FERMENTATION FACILITY

Providing fermentation services to industry clients and Iowa State University

www.ccur.iastate.edu/fermentationfacility
A unique research facility

The Iowa State University Fermentation Facility is designed to help researchers develop new fermentation technologies and products and provide bench- and pilot-scale fermentation equipment.

The Fermentation Facility has equipment for scaling up the production of industrially important chemicals, chemical feedstocks, genetically modified organisms and enzymes.

Researchers have access to state-of-the-art equipment and expertise in the areas of microbial fermentation and product recovery. By using the facility’s equipment and expertise, industry clients have found a cost-effective way to test new products and processes.

The Fermentation Facility is managed by the Center for Crops Utilization Research with additional funding provided by the College of Agriculture and Life Sciences.

BioCentury Research Farm

The Fermentation Facility works jointly with the BioCentury Research Farm to turn a variety of biomass feedstocks into ethanol and industrial chemicals using fermentation. Fermentation and processing capabilities are available, including fermentation vessels of 500- and 1,000-liter working volume capacities.

Researchers can test new processing systems using benchtop- and small pilot-scale equipment before going to large pilot scale at the BioCentury Research Farm.

For more information about the BioCentury Research Farm, visit www.biocenturyresearchfarm.iastate.edu.
Specialized research services

The Fermentation Facility offers a wide range of services to industry clients and Iowa State University researchers to assist in the development of new fermentation technologies and provide fermentation equipment at a reasonable cost.

Various Services
» Controlled growth of microorganisms from bench- to large pilot-scale capacities
» Simultaneous, parallel and long-term fermentations
» Continuous and batch fermentations
» Downstream processing including centrifugation, ultrafiltration, spray drying and freeze drying
» Real-time analytics
» Customized programs to fit the specific needs of clients
» Training for industry personnel and university students

Parallel Bench-scale and Long-term Fermentations
Users have the opportunity to simultaneously run multiple bench-scale fermentations. Experimental designs that would take months to complete with one fermentor can be completed in weeks by using a multiple-unit array.

Some continuous and batch fermentations require use of one or more fermentors for extended periods. Every attempt will be made to assist researchers with scheduling and execution of these projects.

Expert Assistance
Our technical staff has experience scaling up commercially relevant processes, chemicals and materials. Expert assistance is available for biotechnology courses or workshops. Additionally, training of graduate students and technicians in the operation of batch and continuous fermentation fermentors and microbial culture maintenance and preservation is available.
AVAILABLE EQUIPMENT

The Fermentation Facility has equipment for producing cellular biomass, chemicals, chemical feedstocks and enzymes, and converting grain and lignocellulose into fuels and products.

**Bench-scale Fermentors with Computer Controls**
- 5-liter and 7-liter

**Sterilizable-in-Place Fermentors**
- 15-liter, 50-liter, 120-liter, 200-liter, 500-liter and 1,000-liter

**Downstream Processing Equipment**
- French Pressure Cell (40-ml)
- Hollow Fiber Unit (20-liter)
- Horizontal Decanter
- Semi-continuous Centrifuge

**Freeze Dryers**
- Bench-scale Freeze Dryer (1.5-liter condenser capacity)
- Eight-shelf freeze dryer with stoppering capability that can be used for either bulk drying or producing dry product in vacuum sealed vials (15-liter condenser capacity)

**Analytic Equipment**
- Automated Enzyme-based Analyzer
- Spectrophotometer

**Additional Equipment**
- Autoclaves
- Bio-hood
- Chemical Hood
- Distillation Skid System
- Falling Film Evaporator
- Incubating Shakers (acoustic and orbital)
- Jacketed Mixing Vessels (25- to 250-liter)
- Peristaltic Pumps
- Process Tanks (80-gallon and 350-gallon)
- Rotary Evaporator
- Rotary Steam Tube Drying System
- Spray Dryer
- Ultralow Freezer

A fee schedule and a complete list of equipment are available online at [www.ccur.iastate.edu/fermentationfacility](http://www.ccur.iastate.edu/fermentationfacility).