

# BUBBLE-OLOGY

## A BUBBLE IS A THIN FILM OF SOAPY WATER...

The surface film of a bubble is made of three layers.

- A thin layer of water (H<sub>2</sub>O) is sandwiched between two layers of detergent molecules (e.g. sodium laureth sulfate).

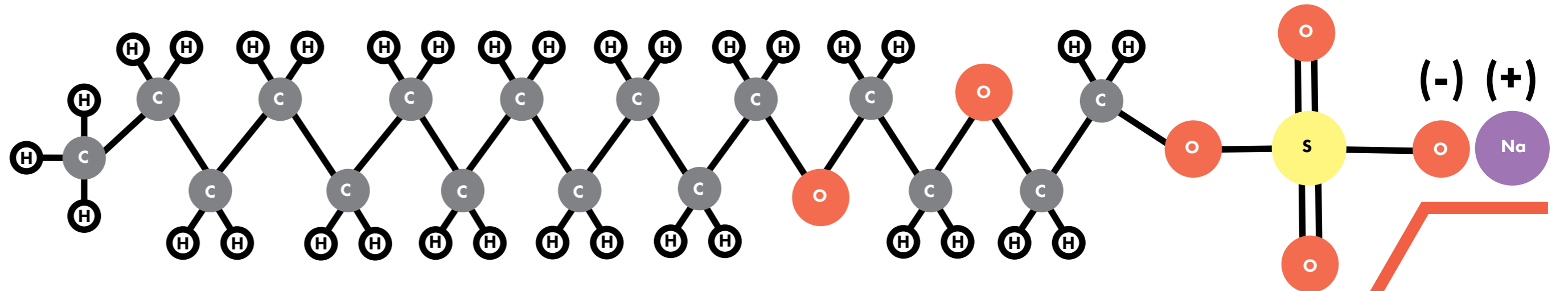
- Detergent molecules are amphiphilic, meaning one end is strongly attracted to water, while the other is strongly repelled.

- When detergent is mixed with water, it will naturally self-organise into the most energy efficient shape—bubbles!

## SODIUM LAURETH SULFATE

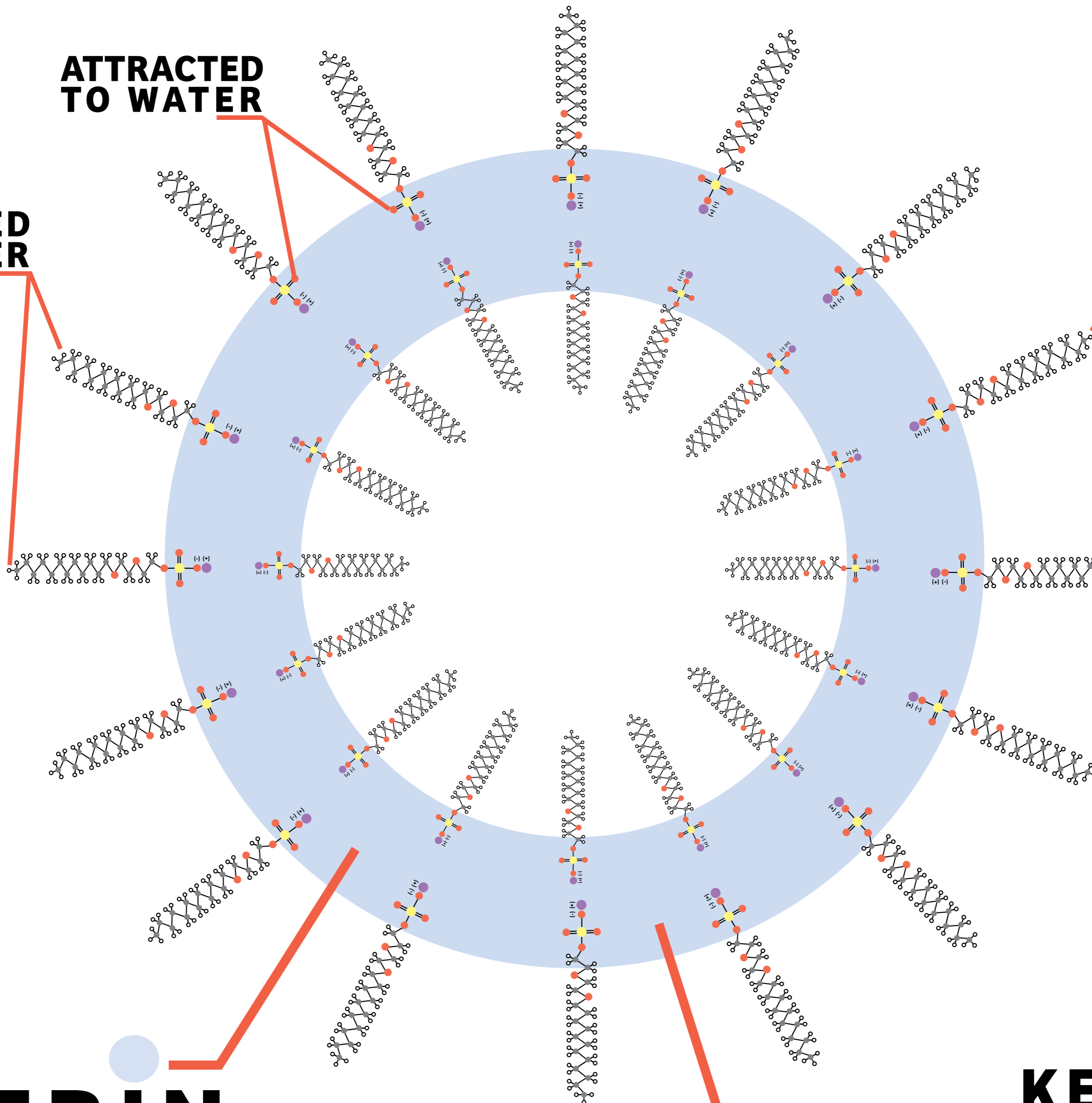


Sodium laureth sulfate is a type of detergent used in many personal care products such as soap, shampoos and toothpaste.



REPELLED BY WATER

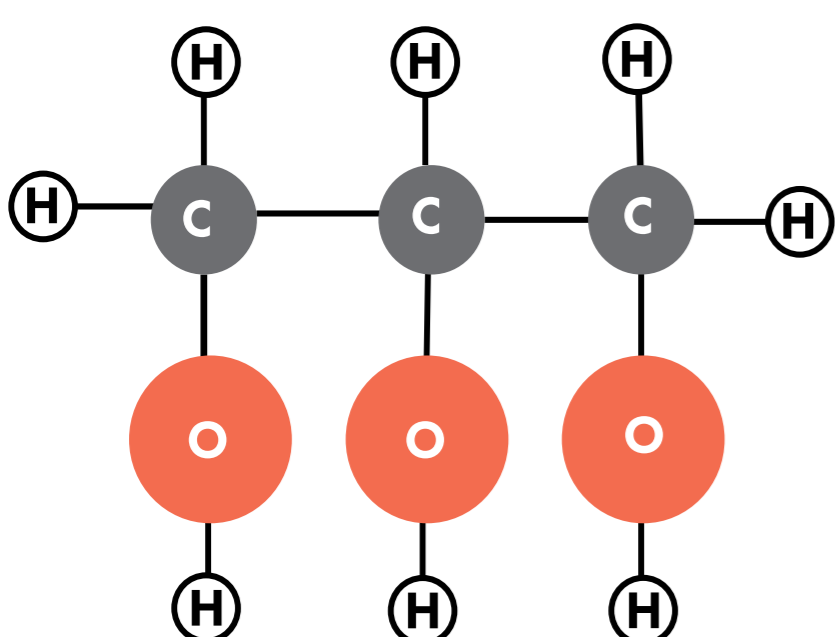
ATTRACTED TO WATER



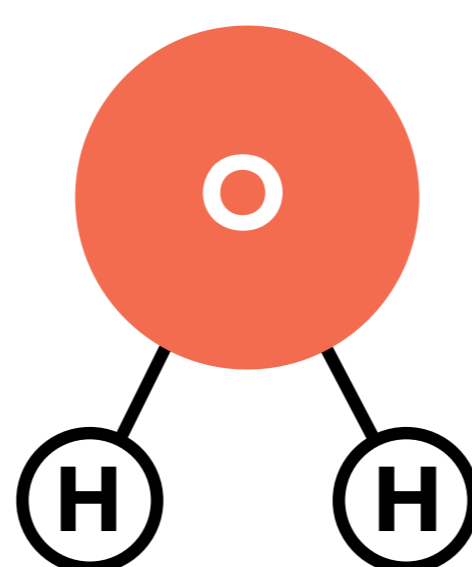
## GLYCERIN



Glycerin extends the life of a bubble by forming weak hydrogen bonds with water, slowing down its evaporation.



## WATER



### KEY:

- ⊖ H → HYDROGEN
- ⊖ C → CARBON
- ⊖ O → OXYGEN
- ⊖ S → SULFUR
- ⊖ Na → SODIUM