

Food Science 101

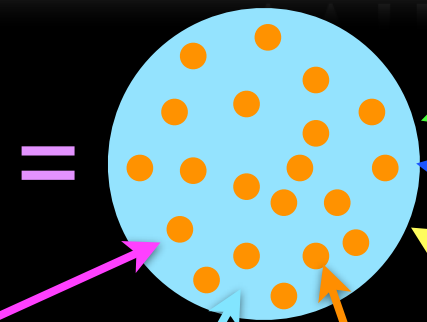


COOK AND EAT LIKE A STAR.

Emulsions

What Is An Emulsion?

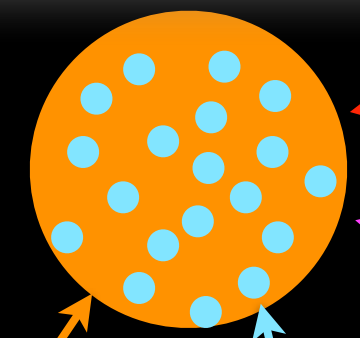
Emulsion?



Hollandaise

Mayonnaise & Aioli

Milk & Cream



Vinaigrettes

Butter

Combining two liquids that maintain their distinct characteristics

In Contrast



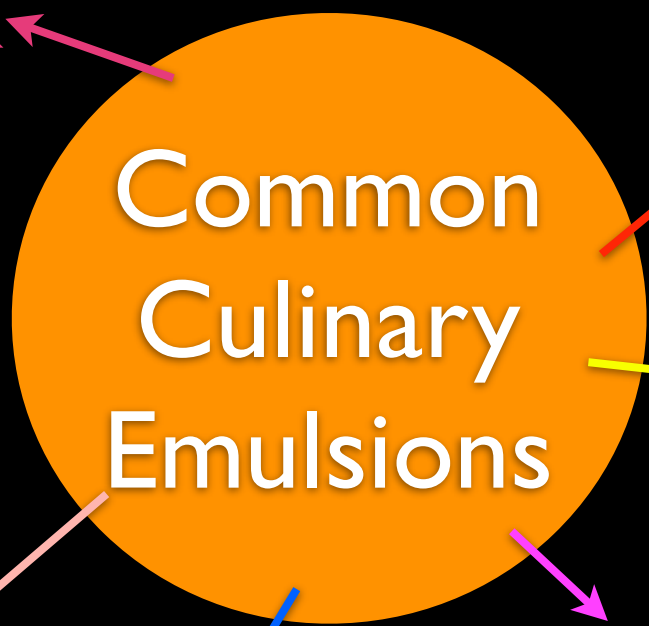
Beer

Wine

Cocktails

Water and alcohol can never form an emulsions because they freely mix together.

Milk



Vinaigrettes

Pan Sauces

Butter

Cream

Egg Based

Hollandaise

Mayonnaise

Aioli



Floor & Furniture Wax

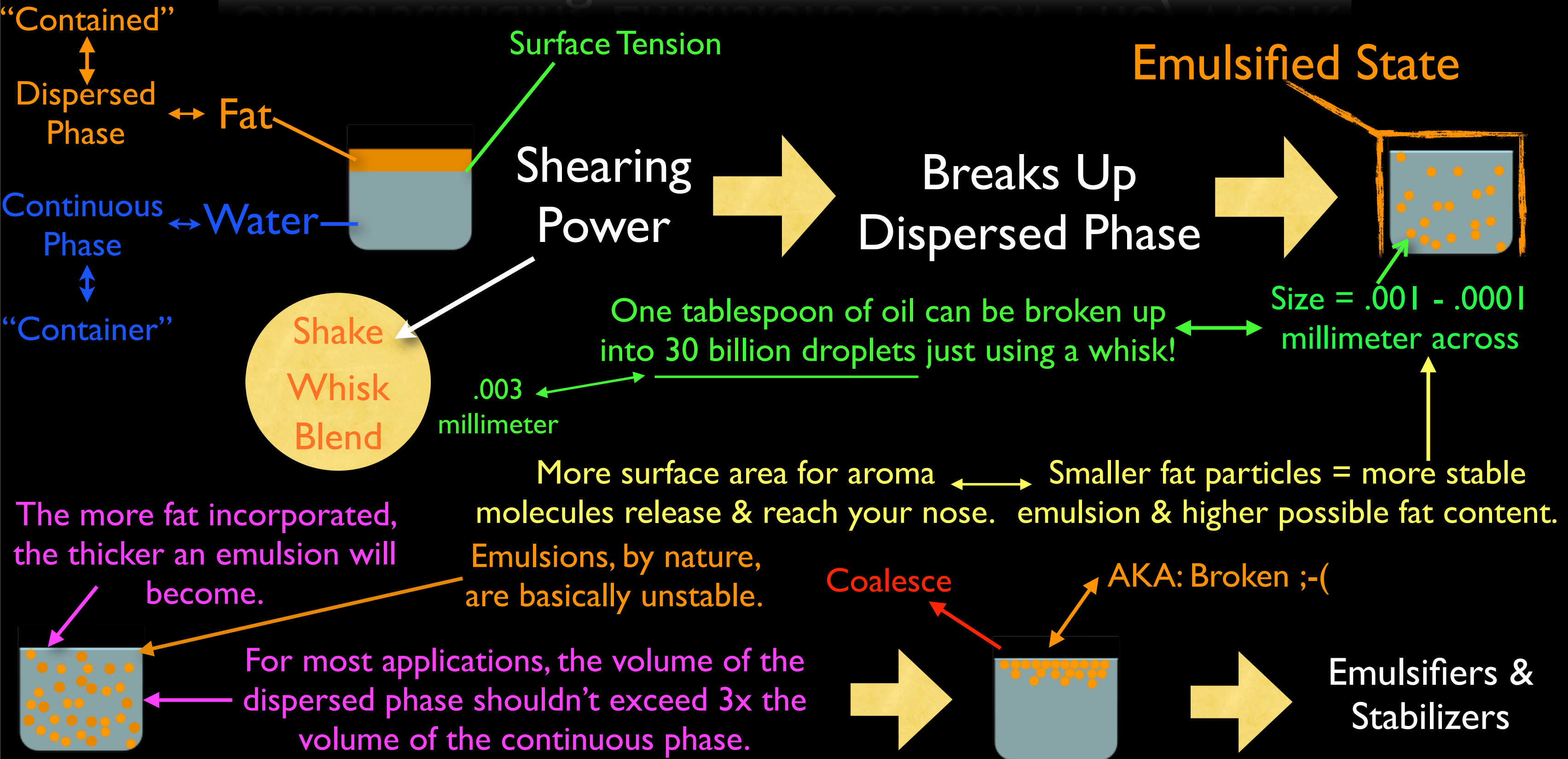
Cosmetic Creams

Some Paints

Crude Oil

Asphalt

Understanding Emulsions & How They Work



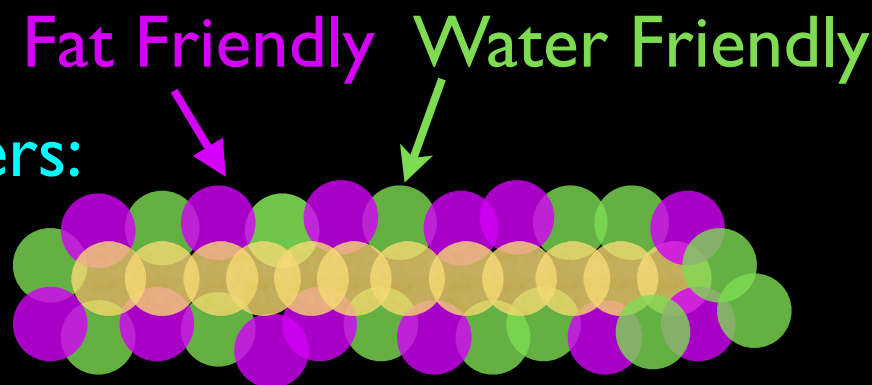
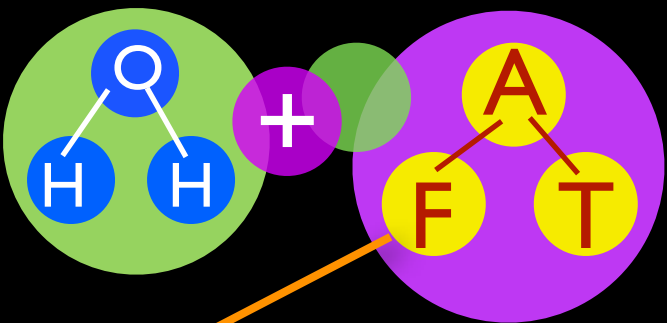
Emulsifiers & Stabilizers

Emulsifiers

Two basic types of emulsifiers:

1) Amino acid chains

2) Phospholipids like lecithin

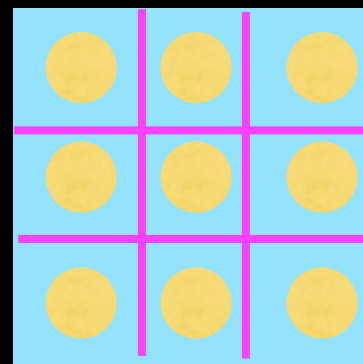


For visualization purposes only.

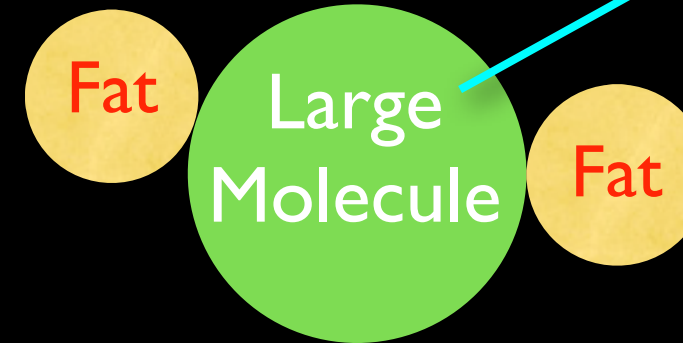
Surfactant → decreases surface tension

Common Emulsifiers

- ★ Egg Yolks → Lecithin (S) + Protein (P)
- ★ Milk & Cream → Casein Protein (P)
- ★ Mustard → Mucilage in seed coating (S)



Stabilizers



- * Proteins
- * Starch
- * Pectin
- * Plant Particles
- * Food Gums

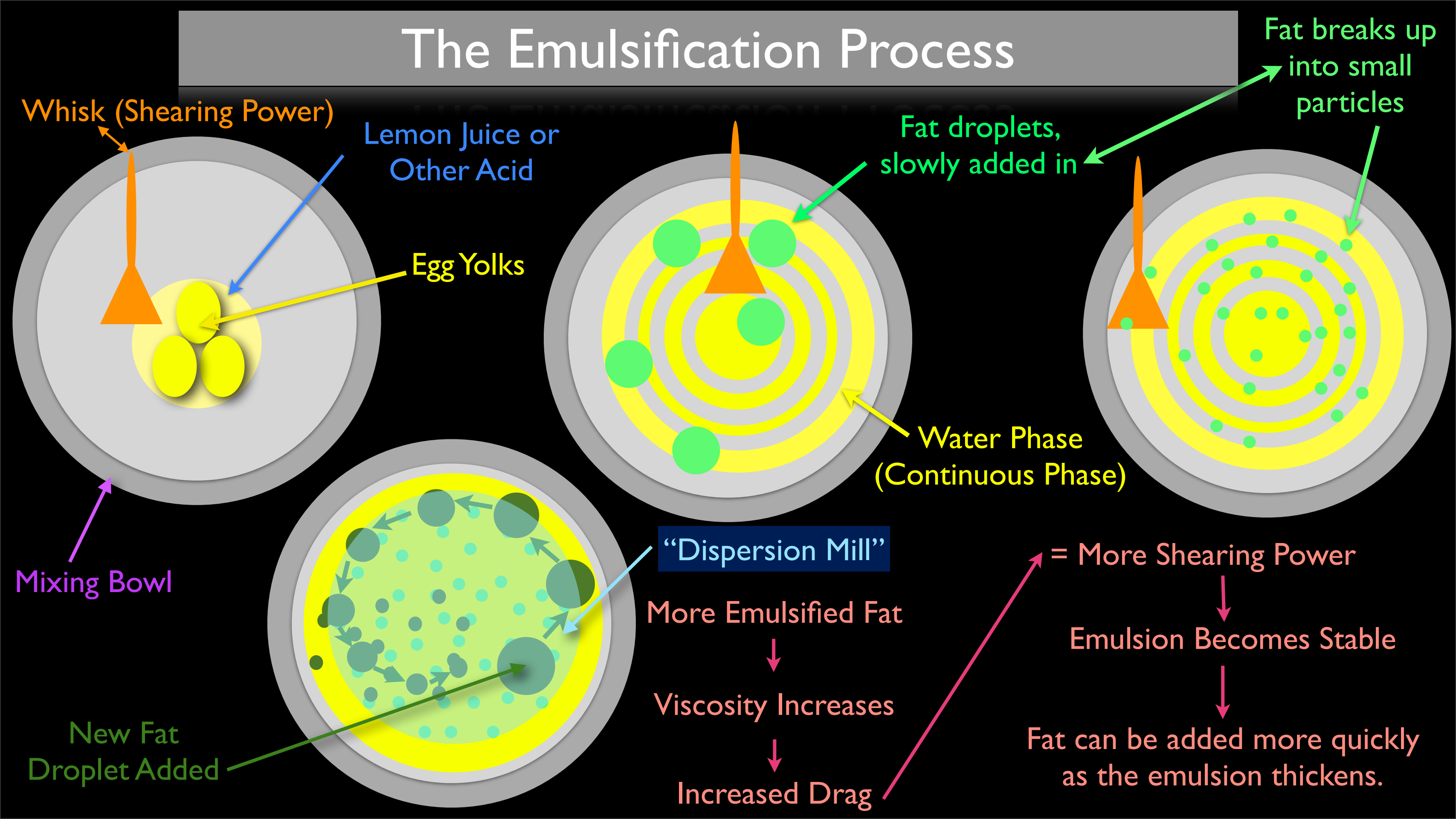
Viscosity as a Stabilizer

A thicker continuous phase creates more drag on the dispersion phase, increasing shearing force, decreasing particle size.

Why Use Xanthan Gum?

- * Adds Viscosity
- * Wide PH Range
- * Works In Hot & Cold Water
- * Shear Thinning

The Emulsification Process



Emulsion Formulas & Ratios

Name	Continuous Phase	Dispersed Phase	Emulsifier	Water : Em : Fat Ratio	Shelf Stability @ Serving Temp
Hollandaise	Egg Yolk + Vinegar/ Lemon	Clarified Butter	Egg Yolk - Lecithin/ Casein	1:1:5* (Yolk = Em)	140°F/60° > 2 hours
Mayonnaise & Aioli	Egg Yolk + Lemon	Oil	Egg Yolk - Lecithin/ Casein	~1:1:14** (Yolk = Em)	>40°F/4°C >1 Week
Vinaigrettes	Oil	Vinegar	Unstable, Mustard, Gums	1:Em:3	>40°F/4°C 2-3 Weeks
Beurre Blanc	White Wine + Lemon	Whole Butter	None	1:NA:4	135°F/58°C Immediately
Sauce Vierge	Tomatoes + Vinegar	Oil	Plant Particles	0.1:1:2***	>40°F/4°C >1 Week
Whole Butter	Butter Fat	Water	Milk Proteins + Viscosity	3:NA:15	>40°F/4°C ~2-3 Months
Whole Milk (Pasteurized)	Milk	Butter Fat	Milk Proteins & Phospholipids	3.25:NA:100	>40°F/4°C ~1-2 Weeks
Heavy Cream	Milk	Butter Fat	Milk Proteins & Phospholipids	2:NA:5	>40°F/4°C ~1-2 Weeks

Further Information

StellaCulinary.com/FS1

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