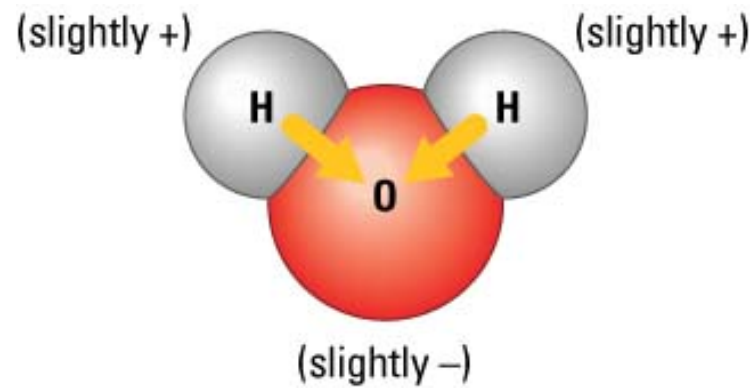
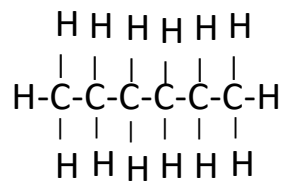
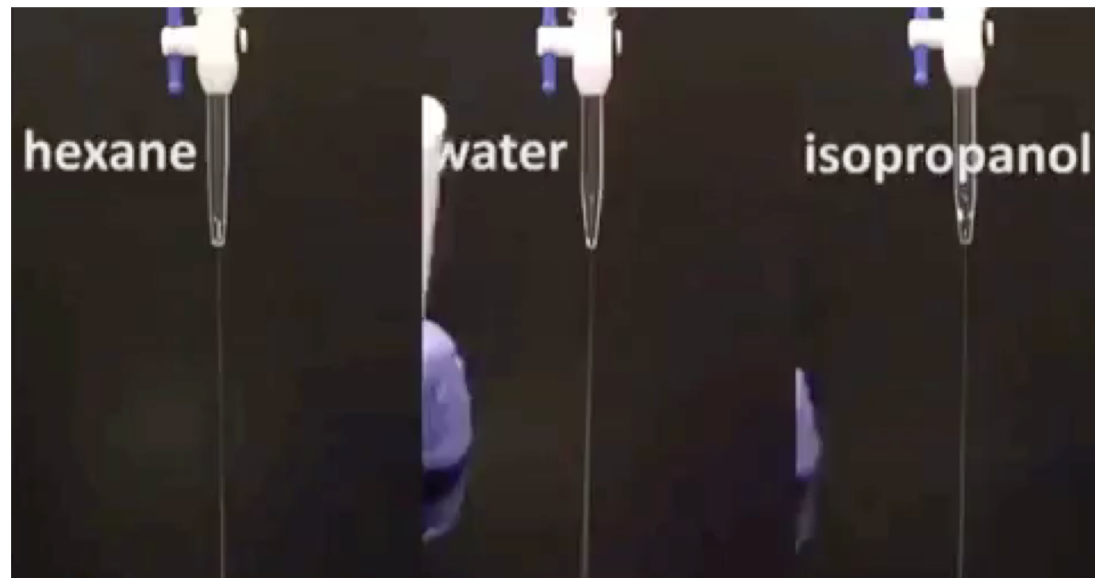


Water is a polar molecule



Démonstration de la polarité de l'eau

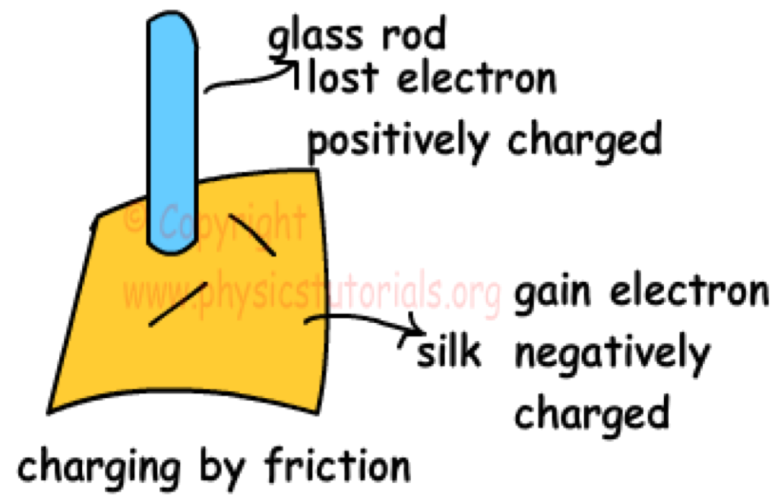
Charge électrostatique
par friction

peigne

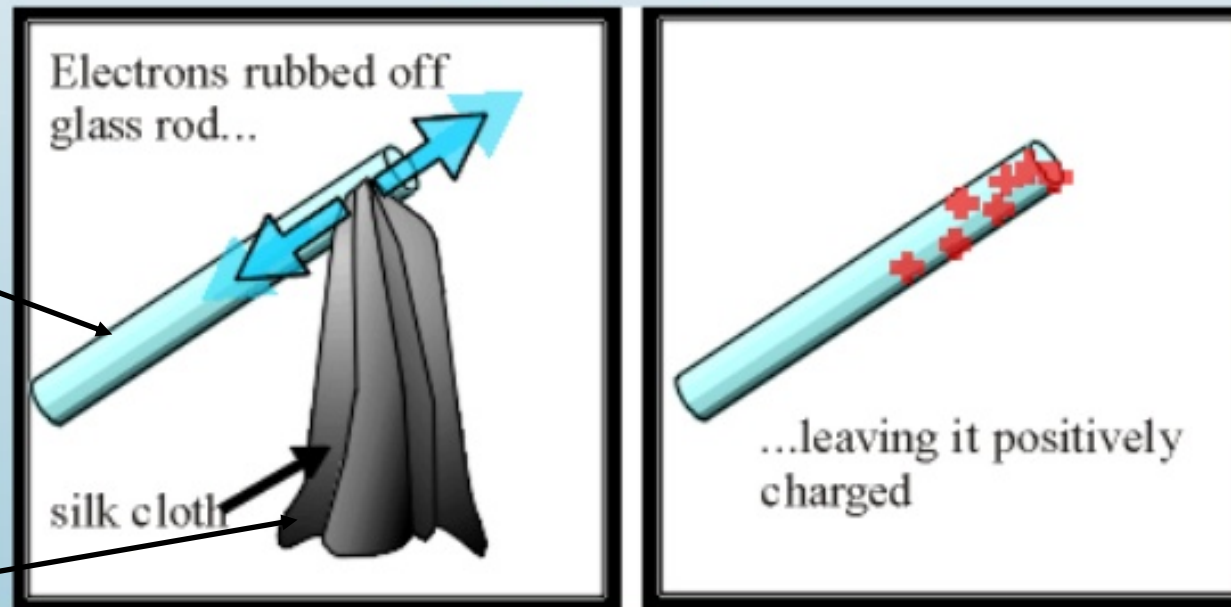


https://www.youtube.com/watch?v=KfcVf_PdXjk

Charging by friction

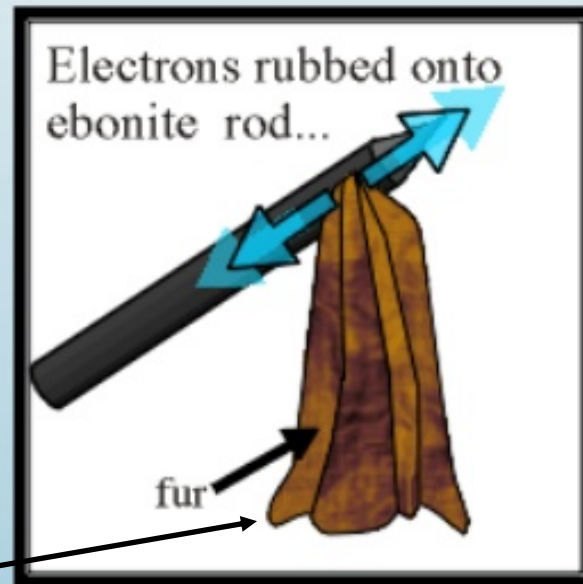


Charging by Friction

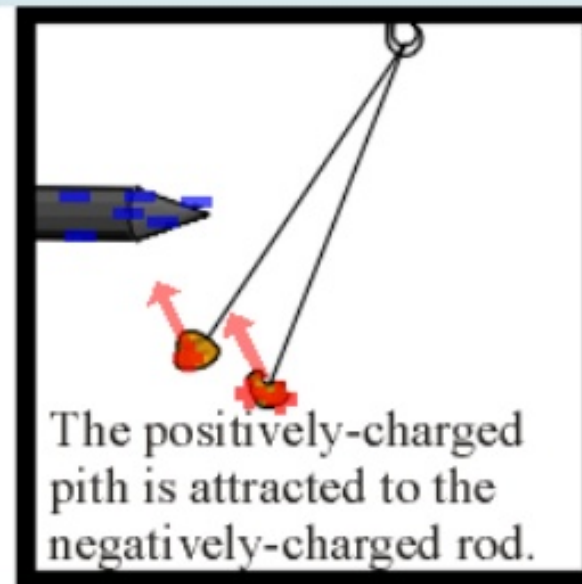


- The two objects wind up with opposite charges.

Negatively charged objects have gained electrons.



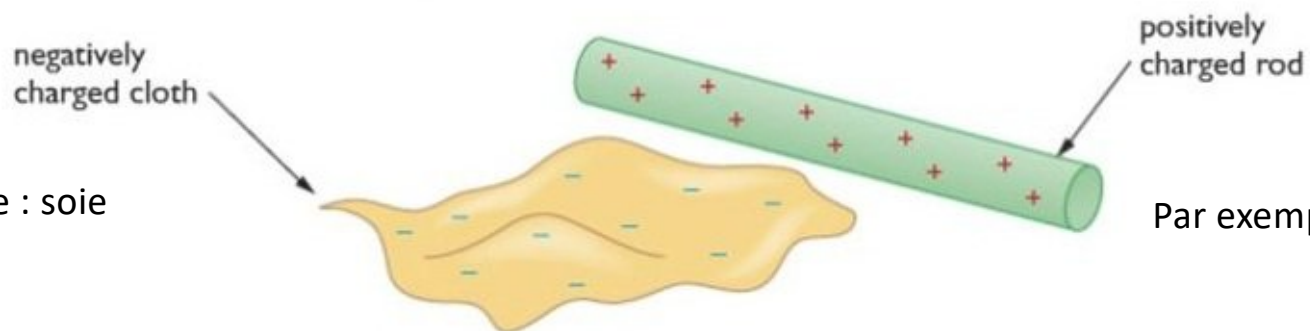
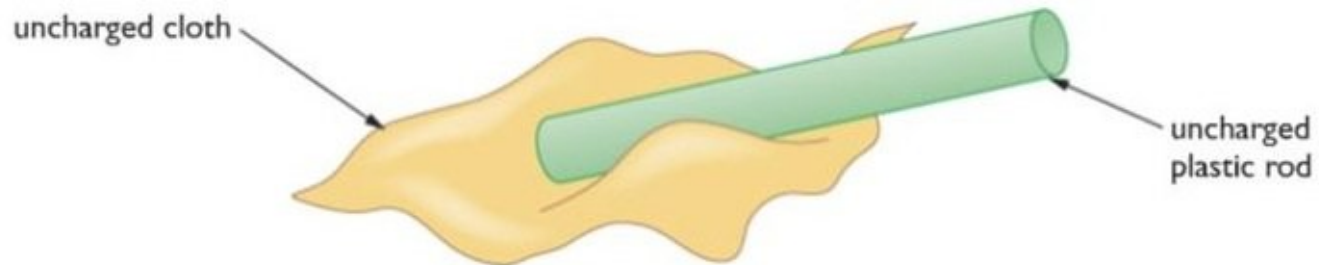
Peau de chat



Example: rubbing a rubber rod with fur.

- **Rubber Rod: - charged**
- **Fur: + charged**

Charging by friction : electrostatic

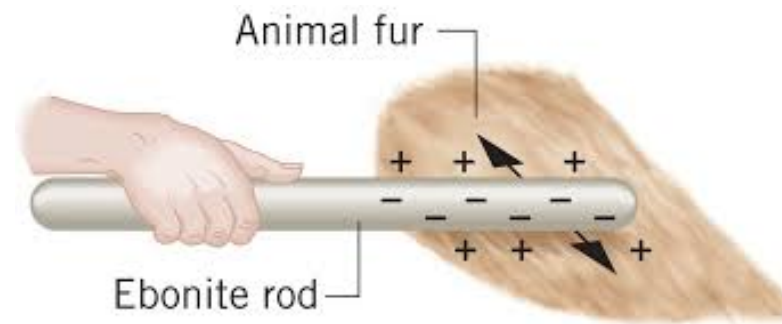
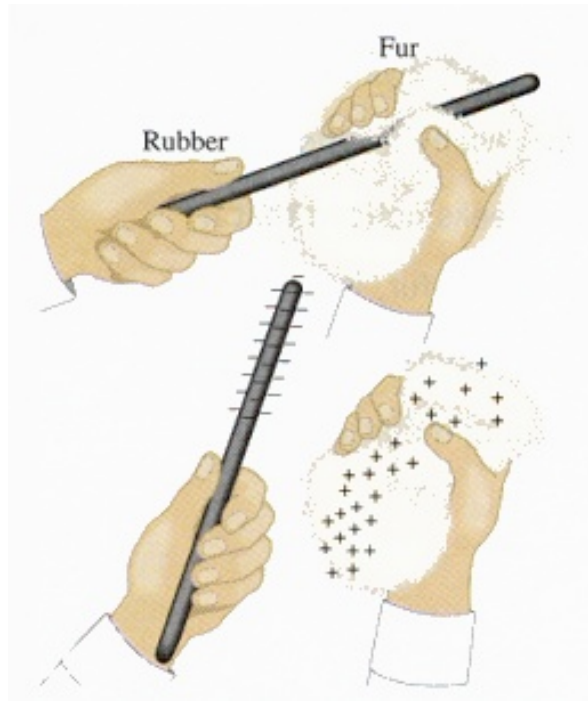


Par exemple : soie

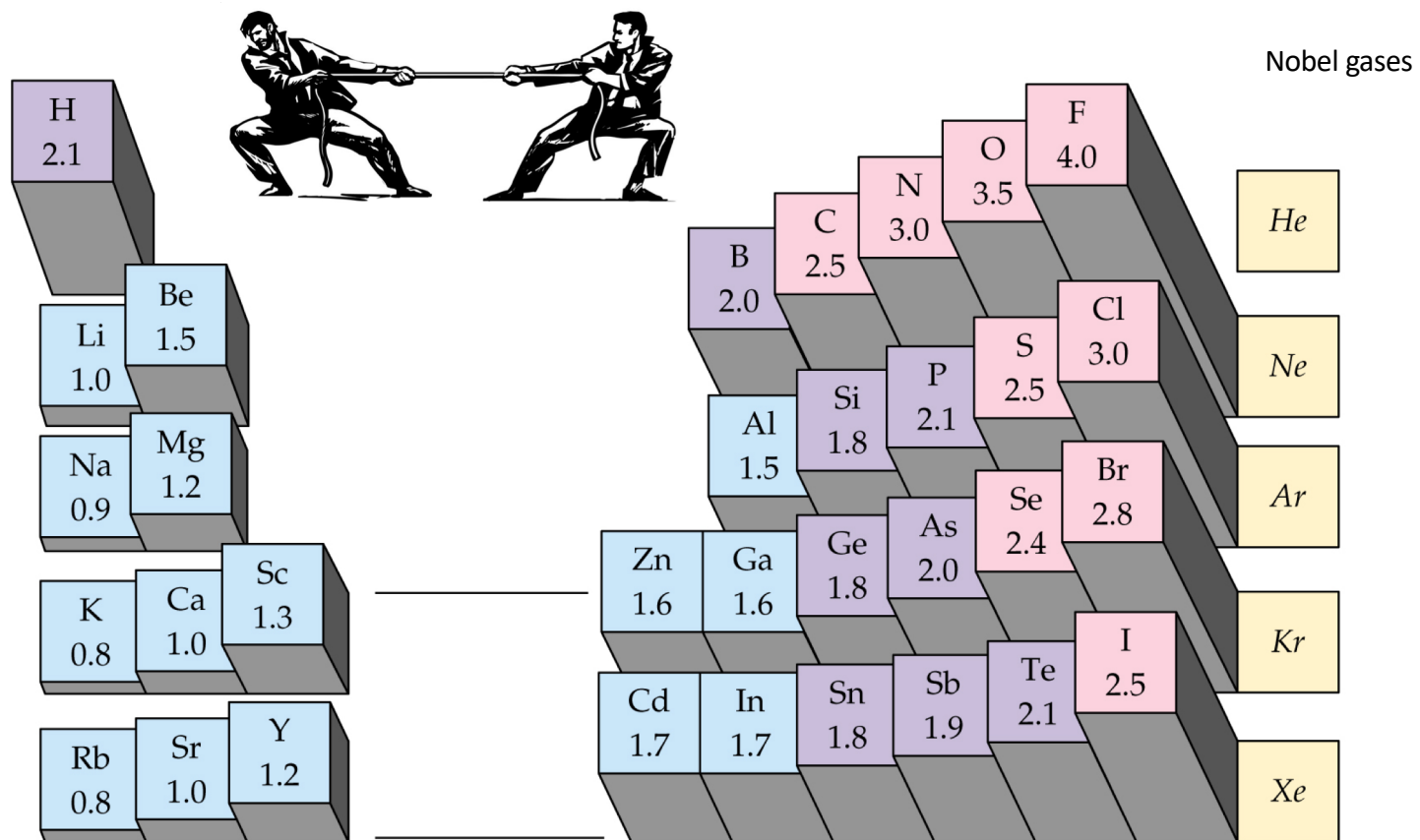
Par exemple : tige en verre

Rubbing a neutral rod with a neutral piece of cloth can result in them both becoming charged.

Charging by friction : electrostatic

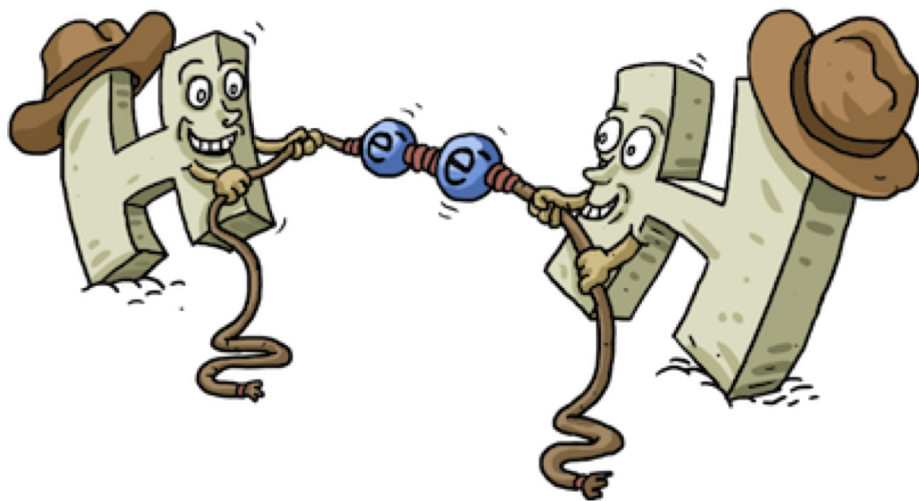


Electronegativity

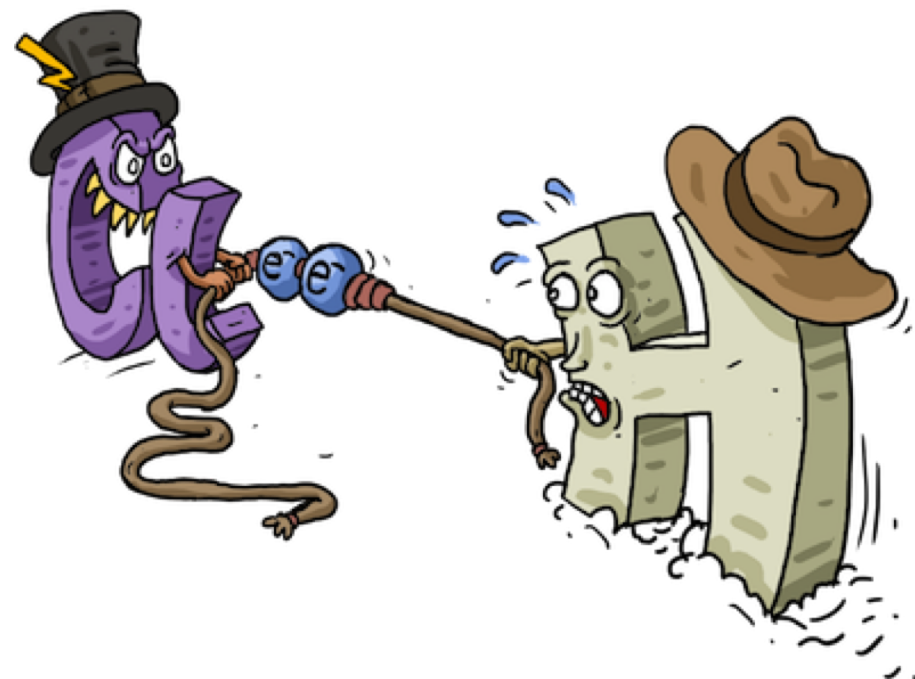


Electronegativity difference : $3.5 - 2.1 = 1.4$

Non-Polar Covalent Bond



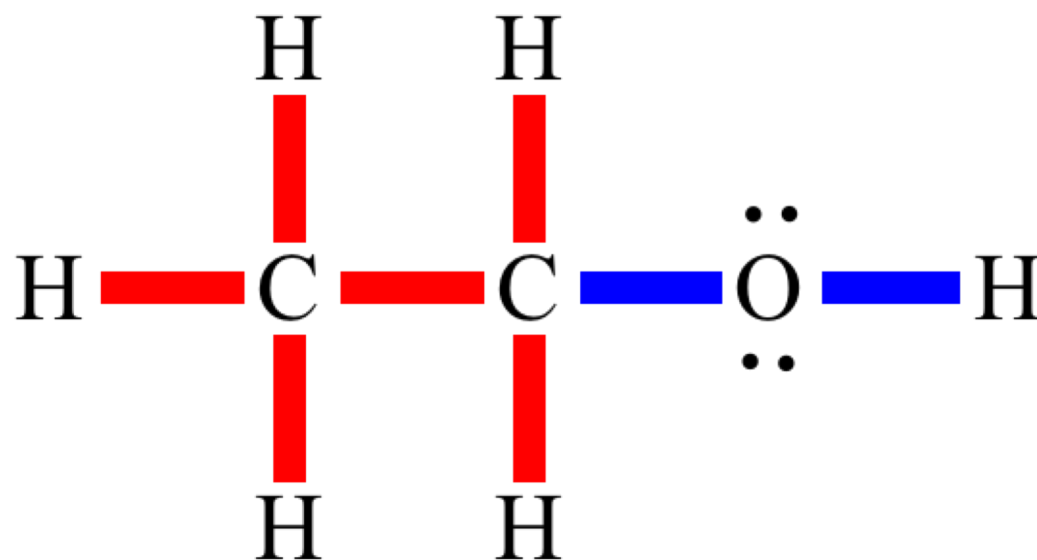
Polar Covalent Bond



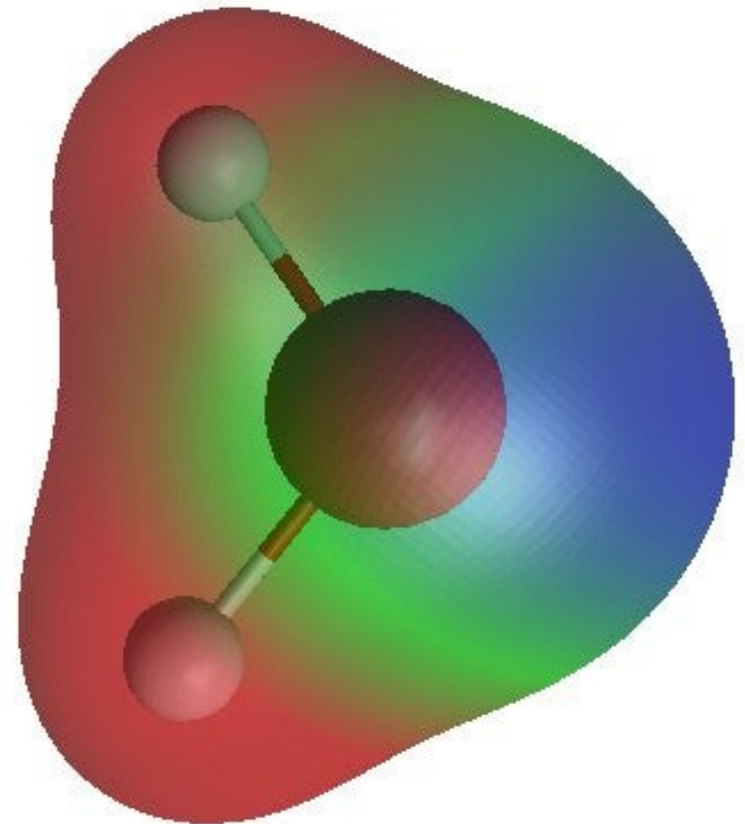
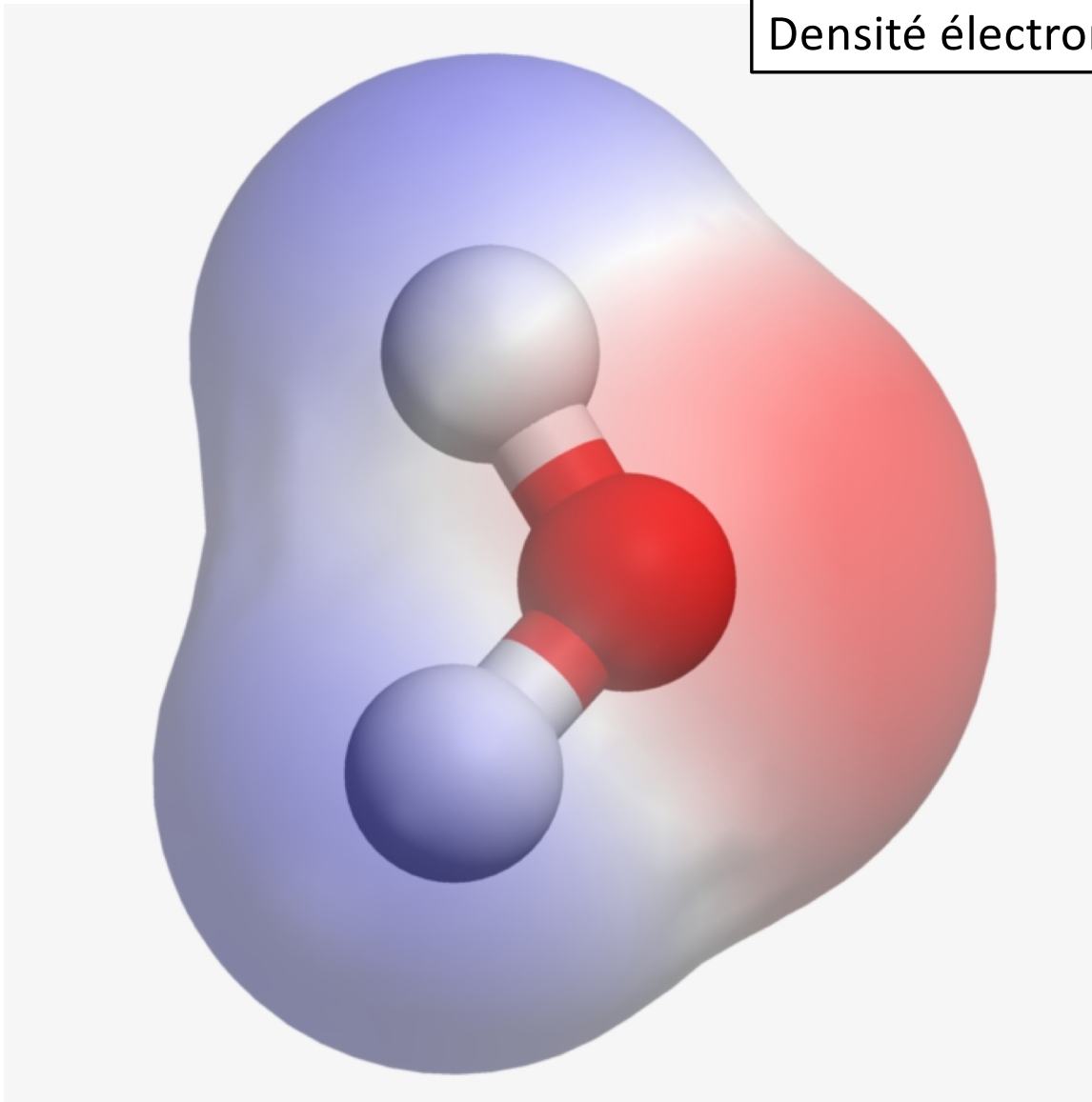
Acide chlorhydrique

<u>ΔEN</u>	Bonding	Bond Example
0.0 - 0.4	<u>Nonpolar covalent bond</u>	H-C, C-C
0.5 - 0.9	Slightly <u>polar covalent bond</u>	H-N, H-Cl
1.0 - 1.3	Moderately <u>polar covalent bond</u>	C-O, S-O
1.4 - 1.7	Highly <u>polar covalent bond</u>	H-O
1.8 - 2.2	Slightly <u>ionic bond</u>	H-F
2.3 - 3.3	Highly <u>ionic bond</u>	Na ⁺ F ⁻

Increasing Δ EN
Increasing ionic (polar) character

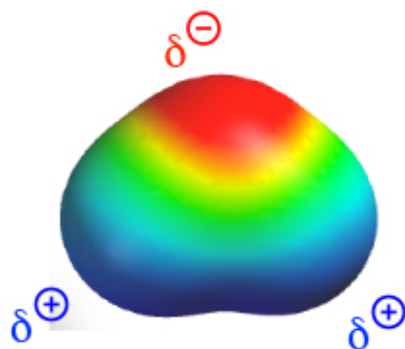
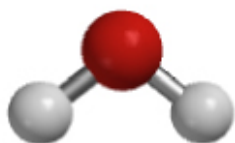
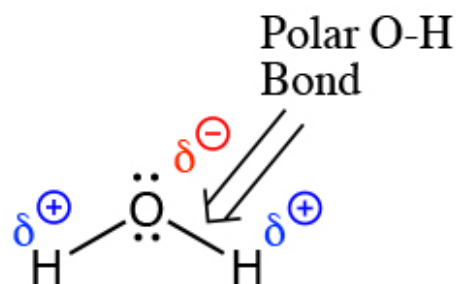


Densité électronique d'une molécule d'eau

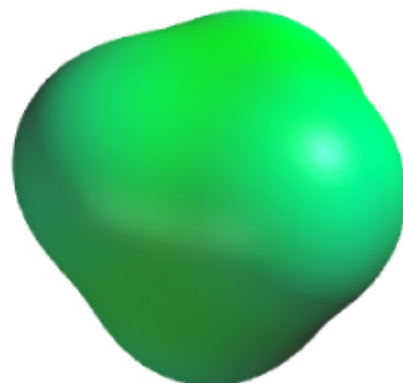
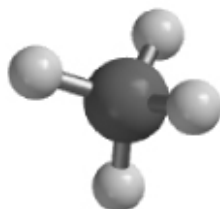
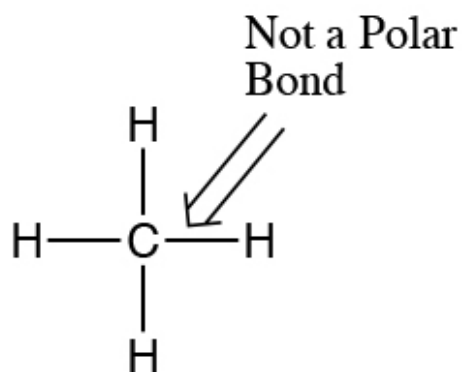


Interactions inter-atomiques

intra-moléculaires

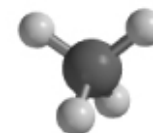
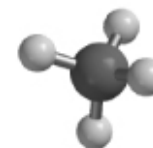
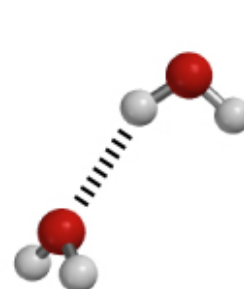


Water

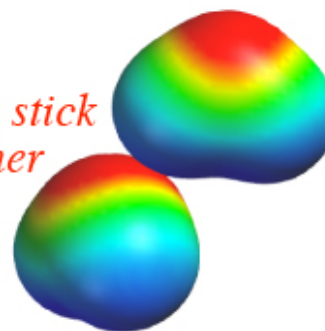


Methane

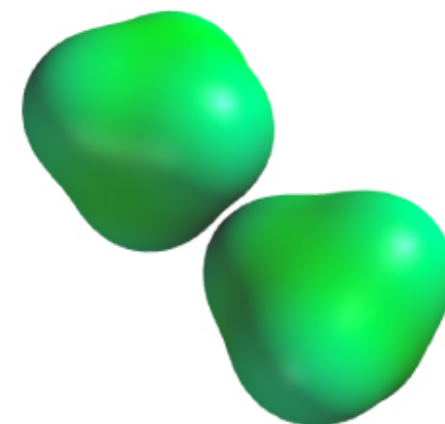
Interactions inter-moléculaires



These stick together

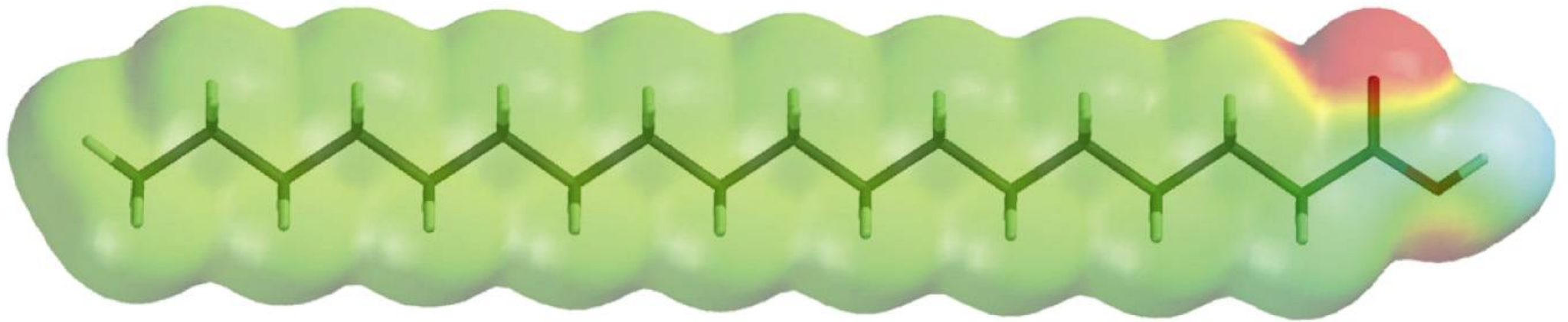


Strong interactions between polar molecules. High melting point and boiling point.



Weak interactions between molecules. Low melting point and boiling point.

A fatty acid



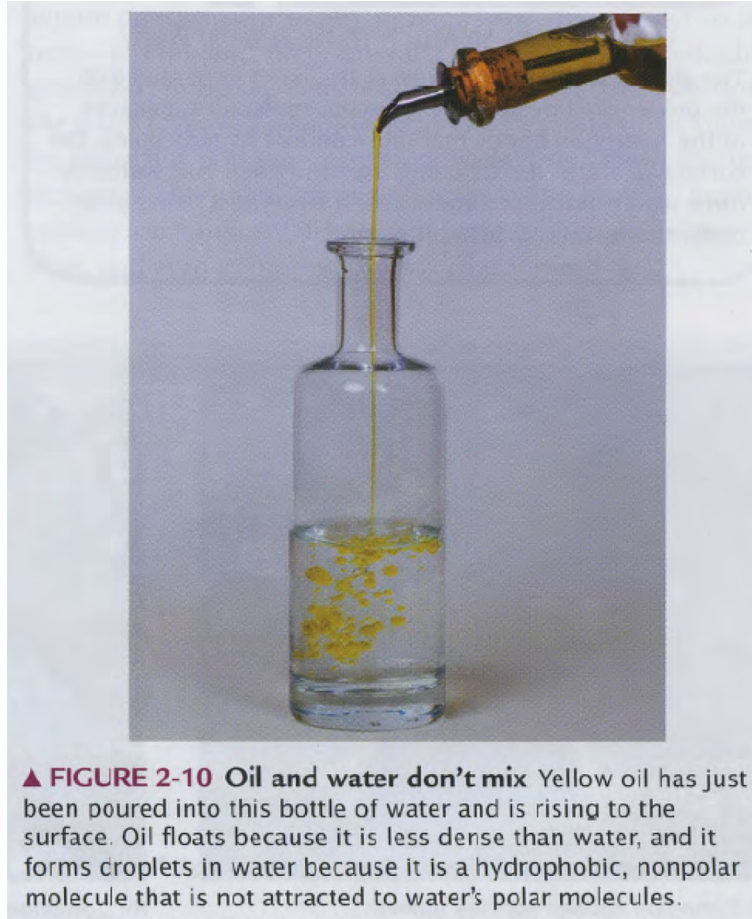
stearic acid

18 atomes de carbone

Polarity and solubility

Water :

- polar
- hydrophilic



▲ **FIGURE 2-10 Oil and water don't mix** Yellow oil has just been poured into this bottle of water and is rising to the surface. Oil floats because it is less dense than water, and it forms droplets in water because it is a hydrophobic, nonpolar molecule that is not attracted to water's polar molecules.

Oil :

lipid

nonpolar

hydrophobic