

IDIS 155: KitchChem Laboratory I

October 8 or 10 -Towers Kitchen, 3:30-?. READ all the recipes and be PREPARED to do any of them (paneer, pretzels or caramels). I will assign your group's specific task on T or Th. You only need to come on the day you are assigned.

The Cooking Basics—Denaturation, Browning, Caramelizing

1. Protein Denaturation:

- a. Cheese making-rennet/paneer –*we will only do paneer today*

[http://www.wikihow.com/Make-Paneer-\(Indian-Cheese\)](http://www.wikihow.com/Make-Paneer-(Indian-Cheese))

<http://biology.clc.uc.edu/fankhauser/cheese/rennet/rennet.html>

<http://www.junketdesserts.com/cheeserecipes.aspx>

Documentation/Experiments:

- 1) Weigh the amount of milk you start with (~ 1 quart)
- 2) record with photos the process of coagulation/how many teaspoons (5 mL each) does it take to coagulate the milk. Take notes.
- 3) Weigh the (wet) cheese afterward. What percentage of whole milk is cheese fat and protein?

2. Browning/Maillard Reaction:

- a. Pretzels and pH (sodium bicarbonate, water, vinegar, vitamin c)

<http://allrecipes.com//Recipe/buttery-soft-pretzels/Detail.aspx>

Documentation/Experiments:

- 1) Dip some pretzels (most of them actually) as described in the baking soda bath.
- 2) Dip a few in plain water as a control
- 3) Dip a few in water to which you have added an acid-maybe about ¼ cup lemon juice/quart of water
- 4) Take pictures of the pretzels before and after baking. Be sure you know which is which! How does the dip affect color and flavor?

3. Caramelization/Maillard Chemistry: Caramels

<http://allrecipes.com/howto/candy-temperature-chart/>

<http://allrecipes.com//Recipe/caramels/Detail.aspx>

Documentation/Experiments:

- 1) Record color associated with temperature while cooking and after setting. Take pictures with thermometer in view.
- 2) When does the color start changing?

4. Surprise mystery activity! (N₂ ice cream)