

Equipment list, pics and specs for the FST Milk Processing Lab

Raw Milk Receiving Tanks

- 2 jacketed stainless-steel tanks with 100-gallon (378 L) capacity
- 1 jacketed stainless-steel tank with 25-gallon (95 L) capacity
- Provides agitation
- Jacketed with chilled water to keep milk at 5°C
- Tank jackets can be heated by coupling with our powerful heat exchanger
- Used as receiving tanks for dairy products, in milk processing, and in enzymatic reactions such as casein precipitation and lactose hydrolysis
- Manufacturer: Sprinkman Corp.



Heat Exchanger

- Utilizes a 3-section sanitary design
 - Section 1: pre-heats cold raw milk with heat released from cooling milk in section 3
 - Section 2: Heats raw milk with hot water
 - Section 3: Cools skim milk to be held at 5°C until processing
- Ideal for heating milk prior to separating skim from cream
- Couples with receiving tanks to heat large volumes
- Manufacturer: Chromalox



Cream Centrifugal Separator

- Separates raw milk into skim and cream fractions
- 100 gallon per hour capacity
- Typically operated at 3.3 L per min
- Best performance with milk between 21-57 °C
- $\leq 0.1\%$ skim efficiency
- 10-40% milk fat cream
- Manufacturer: GEA Westfalia



Pasteurizer/UHT Unit

- Can perform HTST and UHT pasteurization on milk, skim, or cream
- Typically operated at 2 L per min
- Pilot plant scale
- CIP cleanable
- Manufacturer: Microthermics



Homogenizer

- Utilizes 2 homogenizing stages to maximize homogenization
- Variable speed motor to match the flow of the pasteurizer/UHT unit
- Sterilizable by pasteurizer/UHT unit
- Pilot plant scale
- CIP cleanable
- Manufacturer: GEA Niro Soavi



Filler with automatic fill control

- Packages product appropriately for research studies including
 - Refrigerated shelf-life studies
 - Product-package interaction studies
 - Sensory panels
 - Clinical trials
- Capable of aseptic filling
- Ultra-clean filling environment
 - Filler hood has a shower of HEPA filtered sterile air
 - Room is HEPA filtered
- Pilot plant scale
- CIP cleanable



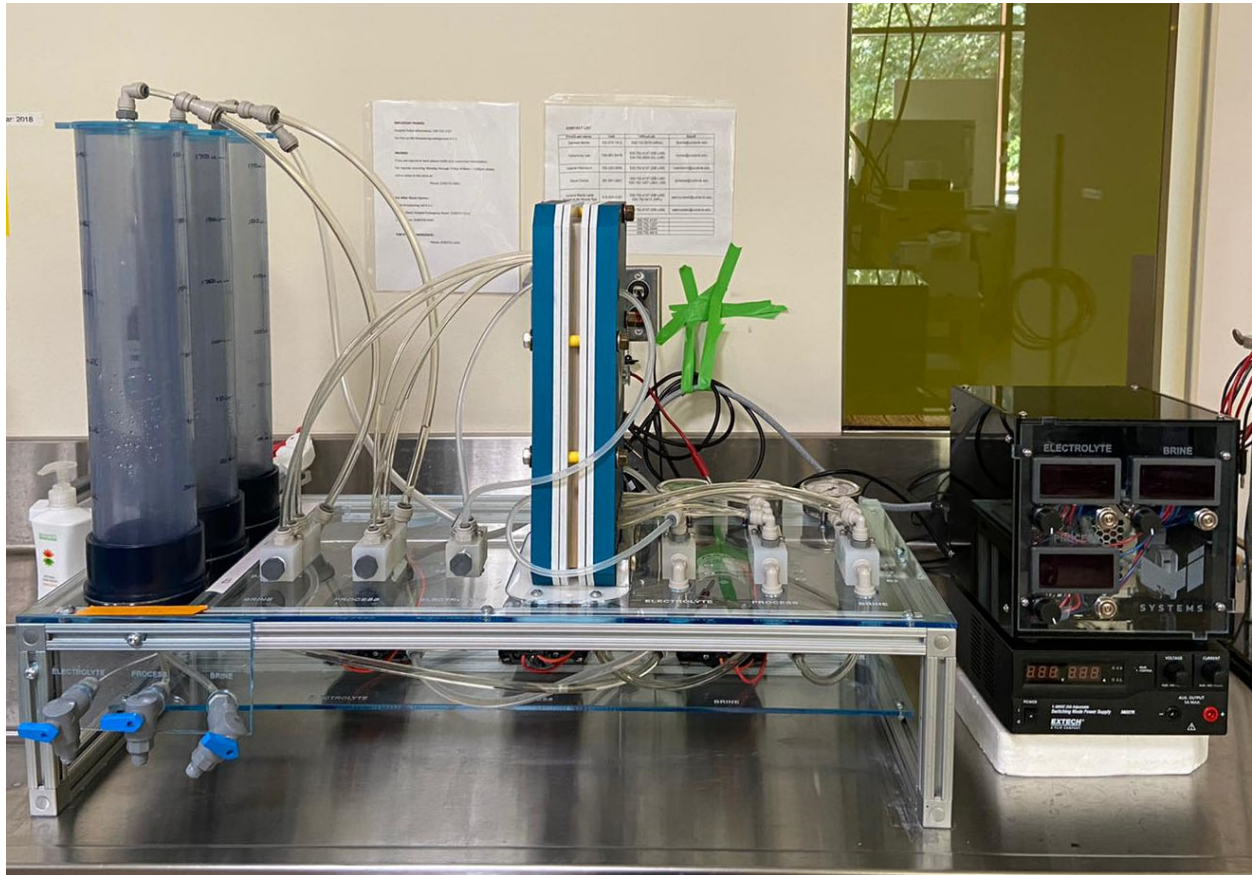
Membrane filtration system

- Capable of micro-, ultra-, and nano-filtration and reverse osmosis to isolate milk components
- Highly versatile
 - Module for simultaneously screening several flat-sheet membranes
 - Module for using up to 3 larger spiral membranes (increased membrane area to save time and energy)
- Available in both pilot plant and bench scales
- Critical step in separating bioactive compounds from milk
- Environmentally friendly technique based around molecular size exclusion
- Manufacturers: GEA Process Engineering (pilot plant scale), Smartflow technologies (bench-scale)



High-Performance Desalination unit

- Fully automated
- Ion exchange membranes
- MiniCell test strand
- 10 cell pairs
- Purifies target compounds following membrane filtration
- Manufacturers: Fuji Film, Magna Imperio Systems Corp.



Fermenters

- Custom-designed stainless-steel fermenters
- High tech design allows for constant monitoring and high levels of control
- Frequently used for lactose hydrolysis and monosaccharide fermentation
- Manufacturer: Cypress Semiconductor

Room specifications

- HEPA filtered air
- Hot water wall panel for cleaning and other uses

If you are interested in working with us, please contact Dr. Daniela Barile (dbarile@ucdavis.edu) or Dr. Juliana Bell (jdemourabell@ucdavis.edu).