ADVANCED FOOD SYSTEMS

CAPABILITIES STATEMENT

Our research aims to deliver sustainable solutions and healthy feeding practices for the growing future population in industrialized and developing nations through scientific and technological advancements.

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VICTORIA UNIVERSITY
MELBOURNE AUSTRALIA

RESEARCH FOCUS

Our research is aligned with 3 Australian national priorities:

- Environmentally sustainable Australia
- Promoting and maintaining good health
- Frontier technologies for building and transforming Australia

Our research strengths can be categorized under the following themed projects.

- Analytical systems - Methods development and analysis of food components
- Macromolecular systems - Fundamental research on understanding physical and chemical interactions governing the properties of complex food macromolecules during various phases of operation
- Bioprocessing systems - Fundamental and applied food biotechnology
- Sustainable food systems - Advanced approaches in the food industry to ensure innovative and sustainable utilisation of our natural resources.

WAYS WE CAN HELP

CONSULTING AND RESEARCH SERVICES

We have diverse research skills, expertise and vast resources with which we can carry out research to our targeted research strengths. Our research includes conceptualization, development of research strategies and analysis and interpretation of results, and currently focuses on the following areas of food research:

- Food Processing
- Functional Foods and Nutraceuticals
- Enhancement of Shelf Life of Foods
- Physical Chemistry of Foods
- Dairy Science and Technology
- Microbial and Enzyme Technology and Engineering
- Analytical systems

PARTNERSHIPS AND COLLABORATIONS

The Research Unit has developed an extensive range of research collaborations both within Victoria University and with external organizations, including the broader academic and industrial research groups, as well as corporations internationally and within Australia. They include

- Regional Victoria Food industry through Geelong Food Co-Product Cluster
- Dairy Innovation Australia
- Fonterra
- Kraft
- Department of Primary Industries
- Institute for Sustainability and Innovation (ISI)
- Institute for Supply Chain and Logistics (ISCL)
- Institute of Sport, Exercise and Active Living (ISEAL)
- Collaborate with Victoria University's nutrition and food safety experts

FACILITIES & RESOURCES

We have access to a wide range of modern research, educational, consultation and conference facilities across the University that can also be availed by partners in research projects.

The pilot plant and small scale operational facility, is equipped with

- Retort and can seamer – required for canning
- Spray dryer
- Ultrafiltration/Microfiltration/Nanofiltration/Reverse Osmosis Modules
- Controlled atmosphere oven
- Pasteurizer
- Microfluidizer/homogenizer
- Cheese vats/press
- Ice cream maker
- Incubators for yoghurt manufacturing
- Vacuum packing
- Freeze dryer
- Vacuum dryer

Food Material Science Laboratory

Equipped with instruments, including:

- CS/CR Physica MCR 301 Rheometer
- Zetasizer-Nano ZS
- TA-XT.2 Texture analyser
- Universal testing machine

Analytical Instrumentation Laboratories

Equipped with state-of-the-art instruments, including:

- Fourier Transform Infrared (FTIR) spectroscopy with polymer library, drug library and software
- Fluorescence spectrophotometer with software
- GCMS (gas chromatography-mass spectrometer)
- HPLC (high performance liquid chromatography equipped with PDA, ELSD, electrochemical and fluorescence detectors)
- FPLC (fast protein liquid chromatography) with autoanalyser and software
- Ion chromatograph
- ICP (inductively coupled plasma-atomic emission spectrometer)
- AAS (atomic absorption spectrometer)
- Capillary electrophoresis
- NMR

Polymer Research Laboratory

- Differential Scanning Calorimetry Equipment
- High temperature gel permeation chromatography
- Compression moulding press
- Programmable ovens.

Imaging Research Laboratory

Provides the latest equipment for imaging food systems including:

- Scanning electron microscope
- Confocal laser scanning microscope
- Luminescence and light microscopes

TRACK RECORD AND PROFILE

Members of the Advanced Food Systems Research Unit have developed an international track-record of research excellence and continue to publish their work in a broad range of scholarly journals and in proceedings of international learned conferences. The Australian Research Council has ranked the research performance of the team as "above world standard".

CONTACTS

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FURTHER INFORMATION

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