

**DOCTORAL AND MASTER OF SCIENCE PROGRAM
IN FOOD SCIENCE**

Department of Food Science and Technology

Graduate School

Kasetsart University



DOCTORAL AND MASTER OF SCIENCE PROGRAM IN FOOD SCIENCE

ACADEMIC INSTITUTION:

Department of Food Science and Technology,
Faculty of Agro-Industry,
Kasetsart University, Bangkok, Thailand
<http://www.agro.ku.ac.th/english/>

OBJECTIVES:

To produce Ph.D. or M.S. graduates through state of the art basic or applied research in the area of food science, food safety and related food disciplines.

To enroot international food scientists with perspectives and abilities in research capacity which promote academic advancement and problem based-solving in food science and food industry.

To contribute internationally-valued research projects and to distribute knowledge to industries and other interested parties.

COURSE SYNOPSIS & METHODOLOGY:

Food science and technology study at Kasetsart University has been in place since 1964 as the first program in Thailand and is considered one of the best food science programs in South East Asia. Internationally recognized, the department takes pride in the rigorous scientific curriculum. Master's degree graduates with in-depth basic and practical food science knowledge are trained to serve their own societies and countries.

Food science and technology graduates are major driven forces that contribute to the success of Thai food industry. Range of knowledge and researches are covered all aspects of food science and technology, e.g., food chemistry, food safety, food process and product innovation. Advance in food research study is enhanced by close link to food industry, both local and international company, and through extensive research collaboration network. Research exchange with most prominent food science institution and University in Europe, USA and Canada and Asia is available with special arrangement between professors involved. Talented international students are our priority for student selection.



Ph.D. Program: There are 2 programs available.

Program 1.1 focuses on research capacity building with a minimum of 52 credits research thesis. Four seminars and at least 1 research publication in a recognized international scientific journal is required.

Program 2.1 involves student with 12 credits course works plus a minimum of 36 credits research thesis. In addition to seminars and research publication, a grade point average (GPA) of B (3.0 out of 4.0 score) is required for graduation according to Kasetsart graduate school requirement.

M.S. Program: There are 2 programs available.

Program A1 focuses on research capacity building with a minimum of 36 credits research thesis. Two seminars and 1 research publication in a recognized scientific journal is required.

Program A2 involves student with 18 credits course works plus a minimum of 18 credits research thesis. In addition to seminars and research publication, a grade point average (GPA) of B (3.0 out of 4.0 score) is required for graduation according to Kasetsart graduate school requirement.

Academic year: Two semesters system start in August-December, and January-May, with a summer thereafter. 1 credits system is equivalent to 1hour per week of total 15 weeks in a semester.

COURSE CONTENT / STUDY TOPIC:

Selected course works will be offered during a semester. Example are: Advanced food science, Advanced food processing, Colloidal systems in foods, Hygienic problems of foods , Carbohydrate in foods, Chemistry of food flavor and analysis, The application of physical chemistry to food science, Lipid in foods, Protein in foods, Enzyme in foods, Food additives, Food Toxicology, Nutrition in Food Science.

Thesis research topics are in the area of industrial needs and academic advancement such as:

Food safety: novel sanitizers, microbial stress-response, cell-to-cell communication, biosensors and rapid method, food risk assessment, food mycotoxins, food safety and additives.

Food colloids and biopolymers: fabrication of food structure from biopolymer (mainly protein, polysaccharides and starches) with desirable characteristics at micro- and nano-length scales from the approaches of physico-chemistry and food physics.

Phytochemistry and functional food: extraction, purification and modification of functional and health benefit compounds from local plants, with an emphasis on polyphenolics, terpenoids, flavonoids and phytosterols.

Food flavor: aroma active compounds in Thai and Asian ethnic foods and ingredients, food interactions and processing factors affecting the flavor of traditional Thai food products.



Food process engineer and simulation: food process optimization, modeling and simulation, design of food processes and equipments.

Controlled-release delivery systems for bioactive compounds: antioxidants, anticancers and immunopromoters to be micro- or nano-encapsulated, the understanding of the self-assembling process of biomolecules and the interactions between core and encapsulating materials.

Rice and rice products: modified starch, starch-protein/lipid interactions, functional properties of rice bran protein, γ -amino butyric acid, oryzanol, application in value-added starch and rice-based products.

Other research area includes: alternative ingredients and additives for food industry, freshness preservation of food products, food chemical toxicology, drying technology, physico-chemical properties and processing of confectionery products, frozen food process and product development, utilization and value-added of food industry by-product, postharvest technology

QUALIFICATIONS:

Ph.D. Program: Master of Science degree in food science and technology or equivalent of M.S. in related fields, i.e., biotechnology, nutrition, pharmaceutical.

M.S. Program: Bachelor of Science degree in food science and technology or equivalent of B.S. in related fields, i.e., biotechnology, nutrition, pharmaceutical.

Competency in English communication and writing is required for application. English proficiency proof is required for graduation according to Kasetsart University graduate school. Current requirement is IELTS score not less than 5.0, or TOEFL (Paper-based Test: Section 2 and 3, score not less than 45 for each section, and Total score not less than 450) (Computer-based Test: Section 2 score not less than 14, section 3 score not less than 13, and Total score not less than 133), (Internet-based Test: Total score not less than 45). Alternatively, students must take and pass the English course arranged by Kasetsart University graduate school.

CONTACT PERSON:

Dr. Kullanart Tongkhao by email at fagiknt@ku.ac.th



Food Science (M.S. & Ph.D.)

Introduction

Kasetsart University offered courses in Food Science since 1964. It was the first academy to offer a Food Science degree program in Thailand. In 1980, the department evolved and was renamed the Department of Food Science and Technology. Since then, over 1,500 graduates have completed their studies from the Department and are serving in technical and administrative positions at food-related industries as well as leading academic and research institutions.

Master's Program

Plan A Type A 1

Total credits minimum 36 credits

Curriculum structure

- | | | | |
|------------------|---------|----|------------------|
| a. Major courses | minimum | 2 | credits (audits) |
| - Seminar | | 2 | credits (audits) |
| b. Thesis | minimum | 36 | credits |

Course requirements

- | | | | |
|------------------|---------|------------|------------------|
| a. Major courses | minimum | 2 | credits (audits) |
| - Seminar | | 2 | credits (audits) |
| 01052597 Seminar | | 1, 1, 1, 1 | |
| b. Thesis | minimum | 36 | credits |
| 01052599 Thesis | | 1-36 | credits |

Plan A type A 2

Total credits minimum 36 credits

Curriculum structure

- | | | | |
|---------------------|---------|----|---------|
| a. Major courses | minimum | 18 | credits |
| - Seminar | | 2 | credits |
| - Compulsory course | | 5 | credits |
| - Electives | minimum | 11 | credits |
| b. Thesis | minimum | 18 | credits |

Course requirements

- | | | | |
|------------------|---------|------|---------|
| a. Major courses | minimum | 18 | credits |
| - Seminar | | 2 | credits |
| 01052597 Seminar | | 1, 1 | |

| | | | |
|---------------------|---|------|----------|
| - Compulsory course | | 5 | credits |
| 01052517 | Advanced Food Science | | 3(3-0-6) |
| 01052591 | Advanced Research Methods in Food Science | | 2(1-3-4) |
| - Electives | minimum | 11 | credits |
| b. Thesis | minimum | 18 | credits |
| 01052599 | Thesis | 1-18 | credits |

Doctoral Program

Plan 1.1

Total credits minimum 48 credits

Curriculum structure

| | | | |
|------------------|---------|----|------------------|
| a. Major courses | minimum | 4 | credits (audits) |
| - Seminar | | 4 | credits (audits) |
| b. Thesis | minimum | 48 | credits |

Course requirements

| | | | |
|------------------|---------|------------|------------------|
| a. Major courses | minimum | 4 | credits (audits) |
| - Seminar | | 4 | credits (audits) |
| 01052697 | Seminar | 1, 1, 1, 1 | |
| b. Thesis | minimum | 48 | credits |
| 01052699 | Thesis | 1-48 | credits |

Plan 2.1

Total credits minimum 48 credits

Curriculum structure

| | | | |
|---------------------|---------|----|---------|
| a. Major courses | minimum | 12 | credits |
| - Seminar | | 4 | credits |
| - Compulsory course | | 3 | credits |
| - Electives | minimum | 5 | credits |
| b. Thesis | minimum | 36 | credits |

Course requirements

| | | | |
|------------------|---------|------------|---------|
| a. Major courses | minimum | 12 | credits |
| - Seminar | | 4 | credits |
| 01052697 | Seminar | 1, 1, 1, 1 | |



| | | | |
|---------------------|---|----------|---------|
| - Compulsory course | | 3 | credits |
| 01052691 | Advanced Research Methods in Food Science | 3(2-3-6) | |
| - Electives | minimum | 5 | credits |
| b. Thesis | minimum | 36 | credits |
| 01052699 | Thesis | 1-36 | credits |



Course Description (M.S.)

- 01052511 Cereal Chemistry 3(2-3-6)
The formation of cereal grains, chemical properties and analysis of chemical contents of various cereals and their products. Field trip required.
- 01052512 Carbohydrate in Foods 3(2-3-6)
Types, properties and contents of carbohydrate in foods, sources of carbohydrates. Chemical and physical changes during processing and storage, modification of starch for industrial uses. Field trip required.
- 01052513 Lipid in Foods 2(2-0-4)
Property, composition, and function of lipids in foods, methods used for analysis of lipid composition, lipid separation and modification, lipid deterioration during production process and storage.
- 01052514 Protein in Foods 3(2-3-6)
Chemical properties and structure of protein; changes during processing; important proteins of various food sources; functional properties and effects of modification; quality evaluation of protein. Field trip required.
- 01052515 Enzyme in Foods 3(2-3-6)
Types and nature of enzyme. Factors affecting enzyme activity. Production and purification of enzyme. Natural enzyme in foods. Relationship of enzyme and food quality changes. Effect of processing on enzyme activity. Application of enzyme in food industry. Advancement in topics related to enzyme in food.
- 01052516 Food Additives 3(2-3-6)
Types of food additives and their applications in food, effect of food additive on quality and food preservation. Field trip required.
- 01052517 Advanced Food Science 3(3-0-6)
Advanced and new techniques in analysis and food science research.
- 01052518 Chemistry of Food Flavor and Analysis 2(2-0-4)
Chemical and physical properties of flavoring agents. Flavor formation in foods. Extraction techniques of flavoring agents used in sample preparation for food research. Chemical analysis techniques for substance identification. Sensory techniques for investigation of food flavoring agents. Co-relationships between data obtained from instrument and sensory tests.



- 01052544 Nutrition in Food Processing 2(2-0-4)
Nutrition quality of products effected by method of processing, light, heat and pressure. Methods of prevention and preservation of nutrients in food products during processes.
- 01052545 Quality Management in Food Industry 2(2-0-4)
Quality system and principle of quality management in food industry. Authority and responsibility of personnels at each level in organization. Policy management. Standard of operation procedure. Use of quality control tools and statistics in decision making and problem solving. Production control in food industry.
- 01052546 Health Foods and Nutraceuticals 2(2-0-4)
Classification of health foods and nutraceuticals, dietary fibers, antioxidants, prebiotics, probiotics, omega-3 fatty acids, and phenolic compounds, including their mechanisms of action, analytical methods, and current regulations.
- 01052591 Research Methods in Food Science 2(1-3-4)
Research methodology in Food Science. Planning, proposal writing, report writing, and using of instrumentation in food science research. Principle of Good Laboratory Practices (GLP). Application of software in instrumental control and data analysis.
- 01052592 Applied Statistics for Food Science Research 3(2-3-6)
Experimental design. Research hypothesis, measurement and hypothesis testing in food science research. Principle and application of statistical software package. Data collection. Type of data. Data input. Data analysis using multivariate statistical tools and data interpretation for food science research.
- 01052596 Selected Topics in Food Science and Technology 1-3
Study on selected topics in Food Science and Technology at the master degree level. The topics are subject to changed each semester.
- 01052597 Seminar 1
Presentation and discussion on current interesting topics in food science at the master's degree level.
- 01052598 Special Problems 1-3
Study and research in Food Science and Technology at the master degree level and compiled into a written report.
- 01052599 Thesis 1-36
Research at the master degree level and compile into a thesis.



Course Description (Ph.D.)

- 01052611 Advanced Food Analysis 3(2-3-6)
Modern methods, current techniques, and progress in various food analyses. Development and improvement of appropriate food analytical methods for specific situation. Field trip required.
- 01052612 Advanced Food Additives 3(2-3-6)
Current research on different aspects of food additives. New food additives. Toxicological significance and use of food additives. Modern techniques in food additive analysis.
- 01052613 Food Materials 2(1-3-4)
Physics related to food structure creation of nutrients and food ingredients having self-assembling characteristics. Interactions and chemical bonds within food structure fabricated during processing and storage associated with materials properties of food products under the alterations of stress, strain and time. Evaluation methods of the materials property changes in food.
- 01052631 Physical and Engineering Properties of Biomaterials 3(3-0-6)
Structure of solid biomaterials. Physical and engineering properties of biomaterials including mechanical, surface, thermal and electrical properties. Changes of properties and testing. Phase transition of biomaterials. Case study.
- 01052661 Advanced Food Microbiology 3(2-3-6)
Quantitative evaluation of microorganisms in food by modern, rapid and automatic techniques. Microbiological quality assurance of food. Relationship between starter culture and quality of fermented food products. Production and storage of starter culture for food industry. Field trip required.
- 01052691 Advanced Research Methods in Food Science 3(2-3-6)
Advanced research methods in Food Science, preparation of research proposal, application of computer and information technology for data retrieval and data analysis. Data collection and manuscript preparation for technical presentation and group discussion with academic and food industry, technical report writing for publication in accredited journals in the Food Science area or for technical report in food industry.
- 01052696 Selected Topic in Food Science and Technology 1-3
Selected topics in food science at the doctoral level. Topics are subjected to be changed each semester.
- 01052697 Seminar 1
Presentation and discussion in English on interesting topics in food science at doctoral level.



| | | |
|----------|---|------|
| 01052698 | Special Problems | 1-3 |
| | Study and research in food science at the doctoral level and compile into a report. | |
| 01052699 | Thesis | 1-48 |
| | Research study at the doctoral level and writing thesis. | |



Faculty and Research areas in Food Science and Technology Department Faculty of Agro-Industry, Kasetsart University

Asst.Prof. Chitsiri Rachtanapun (ผศ.ดร. จิตศิริ ราชตนะพันธุ์)

Faculty code: K4028

Department of Food Science and Technology

Tel : +66 2 562-5152 E-mail : chitsiri.t@ku.ac.th

Research Areas : Natural antimicrobials, Food microbiology, Food Safety

Assoc. Prof. Chockchai Theerakulkait (รศ.ดร. โชคชัย ธีรกุลเกียรติ)

Faculty code: K4014

Department of Food Science and Technology

Tel : +66 2 562-5032 E-mail : chockchai.t@ku.ac.th

Research Areas : Novel food /beverage ingredients and flavorings from rice bran and plant extract, Anti-enzyme browning agents and biologically active agents from plant extract, Enzyme in plant food processing, Processing and biochemistry of beverages from plant

Kanithaporn Vangnai (ดร. กนิษฐพร วังไฉน)

Faculty code: K4033

Department of Food Science and Technology

Tel : +66 2 562-5037 E-mail : kanithaporn.p@ku.ac.th

Research Areas : Food chemical toxicology, Meat technology

Kanokrat Limpisophon (ดร.กนกรัตน์ ลิ้มปิโสภณ)

Faculty code: K4036

Department of Food Science and Technology

Tel : +66 2 562-5219 E-mail : kriskamol.n@ku.ac.th

Research Areas : Gelatin application, Fishery product technology, Protein from marine sources, Edible film

Kriskamol Na Jom (ดร.กฤษกมล ณ จอม)

Faculty code: K4039

Department of Food Science and Technology

Tel : +66 2 562-5035 E-mail : fagikrl@ku.ac.th

Research Areas : Food Chemical Safety, Metabolomics for Food Quality and Safety

Kullanart Tongkhao (ดร.กุลนาถ ทองขาว)

Faculty code: K4037

Department of Food Science and Technology

Tel : +66 2 562-5020 ext. 5227 E-mail : fagiknt@ku.ac.th

Research Areas : Food microbiology, Food safety, Genetic engineering

Asst. Prof. Masubon Thongngam (ผศ.ดร. มาศอุบล ทองงาม)

Faculty code: K4025

Department of Food Science and Technology

Tel : +66 2 562-5152 E-mail : masubon.t@ku.ac.th

Research Areas : Food microstructure, Food polysaccharide, Polysaccharide and colloid, Starch chemistry

Assoc. Prof. Parichat Hongsprabhas (รศ.ดร. ปาริฉัตร หงสประภาส)

Faculty code: K4023

Department of Food Science and Technology

Tel : +66 2562 5043 E-mail : parichat.h@ku.ac.th

Research Areas : Food colloids and biopolymers, Food microstructure, Mixing biopolymer and its influences on food qualities, Control release of functional ingredients, Soft matter, Nutraceuticals and functional foods, Dairy technology

Pathima Udornpittkul (ดร. ปัทธิมา อุดมไพจิตรกุล)

Faculty code: K4041

Department of Food Science and Technology

Tel : +66 2562 5020 E-mail : pathima.u@ku.ac.th

Research Areas : Food microbiology, Spore-forming bacteria, Molecularbiology, Spore inactivation

Pinthip Rumpagaporn (ดร. พิณทิพย์ รัมภากาภรณ์)

Faculty code: K4035

Department of Food Science and Technology

Tel : +66 2 562-5020 ext. 5205 E-mail : fagiptr@ku.ac.th

Research Areas : Dietary fiber, Starch technology, Nutrition

Pitiya Kamonpatana (ดร.ปีติยา กมลพัฒนนะ)

Faculty code: K4029

Department of Food Science and Technology

Tel : +66 2 562-5020 ext. 5208 E-mail : pitiya.n@ku.ac.th

Research Areas : Food Engineering

Assoc. Prof. Prisana Suwannaporn (รศ.ดร. ปริศนา สุวรรณากาภรณ์)

Faculty code: K4019

Department of Food Science and Technology

Tel : +66 2 562-5038 E-mail : prisana.s@ku.ac.th

Research Areas : Physicochemical properties and rheology of rice starch, Cereal technology, Physical modification of rice starch and its maltodextrin, Retrogradation of waxy rice gel, Consumer study and new product development in foods, New product development management, Food product marketing, Applied statistic for food science research

Saipin Thanachasai (ดร. สายพิน ทานัชฌาสัย)

Faculty code: K4032

Department of Food Science and Technology

Tel : +66 2 562-5034 E-mail : saipin.t@ku.ac.th

Research Areas : Food engineering, Food biosensor, Enzyme technology, Bioinstrumentation

Assoc. Prof. Sanguansri Charoenrein (รศ.ดร. สงวนศรี เจริญเหรียญ)

Faculty code: K4020

Department of Food Science and Technology

Tel : +66 2 562-5027 E-mail : sanguansri.c@ku.ac.th

Research Areas : Freshness preservation of frozen foods, controlling properties of starch paste and gel, Freezing preservation of foods, Enhance stability of food using physico chemical principles

Asst. Prof. Sasitorn Tongchitpakdee (ผศ.ดร. ศศิธร ตรงจิตภักดี)

Faculty code: K4026

Department of Food Science and Technology

Tel : +66 2 562-5027 E-mail : sasitorn.ch@ku.ac.th

Research Areas : Phytochemicals, natural pigments, Fruit and vegetable technology; Functional foods, Bioactive compounds in fruits, vegetables and herbs

Savitree Ratanasumawong (ดร. สาวิตรี รัตนสุมาวงศ์)

Faculty code: K40

Department of Food Science and Technology

Tel : +66 2562-5033 E-mail : fagistt@ku.ac.th

Research Areas : Mass transfer/Heat transfer in starchy food, Starchy food (Noodle, wheat flour based products), Adsorption of protein on solid surface, Food safety (Allergen)

Assoc. Prof. Siree Chaiseri (รศ.ดร. สิริ ชัยเสรี)

Faculty code: K4017

Department of Food Science and Technology

Tel : +66 2562 5002 E-mail : siree.c@ku.ac.th

Research Areas : Flavor chemistry, Confectionery Technology

Sirichai Songsermpong (ดร. สิริชัย ส่งเสริมพงษ์)

Faculty code: K4005

Department of Food Science and Technology

Tel : +66 2 562-5024 E-mail : sirichai.so@ku.ac.th

Research Areas : Food engineering, Instant rice and novel process, Aseptic processing, Food safety engineering

Sudathip Sae-Tan (ดร. สุดาทิพย์ แซ่ตัน)

Faculty code: K4042

Department of Food Science and Technology

Tel : +66 2 562-5037 E-mail : fagists@ku.ac.th

Research Areas : Obesity and inflammation and Cancer Prevention by Dietary Component, Functional foods, Nutrition, Biochemistry

Asst. Prof. Sudsai Trevanich (ผศ.ดร. สูดสาย ตริวานิช)

Faculty code: K4001

Department of Food Science and Technology

Tel : +66 2 562-5030 E-mail : sudsai.t@ku.ac.th

Research Areas : Food safety, Food microbiology, Synbiotic, Cell to cell communication, Rapid method, Genetic engineering

Asst. Prof. Tanaboon Sajjaanantakul (ผศ.ดร. ธนะบุญย์ สัจจาอนันตกุล)

Faculty code: K4016

Department of Food Science and Technology

Tel : +66 2 562-5039 E-mail : tanaboon.s@ku.ac.th

Research Areas : Chemistry of pectin and plant polysaccharides, Functional ingredients and phytochemicals, Post-harvest technology, Thermal processing, Phytochemicals

Asst. Prof. Utai Klinkesorn (ผศ.ดร. อุทัย กลิ่นเกษร)

Faculty code: K40

Department of Food Science and Technology

Tel : +66 2 562-5031 E-mail : utai.k@ku.ac.th

Research Areas : Food emulsion, Fat and oil technology: Transesterification, emulsion and encapsulation, Functional food

Asst. Prof. Wanee Jirapakkul (ผศ.ดร. วรณี จิรภาคย์กุล)

Faculty code: K4021

Department of Food Science and Technology

Tel : +66 2 562-5028 E-mail : wanee.ch@ku.ac.th

Research Areas : Food chemistry, Food additive, Food analysis, Flavor analysis, Chemistry of Thai foods and ingredients

Wasaporn Chanput (ดร.วศะพร จันทร์พุ่ม)

Faculty code: K4040

Department of Food Science and Technology

Tel : +66 2 562-5011 E-mail : wasaporn.c@ku.ac.th

Research Areas : Immunonutrition, Immunomodulation by food, Molecular biology, Allergy, Food chemistry

Asst. Prof. Warapa Mahakarnchanakul (ผศ.ดร. วรภา มหากาญจนกุล)

Faculty code: K4018

Department of Food Science and Technology

Tel : +66 2 562-5036 E-mail : warapa.m@ku.ac.th

Research Areas : Microbial food safety, Bacterial stress response in food system, Mycotoxin detection, GMP, HACCP, Food sanitation, Food safety

Assoc. Prof. Waraporn Boonsupthip (รศ.ดร. วรภรณ์ บุญทรัพย์ทิพย์)

Faculty code: K4024

Department of Food Science and Technology

Tel : +66 2 562-5042 E-mail : waraporn.b@ku.ac.th

Research Areas : Freezing process engineering jet impingement freezing, ice nucleator, antifreeze protein, etc.

Asst. Prof. Weerachet Jittanit (ผศ.ดร. วีระเชษฐ์ จิตตานิษฐ์)

Faculty code: K4031

Department of Food Science and Technology

Tel : +66 2 562-5026 E-mail : weerachet.j@ku.ac.th

Research Areas : drying technology, freezing technology, ultra-high temperature processing, and Ohmic heating.

Yaowapa Lorjaroenphon (ดร. เขาวภา หล่อเจริญผล)

Faculty code: K4038

Department of Food Science and Technology

Tel : +66 2 562-5215 E-mail : yaowapa.l@ku.ac.th

Research Areas : Flavor chemistry, Flavor analysis by instrumental and sensory measurements, Food chemistry, Sensory science

Guest professor:

Asst. Prof. Namfone Lumdubwong (ผศ.ดร. น้ำฝน ลำดับวงศ์)

Faculty code: K6001

Department of Packaging and Materials Technology

Tel : +662 562-5098 E-mail : namfone.l@ku.ac.th

Research Areas : Cereal starch chemistry and technology, Relationship between starch fine structure and function properties, Properties and fine structures of modified / native rice starch, Thermoplastic starch and biobased materials

Emeritus professor:

Prof. Onanong Naivikul (ศ.ดร. อรอนงค์ นัยวิกุล)

Faculty code: K4012

Department of Food Science and Technology

Tel : +66 2 562-5023 E-mail : onanong.n@ku.ac.th

Research Areas : Rice science and technology, Rice utilization, Cereals chemistry