

# **THE PRISM OF FLAVOR**

Bill Yosses and Najat Kaanache  
Experimental Cuisine Collective  
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# THE BEGINNING OF COOKING FROM THE FIRST CHEF

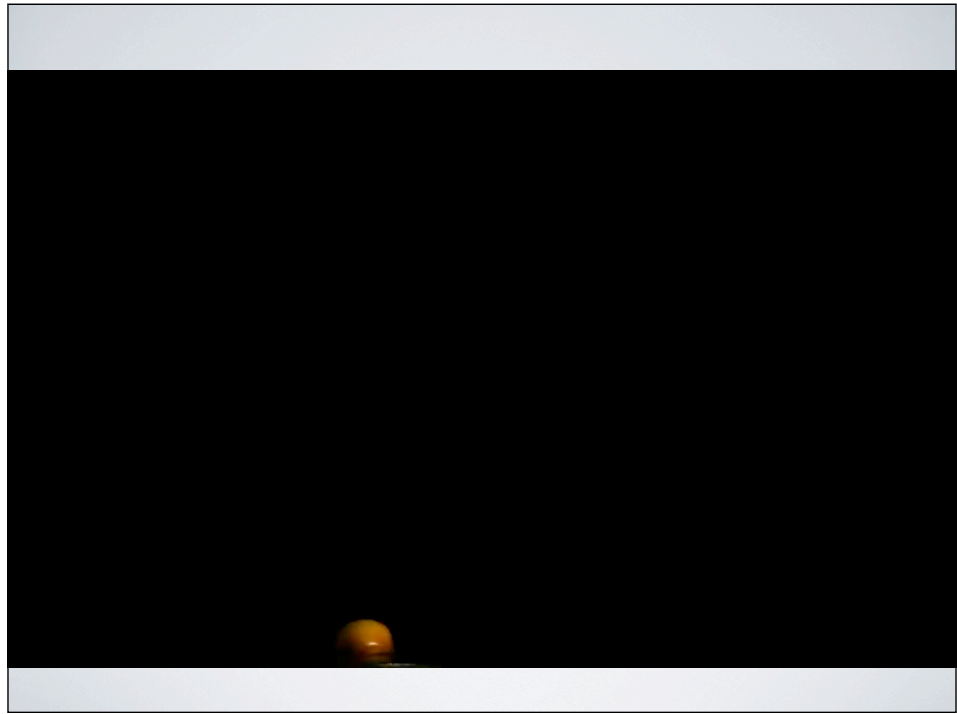
Oil on hot charcoal



## THE BEGINNING OF COOKING FROM THE FIRST CHEF

Oil on hot charcoal

Popcorn popping



Emulsions: dispersion of fat in liquid, continuous and discontinuous phases.

Chocolate Ganache

Foams: soy protein mixed with tangerine juice, foam that is extremely light and flavorful with an unctuous texture.

Tangerine Air

Gels: collagen-based gelatins

Strudel Dough and Fruit Cylinders

## SWEET SCIENCE: PHYSICS OF DESSERT



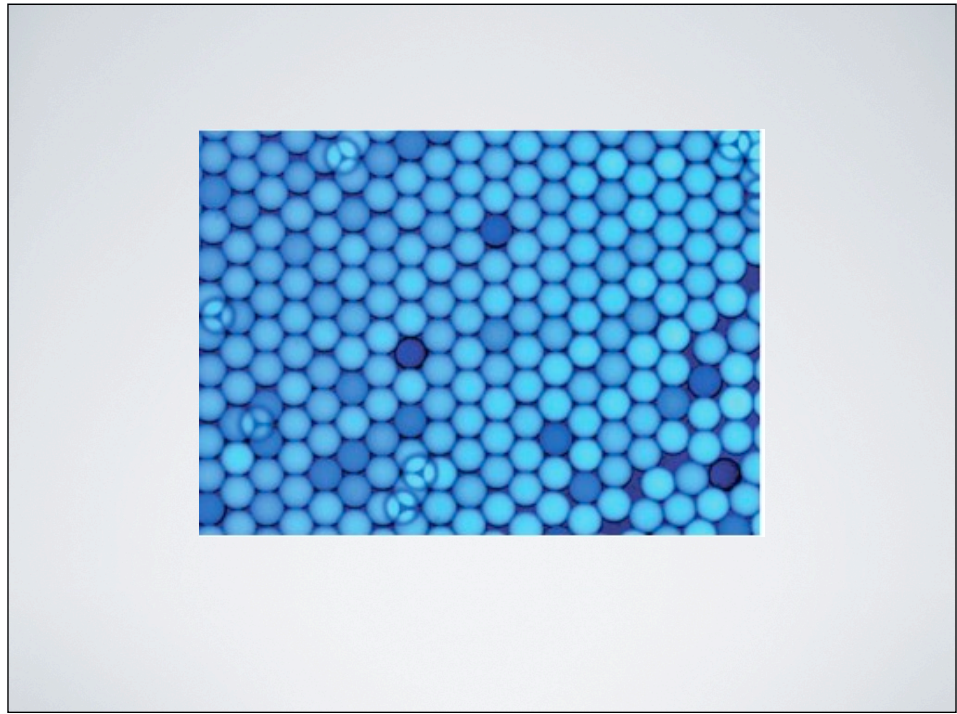
## TYPICAL LENGTH SCALES

- Atom – molecule – macromolecule – protein/membrane
- Hierarchical structures that self-assemble: Mesoscopic (going beyond nano)
- Mesoscopic structures are larger than atoms and molecules



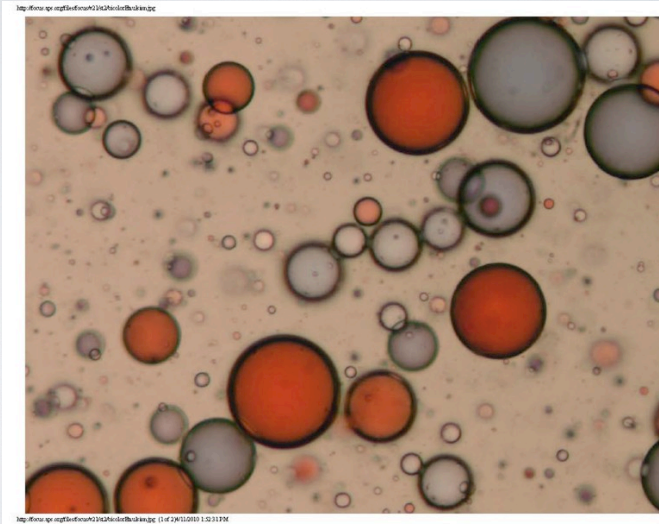
Scale =  
(0.000 075 m)

A PIECE OF HAIR  
(0.000 075 M)



- Emulsions = a suspension of oil in water
- Foam = bubbles of gas in a liquid
- Gases and liquids behave as solid

# EMULSIONS





# RASPBERRY FOAM

Versawhip: All-purpose recipe

200g fruit puree  
20g sugar  
1.2g versawhip  
2.2g xanthan gum  
100g water

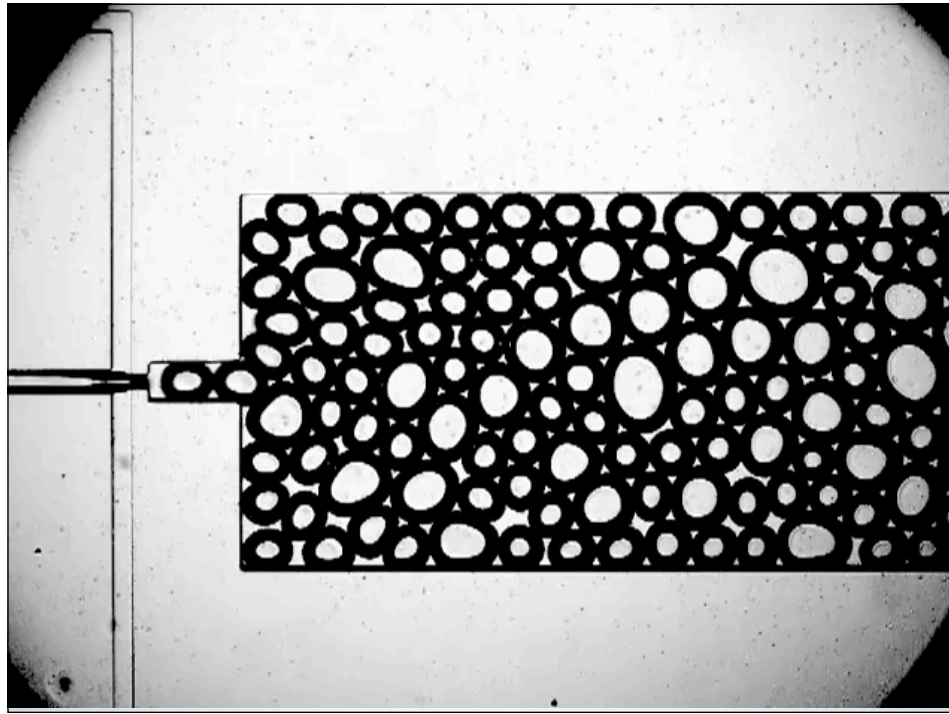
If a milk foam use all milk  
Mix dry ingredients together to disperse well

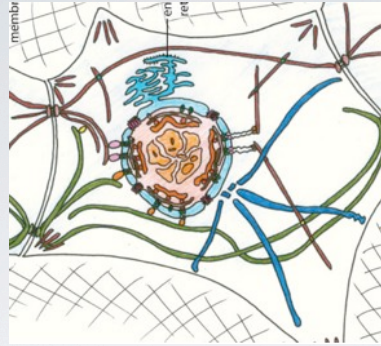
1. Burr mix together. Put in Kitchen Aid on high speed until it turns into a foam.

## REAL-WORLD APPLICATIONS

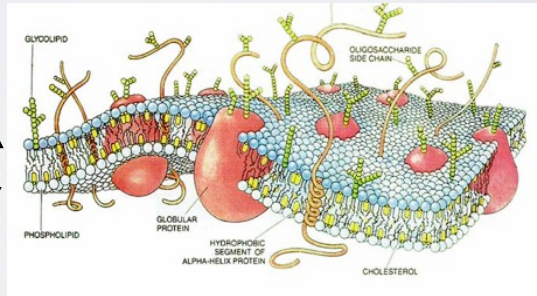
Sindy Tang: the finest meringue ever made

Medical uses and applications

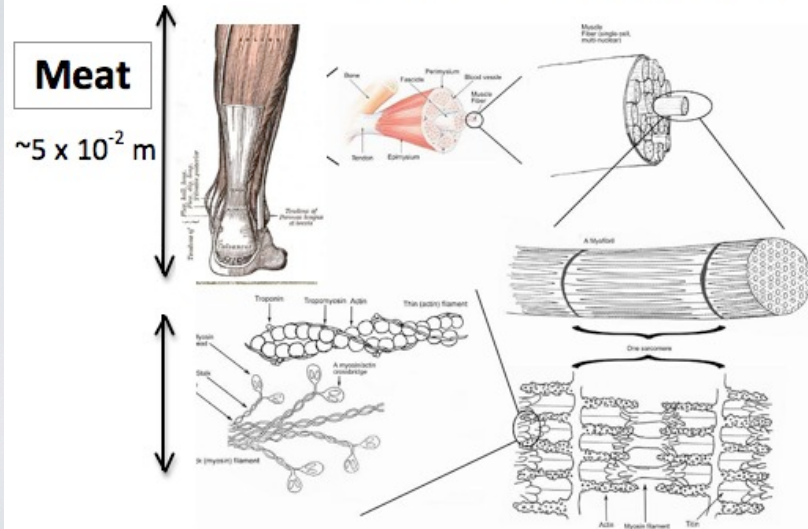


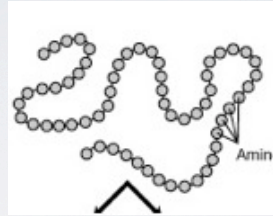


$5 \times 10^{-9}m$

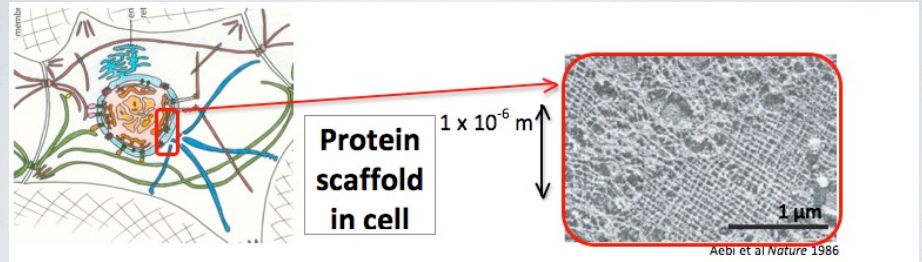


# Cables & Networks





The hydrophilic is facing outside and the hydrophobic inside



# NO EGG NO CREAM PURE CHOCOLATE MOUSSE

## **Chantilly Chocolate**

### **Ingredients**

200g water  
2 leaves (g) gelatin  
150 g chocolate dark

1. Boil water and remove from heat, add soaked gelatin, then whisk in the chocolate with a burr mixer in ice water.

A chocolate mousse unadulterated by eggs or cream

Science: The fatty droplets in an oil in water emulsion such as cream do not combine with one another for they are stabilized by casein micelles and calcium phosphate, into tensioactive structures.

---we add tensioactive molecules by adding a protein such as gelatin. Whisking creates large air bubbles in the sauce; once the crystallization temperature is reached the volume expands.

---the chocolate crystallizes around the air bubbles.

APPLICATION OF GELS IN  
MODERN CUISINE

# SPHERIFICATION

Alginate chains form a network.

Alginate + fruit puree = polymer solution

When dipped into calcium chloride (a salt), a cross link is formed.

This crosslinking reaction forms a solid shell, or caviar.

# DENSITY OF INTERACTIONS DETERMINES STIFFNESS

The number and type of interaction between molecules are important for bulk properties



# STRUDEL DOUGH

## **Ingredients**

12 oz bread or hi gluten flour  
1 tsp salt  
2 Tbsp salad oil (canola, safflower, sunflower)  
1 cup warm water

1. Place flour in mixer with hook, add salt and oil and pour in water slowly while mixing.
2. Let mixer run for 10 minutes until an elastic dough is formed.
3. Rest overnight and stretch over large table.

A protein network from flour.

Gluten protein network gives flour products elasticity.

Najat Kaanache  
The Pilgrim Chef

