Lipids:

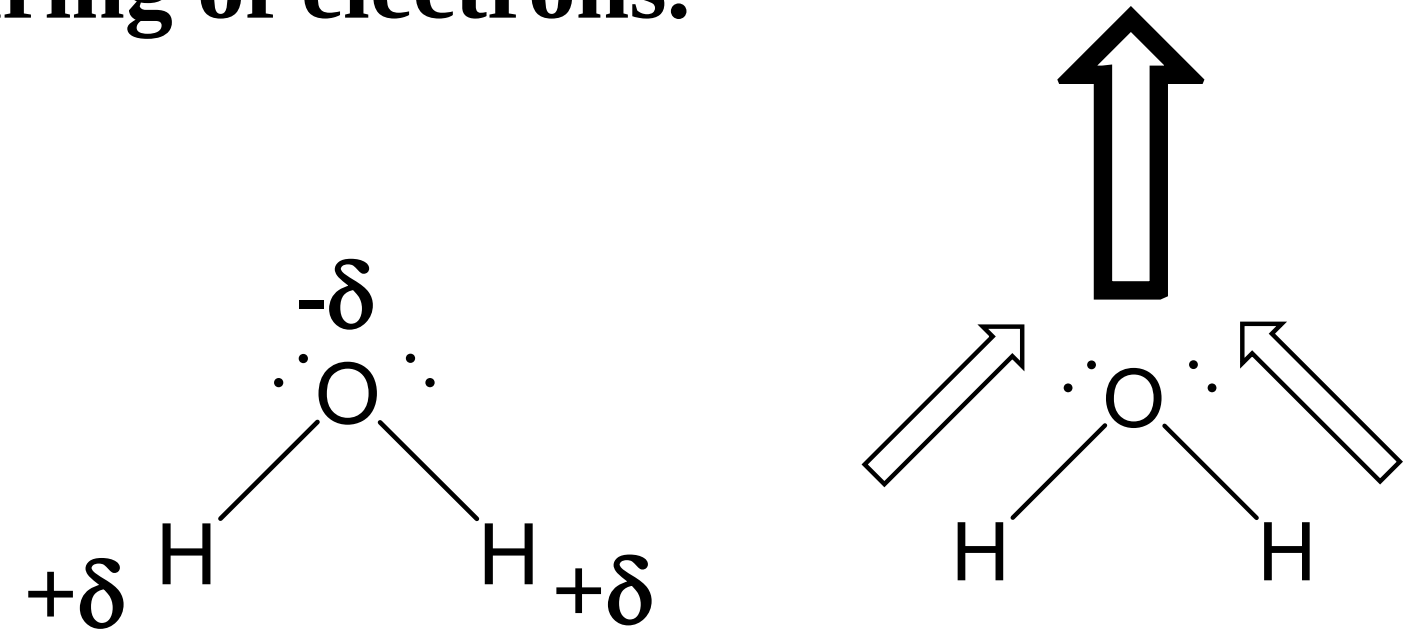
Lipids are a class of organic compounds classified not on their structure but on their lack of solubility in water.

Types of Lipids:

1. **Fatty acids**
2. **Fats and oils. Triglycerides or triesters.**
3. **Steroids.**

Water:

Water is a polar molecule due to unequal sharing of electrons.



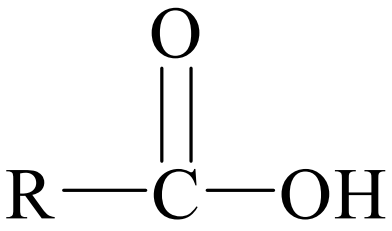
Lipids contain C and H bonds in which the electron pairs are shared equally(nonpolar).

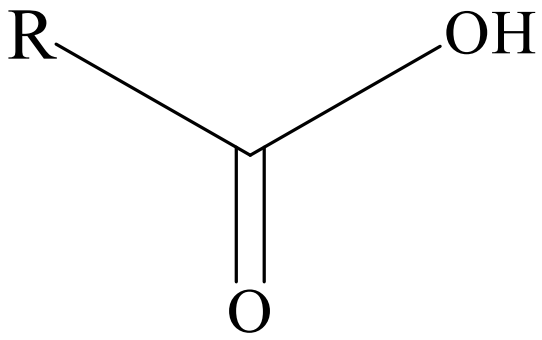
Lipds:

“Like dissolves Like.”
Nonpolar compounds do not dissolve in polar compounds like water.

Polar protic solvents are solvents with a H atom bound to an electronegative element (O, N, F).

Fatty Acids:





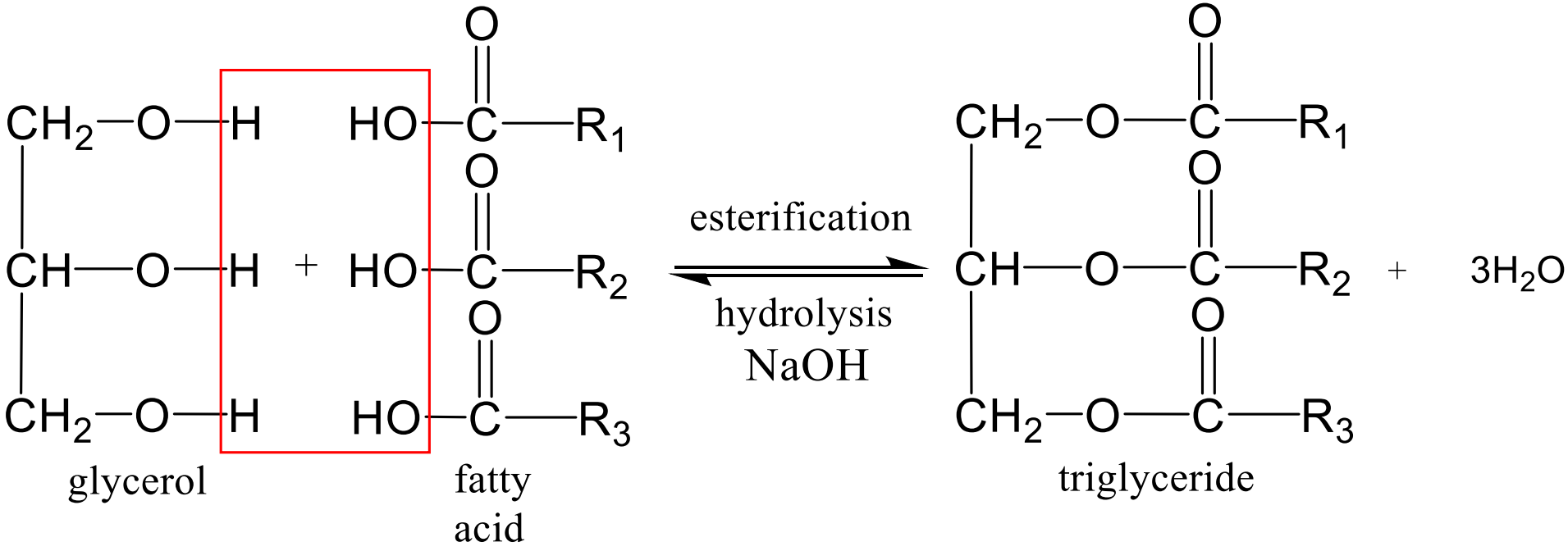
R: hydrocarbon chain(3 to 19 carbon atoms)

Saturated: Hydrocarbon chain contains only C-C single bonds.

Unsaturated: Hydrocarbon chain contains a C=C double bond.

Fats and Oils:

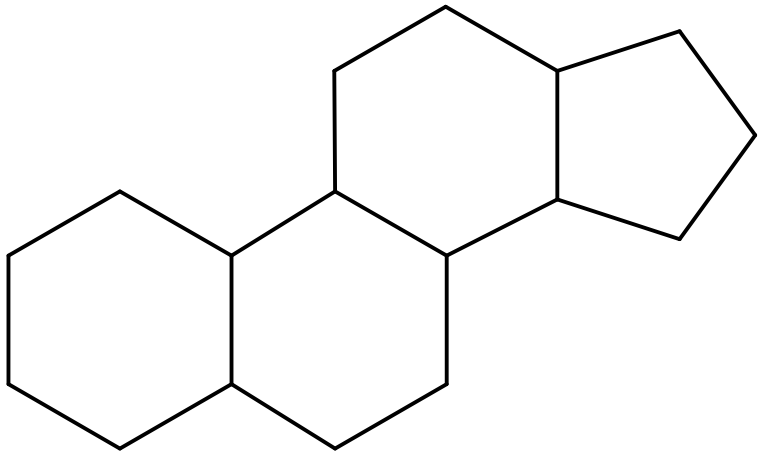
Triglycerides are triesters composed of glycerol and three fatty acids.



Saponification: Hydrolysis of an ester in the presence of a strong base. Ex:NaOH

Steroids:

Lipids that contain the following ring structure.



Emulsification:

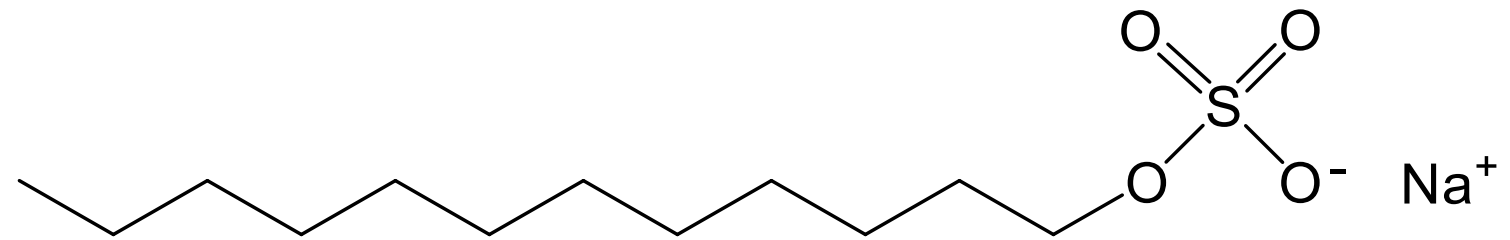
An emulsion is a mixture of immiscible (nonmixable) liquids.

Emulsification is the breakdown of lipids into smaller, uniformly distributed particles.

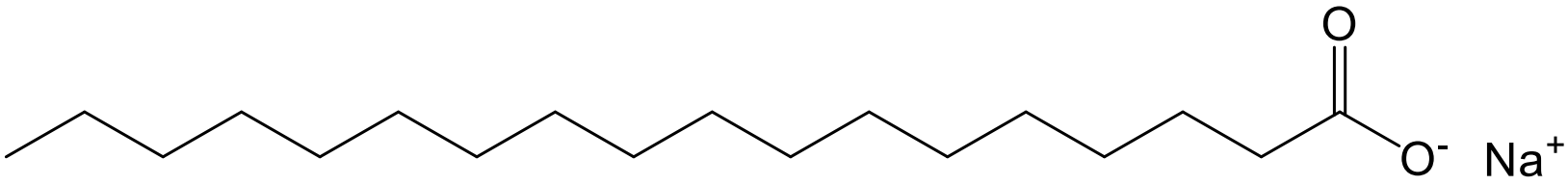
Emulsifying Agents:

Emulsifying agents are molecules containing both a nonpolar(hydrophobic) section and a polar(hydrophilic) section. Called surfactants.

Ex: SOAP



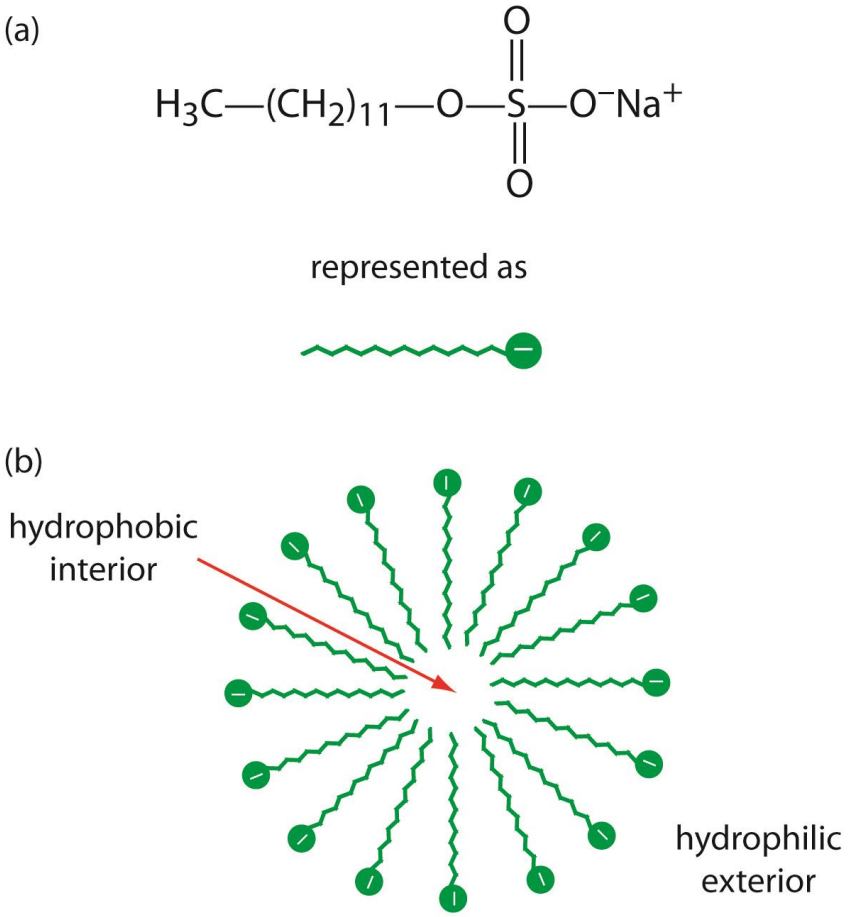
SDS



Sodium Stearate

Micelles:

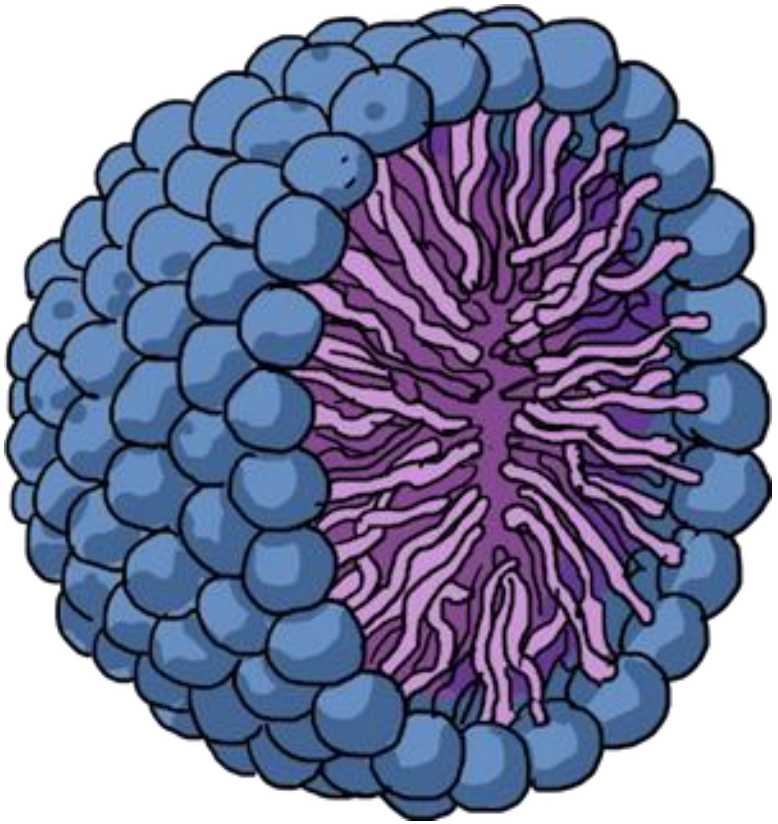
A spherical organized aggregate of individual surfactant molecules.



Reference: http://chemwiki.ucdavis.edu/@api/deki/files/12441/Figure12.64.jpg

Micelles:

Micelles contain nonpolar interior that can solubilize lipids and aid dispersing in water.



Reference: http://www.shmoop.com/organic-chemistry/laundry.html