

# Surfactants

**SURF**ace **ACT**ive **AgeNTS**

Substance which aggregates or adsorbs at the surfaces and interfaces of a system --and changes their properties

There are three primary classes of surfactants:

Hydrocarbon based surfactants

Silicone-based surfactants

Fluorocarbon-based surfactants (**Fluorosurfactants**)

## Surfactants

- SURFACTANTS are often referred to as ‘ambiphilic’ (two-sided) molecules. This is represented the schematic diagram of a “typical” surfactant molecule, shown below. (NOTE: The head and tail representation for a surfactant molecule is widely used throughout the presentation, and the literature of surface science.)
- The ‘head’ of the molecule is the ‘phile’; This part can be made to be a hydrophile (i.e., it likes water), or a lipophile (i.e., it likes hydrocarbons).
- The ‘tail’ of the molecule is the ‘phobe’; This part can be made to be a hydrophobe (i.e., it is ‘afraid’ of water).
- In the case of fluorosurfactants, the ‘tail’ of the molecule is both hydrophobic AND lipophobic.



## Surfactants

- Creating a surface requires energy.
- It's energetically favorable for surfactants to aggregate at surfaces/interfaces.
- Simply stated, new surfaces/interfaces create “homes” for surfactant molecules.
- Surfactants reduce the energy required to create surfaces.

