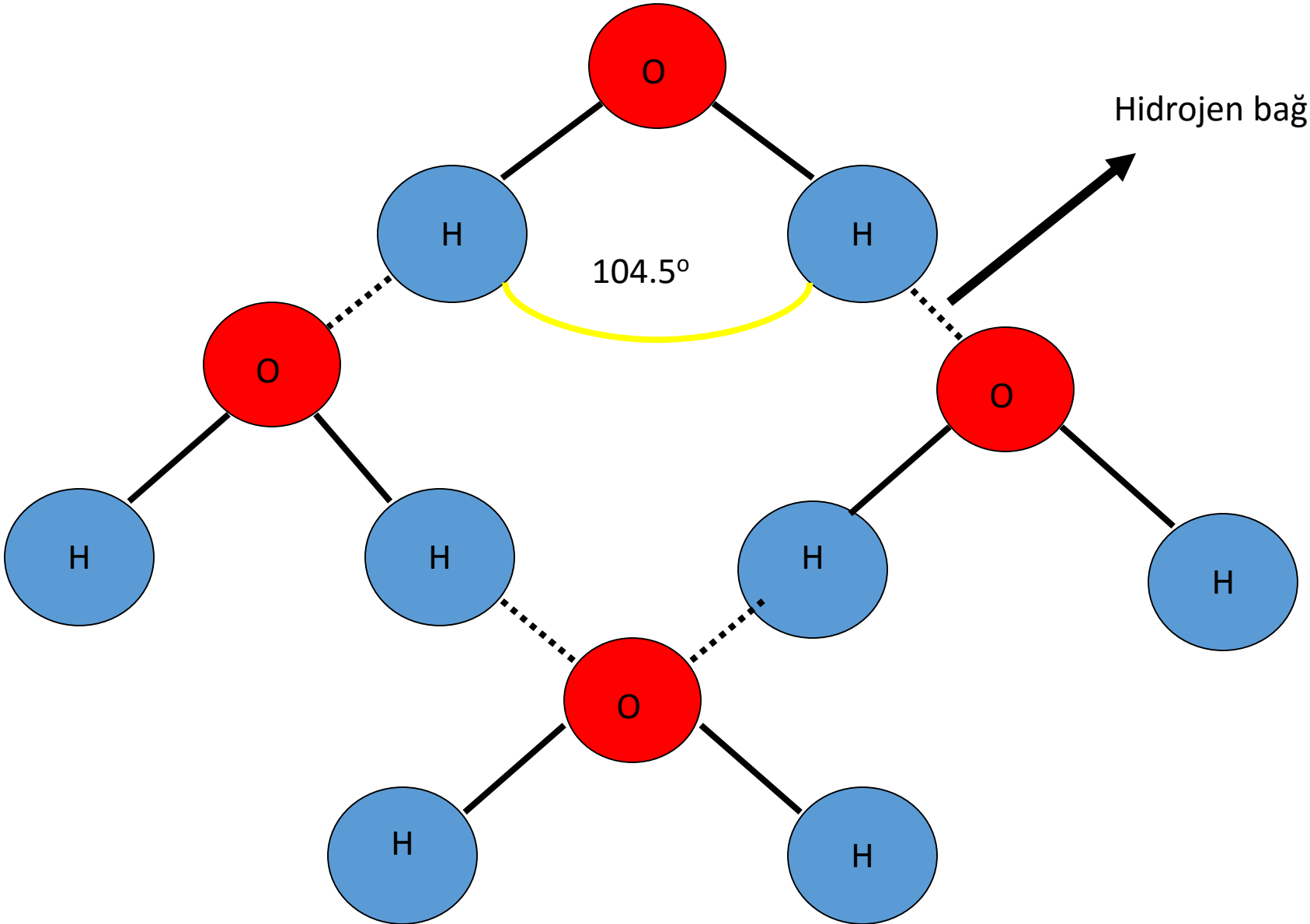
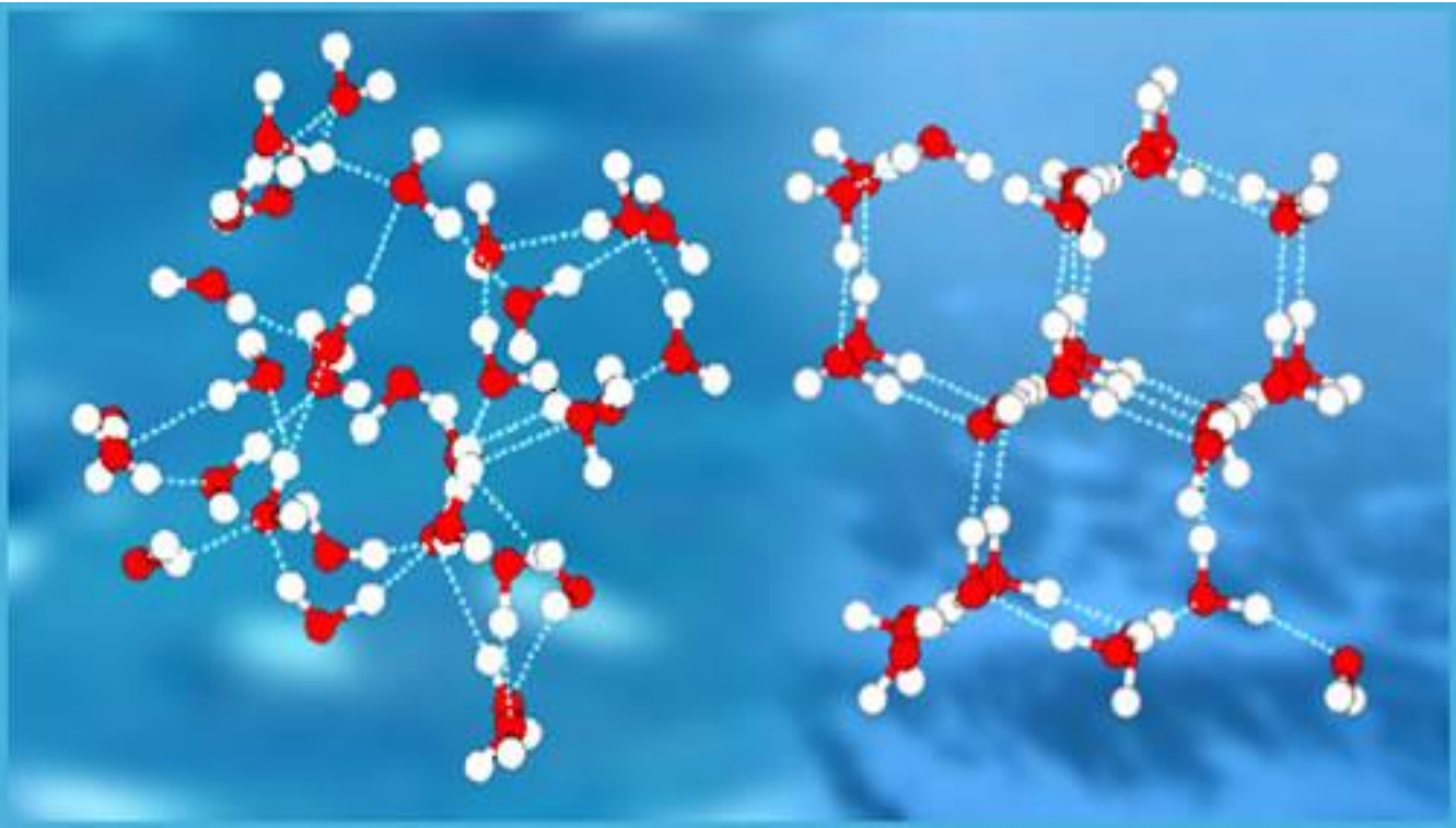
WATER

- The molecular structure of water determines many features of aquatic habitats.
- Due to the 105º angle between the hydrogen atoms, the water molecule is bipolar (bipolar).
- Because of this feature, water molecules tend to merge with another molecule in biochemical processes and dissolving other substances.

WATER MOLECULES



Water molecule (liquid and ice)



- Water molecules bond to one another with relatively weak hydrogen bonds, forming cluster-like communities.
- An important feature of the clusters is that they have a dynamic structure that constantly joins or breaks with other water molecules. The number of molecules in each cluster decreases with increasing temperature. This structure of water changes completely when frozen: the four hydrogen atoms surround an oxygen atom to form a tetraedrone.

Comparing water properties with other substances

Density	Max. 4°C
Melting and boiling points	Very high
Heat capacity	Only liquid ammonia higher
Evaporation	Highest one
Surface tension	High
Solving	High

Water Density

- **Density** is mass divided by volume (ρ=m/v)
- The density of water is 775 times higher than that of air under 0 ° C and 760 mm Hg pressure. This situation has some effects on aquatic organisms (plants and animals):
- The effect of gravity on the organism is reduced;
- It consumes less energy than the atmospheres to achieve a living balance

- A cubic centimeter ($1cm^3$) of **water** weighs one gram (1g) = **1** g/cm^3

- **Water** is densest at 4°C and is least dense at 0°C (freezing point).
- Ice is less dense than water