

YAO OLIVE LI

Research Assistant Professor

Food Engineering
School of Agriculture & Consumer Sciences
Tennessee State University
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EDUCATION:

Jan 2005 ~ Feb 2009

Doctor of Philosophy in Food Engineering

Department of Chemical Engineering & Applied Chemistry, University of Toronto, Canada
Dissertation title: *Development of microencapsulation-based technology for micronutrient fortification in staple foods for developing countries*

Sept 2002 ~ Jan 2005

Master of Applied Science in Food Engineering

Department of Chemical Engineering & Applied Chemistry, University of Toronto, Canada
Thesis title: *Development and stability study of multiple-fortified Ultra Rice[®] containing iron, zinc, and B vitamins*

Sept 1994 ~ June 1997

Master of Engineering in Biochemical Engineering

Faculty of Engineering, Dalian University of Technology, China
Thesis title: *Study of mutagenization and its effects on production of thermostable alpha-amylase by thermophilic strain Bacillus sp. JF.*

Sept 1986 ~ June 1990

Bachelor of Engineering in Food Engineering

Department of Food Engineering, Dalian Polytechnic University, China
Thesis title: *Development of an extraction procedure for recycling useful pigments from sunflower seed waste*

RESEARCH EXPERIENCE:

2010, July ~ present

Research Assistant Professor, Tennessee State University, School of Ag. & Consumer Sciences

2009, March ~ 2010, June

Post Doctoral Fellow, Food Engineering Research Group, University of Toronto, Canada

2002 ~ 2008

Research Assistant, master’s and later doctoral level, University of Toronto, Canada

1997 ~ 2001

Research Engineer, Dalian Polytechnic University, China

- Research project was funded by the *Natural Science Foundation of China*

1994 ~ 1997

Research Assistant, master’s level, Dalian University of Technology, China

1990 ~ 1994

Research Engineer, Dalian Polytechnic University, China

Research Interests:

- Development of innovative ingredient delivery system and processing technologies based on microencapsulation and controlled-release drug delivery techniques
- Utilization of agricultural materials rich in nutraceuticals, such as oilseed proteins, dietary fibers, and legume/pulse flours for development of functional foods
- Design of “engineered” foods or food ingredients with enhanced nutritional values, particularly for obese and diabetic populations, based on the weight control/management effects from plant proteins and dietary fibers
- Assessment on quality, safety, bioavailability/bioactivity of the food products developed

TEACHING EXPERIENCE:

Jan 2010 ~ May 2010

Sessional Lecturer, Department of Chemical Engineering & Applied Chemistry, U of Toronto

- Taught **Food Engineering** to 4th year undergraduate students majoring in Chemical Engineering

2005 ~ June 2010

Research supervision, Food Engineering Research Group, University of Toronto, Canada

- Provided supervision to 15+ undergraduate & graduate students during their thesis studies or summer research projects

2002 ~ 2008

Teaching Assistant, Department of Chemical Engineering & Applied Chemistry, U of Toronto

- Assisted/facilitated several core courses for undergraduate study, including **Chemical Plant Design** – a capstone course, **Team Strategies for Engineering Design**, and **Applied Chemistry Lab**

Summer 2003 & 2004

Course Instructor, Faculty of Engineering, University of Toronto

- Independently designed curriculum and taught a mini-course, **Iron chef with iron ring - Introduction of Food Engineering** for 2 years, which was a part of Da Vinci Engineering Enrichment Program (D.E.E.P) offered for high school students for their preparation of entering university

1997 ~ 2001

Senior Lecturer, Dalian Polytechnic University, China

- Taught and evaluated university students at senior levels in **Food Biochemistry** course through large-class lecturing, small group tutorials, and laboratory experiments

1990 ~ 1994

Junior Lecturer, Dalian Polytechnic University, China

- Taught and evaluated undergraduate students in two elective courses, **Food Additives** and **Functional Plant Proteins**, through large-class lecturing
- Arranged and directed students’ internships/trade training

Teaching Interests:

- Advanced foods and food systems for enhanced nutritional values
- Microencapsulation and applications in food production
- Food engineering, or food processing technologies
- Food chemistry and biochemistry

AWARDS AND SCHOLARSHIPS:

Oct 2010	Travel grant, valued at \$700 Euro, for 18 th International Conference on Bioencapsulation being held in Porto, Portugal
Sept 2009	Travel grant, valued at \$500 Euro, for 17 th International Conference on Bioencapsulation held in Groningen, Netherlands
2006 ~ 2007	Dupont Graduate Scholarship (Ontario Graduate Student Scholarship, OGS)
2005 ~ 2006	Richard Quittenton Graduate Scholarship (OGS)
2003 ~ 2004	McLean Foundation Graduate Scholarship (OGS)
2002 ~ 2003	University of Toronto Open Fellowship
1997 ~ 2000	Research project funded by the Natural Science Foundation of China
1994 ~ 1997	Graduate student scholarships at Dalian University of Technology, China
May 1999	Award of Excellence in Lecturer's Presentation Contest at Dalian Polytechnic University, China
July 1993	Award of Best Ten Instructors of the Year at Dalian Polytechnic University, China

PUBLICATIONS:**Refereed**

- Li, Y.O., Diosady, L. L., Wesley, A., Iodine stability in double fortified salt prepared with microencapsulated ferrous fumarate and iodized salt. *Journal of Food Engineering*, 2010, 99(2) pp. 232-238.
- Li, Y. O., Diosady, L. L., Wesley, A., Iron in vitro bioavailability and iodine storage stability in double fortified salt (DFS), *Food and Nutrition Bulletin* of United Nations, 2009, 30(4) pp. 327-335.
- Li, Y. O., Lam, J., Diosady, L. L., Jankowski, S., Antioxidant system for the preservation of vitamin A in Ultra Rice[®], *Food and Nutrition Bulletin* of United Nations, 2009, 30(1) pp. 82-89.
- Li, Y., Diosady, L.L., Jankowski, S., Effect of iron compounds on the storage stability of multiple-fortified Ultra Rice[®], *International Journal of Food Science and Technology*, 2008, 43: 423-429.
- Li, Y., Diosady, L.L., Jankowski, S., Stability of vitamin B₁ in the presence of encapsulated ferrous fumarate in Ultra Rice[®], *International Journal of Food Science and Nutrition*, 2008, 59: 24-33.
- Yuan, J., Li, Y., Ue, J., Wesley, A., Diosady, L. L., Development of field test kits for determination of microencapsulated iron in double fortified salt, *Food and Nutrition Bulletin* of United Nations, 2008, 29: 288-297.
- Huang, D. C., Ye, S. H., Zhang, Y. Li, Y., Wang, X., Ding, D. W., Microbial remediation and optimization of oil polluted wetlands at Dalian Bay in China, *Biomedical and Environmental Sciences*, 2007, 20: 414-419.
- Ye, S. H., Huang, D. C., Li, Y., Ding, M., Hu, Y. Y., Ding, D. W., Investigation on bioremediation of oil-polluted wetland at Liaodong Bay in northeast China, *Applied Microbiology and Biotechnology*, 2006, 71 (4): 543-548.
- Jin, F. X., Li, Y., Zhang, C. Z., Yu, H. S., Thermostable α -amylase and α -galactosidase production from the thermophilic and aerobic *Bacillus sp.* JF strain, *Process Biochemistry*, 2001, 36: 559-564.
- Li, Y., Jin, F. X., Zhang, C. Z., Yu, H. S., Effects of medium compositions and culture conditions on thermostable α -amylase production by thermophilic *Bacillus sp.-JF*, *Journal of Dalian Polytechnic University* (in Chinese), 1998 (17) pp. 36-42.
- Li, Y., Jin, F. X., Zhang, S., Study of mutation methods for enzyme production by thermophilic *Bacillus sp.-JF*, *Journal of Dalian Polytechnic University* (in Chinese), 1997 (16) pp. 45-50.

Accepted

- Li, Y. O., Yadava, D., Lo, K. L., Diosady, L. L., Wesley, A., Feasibility study of using cold-forming extrusion for agglomerating and microencapsulating ferrous fumarate for salt double fortification with iodine and iron. *International Journal of Food Engineering*.
- Li, Y. O., Diosady, L. L., Wesley, A. S., Folic acid fortification through existing fortified foods – iodized salt and vitamin A fortified sugar. *Food and Nutrition Bulletin*.
- Li, Y. O., Diosady, L. L., Jankowski, S., Folic acid stability in the presence of various formulation components including iron compounds in fortified extruded Ultra Rice[®] over prolonged storage at 40C and 60% relative humidity (RH). *International Journal of Food Science & Technology* (IJFST-2010-06463).
- Yadava, D., Li, Y. O., Diosady, L. L., Wesley, A. S., Optimization of polymer coating process for microencapsulating ferrous fumarate for salt double fortification with iodine and iron. *International Journal of Food Engineering*.

In Preparation

- Li, Y. O., Sangakkara, A., Diosady, L. L., Wesley, A. S., Folic acid stability in salt double fortified with iodine and folic acid prepared by spraying a single solution containing both nutrients. Currently under internal review with the Micronutrient Initiative (MI).
- Li, Y. O., Diosady, L. L., Jankowski, S., Improvement of reconstituted rice grain integrity using controlled in-situ gelation of calcium-alginate during rice grain extrusion.
- Li, Y. O., Sangakkara, A., Xiong, T., Diosady, L. L., Improvement of appearance and organoleptic properties of extruded Ultra Rice using surface modifications, such as surface coating and post-extrusion gelatinization.

Refereed Conference Proceedings

- Li, Y. O., Diosady, L. L., Microencapsulation-based rice fortification through Ultra Rice technology. The 18th International Conference on Bioencapsulation, Porto, Portugal. October 2010.
- Li, Y. O., Diosady, L. L., Microencapsulation-based technologies for effective delivery of micronutrients in fortified staple foods. Technical paper submitted to *The 17th International Conference on Bioencapsulation*, Groningen, Netherland, 2009, pp. 48-49.
- Jin, F. X., Li, Y., Zhang, C. Z., Yu, H. S., Two enzyme fermentation kinetics of thermophilic *Bacillus sp. JF*. *The 5th China-Japan Joint Symposium on Enzyme Engineering*, 1998, pp. 86-87.

Technical Reports

- Li, Y. O. and Diosady, L. L., Analysis of iodine fortified salt samples from Yemen (over three hundred samples) – Final report prepared for the Micronutrient Initiatives (MI), Jan – Aug 2009.
- Diosady, L. L., Yadava, D., Li, Y. O., Microencapsulation-based technologies for the double fortification of salt with iron and iodine – Progress report prepared for the Micronutrient Initiatives (MI), Feb 2009.
- Diosady, L. L. and Li, Y. O., Ultra Rice[®] process and product refinement - Phase II interim report prepared for the Program for Appropriate Technology in Health (PATH), Jan 2009.
- Li, Y. O. and Diosady, L. L., Iodine meter validation – Technical report prepared for the Micronutrient Initiatives (MI), Jan 2009.
- Li, Y. O. and Diosady, L. L., Iodine field test kit, “MBIKITS”, validation – Technical report prepared for the Micronutrient Initiatives (MI), Jan 2009.

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- Diosady, L. L. and Li, Y. O., Ultra Rice[®] process and product refinement - Phase I final report prepared for the Program for Appropriate Technology in Health (PATH), May 2008.
 - Li, Y. O., Ultra Rice[®] technology transfer in Brazil – Field travel report prepared for the Program for Appropriate Technology in Health (PATH), May 2008.
 - Yadava, D., Li, Y. O., Diosady, L. L., Standard Operation Protocols (SOPs) for pilot-testing extrusion-based iron premix production – Prepared for the Micronutrient Initiatives (MI) for field study of DFS technology, Feb 2008.
 - Li, Y. O. and Diosady, L. L., Preliminary investigation of folic acid addition to Guatemalan salt and sugar – Final report prepared for the Micronutrient Initiatives (MI), Dec 2007.
 - Diosady, L. L. and Li, Y. O., Upgrading of Ultra Rice[®] – Interim report prepared for the Program for Appropriate Technology in Health (PATH), Nov 2007.
 - Li, Y. O. and Diosady, L. L., Literature survey on folic acid – its chemistry and applications in food fortification – Report prepared for the Micronutrient Initiatives (MI), March 2007.
 - Diosady, L. L. and Li, Y. O. Final report on development and stability testing of an iron-containing formulation of Ultra Rice[®] - Prepared for the Program for Appropriate Technology in Health (PATH), May 2005.
 - Diosady L. L. and Li, Y. O., Phase I report on the development and stability testing of an iron-containing formulation of Ultra Rice[®] - Prepared for the Program for Appropriate Technology in Health (PATH), Aug 2004.

Conference Presentations

- Li, Y. O., Diosady, L. L., Jankowski, S., Microencapsulation-based micronutrient delivery systems and their applications in rice fortification through Ultra Rice technology, *IFT Annual Conference*, July 17-21, 2010, McCormick Place, Chicago, IL, USA. (Poster presentation)
- Li, Y. O., Effective strategies for global malnutrition problems, *2nd Graduate Student Global Health Research Symposium*, Nov 2009, University of Toronto, Canada. (Oral presenter)
- Li, Y. O., Diosady, L. L., Microencapsulated-based technologies for effective delivery of micronutrients in fortified staple foods, *17th International Conference on Bioencapsulation*, Sept 2009, Netherland. (Oral presenter)
- Li, Y. O., Palynchuk, K., Diosady, L. L., Folic acid stability in salt double fortified with iodine and folic acid, *11th Canadian Society of Chemical Engineering (CSCHE) Ontario-Quebec Biotechnology Meeting*, June 2009, University of Waterloo, Canada. (Poster presenter).
- Palynchuk, K., Li, Y. O., Diosady, L. L., Fortified rice premix formulation: stabilization of vitamin A in the presence of iron, *11th CSCHE Ontario-Quebec Biotechnology Meeting*, June 2009, University of Waterloo, Canada.
- Li, Y. O., Engineering solutions to combating the global nutrition problem of micronutrient deficiencies, *1st Graduate Student Global Health Research Symposium*, May 2009, University of Toronto, Canada. (Oral presenter)
- Li, Y. O., Yadava, D., Lo, K., Diosady, L. L., Microencapsulated ferrous fumarate made by extrusion coupled with glassy polymer coatings, *9th CSCHE Ontario-Quebec Biotechnology Conference*, May 2007, Toronto, Canada. (Oral presenter)
- Li, Y. O., Diosady, L. L., Jankowski, J., Stability of multiple-fortified Ultra Rice[®], *26th Joint AAFC/CIFST Conference* (Agriculture and Agri-Food Canada/Canadian Institute of Food Science and Technology), May 2006, Montreal, Canada. (Oral presenter)
- Li, Y., Diosady, L.L., Jankowski, J., Stability of micronutrients in the presence of encapsulated ferrous fumarate in rice flour, *55th Canadian Chemical Engineering Conference*, Oct 2005, Toronto, Canada. (Oral presenter)

Invited Lecture

- Li, Y. O., Engineering solutions for combating the global problem of micronutrient deficiencies. Oct 2009, invited by Dr. Yvonne Yuan at Ryerson Polytechnic University, Toronto, Canada, as a guest speaker for her 3rd year undergraduate *Food Chemistry* course.

PROFESSIONAL SERVICES

Manuscript Review

July 2010

- On the request of Associate Editor of *Journal of Food Science* reviewed a manuscript with a topic on microencapsulated microalgal oil made by spray drying.

Jan 2010

- On the request of Associate Editor of *Biomacromolecules* reviewed a manuscript with a topic on digestibility of emulsified lipids encapsulated within calcium alginate beads.

Feb 2009

- On the request of Editor-in-chief of *LWT – Food Science and Technology* reviewed a manuscript with a topic on vitamin-fortified rice grain using spraying and soaking.

June 2008

- On the request of Associate Editor of *Journal of the Science of Food and Agriculture* reviewed a manuscript with a topic on the effect of selected iodine carriers on stability of thiamine in processed meats.

March 2008

- On the request of Editor of *Food and Nutrition Bulletin* reviewed a manuscript with a topic on clinical effectiveness of double fortified salt in adolescent girls in India.

Academic Services

August 2010 ~ present

- Serving in the **IFT's Certified Food Scientist Ad Hoc Group** for reviewing the current curriculum design for Food Science Major Program

July 2009 ~ present

- Serving in the **IFT's Food Processing and Packaging Subpanel** for preparation of 2010 IFT Annual Meeting Scientific Programs – proposal/technical paper abstract reviews and short course preparation

July ~ Sept 2009

- Served as a graduate student representative (invited by the vice Dean of Faculty of Engineering, U of T) for preparing the faculty's strategic plan of recruiting graduate students

May ~ August 2006

- Served as a graduate student representative (invited by the department chair) for the department internal review on the development of educational curriculums and research programs

Industrial Experience

2005 ~ present

- Actively involved in the **technology transfer** activities sponsored by two international nutrition-oriented NGOs – the Micronutrient Initiative (MI) and the Program for Appropriate Technology in Health (PATH) for the field studies of Ultra Rice[®] Project and Double Fortification of Salt Project in Brazil, Colombia, India, and China, particularly

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- Was invited by PATH for joining their Ultra Rice[®] team to visit Brazil and to provide technical assistance to a pilot-scale testing
 - Assisted PATH in hiring a technical officer in China for Ultra Rice[®] technology transfer
 - Participated the review of National Standards for Fortified Rice Products for China and Indonesia
 - Drafted Standard Operation Protocols (SOPs) for the technology transfer of Double Fortification of Salt technology in India
 - Assisted technology transfer activities through regular tele-conferences and email correspondence
- Worked as an **independent consultant** and conducted literature reviews and feasibility study for several clients on the topics of:
 - Flax 2015 - opportunities in industrial utilization of flax
 - Natural health product license application from the Health Canada for two products: probiotics product - LB17[®] and natural flax lignan product - Organic Golden[®]
 - Conducted and coordinated 10+ short-term projects for clients from phosphorus analysis in extracted krill oil to verification of different iron and iodine analytical methods
 - Completed 10+ technical reports and 3 presentations for clients with respect to the research progresses in double fortified salt, Ultra Rice[®], and Livade[®] nutrient-enhanced beverages

Professional Trainings

Jan 2010

- Participated in a two-day Professional Development School organized by Advanced Foods & Materials Network (**AFMNet, Canada**) for training their Highly Qualified Personnels (**HQPs**)

June 2009

- Successfully completed with a certificate of **IFT Pre-Annual Meeting Short Course – Microencapsulation in Food Applications**, offered by **Institute of Food Technologists (IFT)**

May 2009

- Participated in a three-day Academic Bootcamp organized by **ONWiE (Ontario Network of Women in Engineering)** for preparing female graduate students and postdoctoral fellows in pursuing academic career.

2006 ~ 2007

- Successfully completed with a certificate of **PPIT (Prospective Professor in Training)** one year program offered by the Faculty of Engineering at University of Toronto, Canada

2003 ~ 2009

- Actively participated in conferences and workshops offered by **OTA (the Office of Teaching Advancement)** and **TATP (Teaching Assistants' Training Program)** at University of Toronto 2003, 2005, and 2007 (3 times)
- Organized and joined **research field trips** with fellow graduate students of the department to visit Dupont R&D center at Kingston, AECL (Atomic Energy of Canada Ltd.) Chalk River Centre, and NRC (National Research Council) at Ottawa, as well as several chemical plants.

PROFESSIONAL MEMBERSHIP:

- 2009 ~ present Chinese American Food Society (CAFS), USA
- 2008 ~ present Institute of Food Technologists (IFT), USA
- 2005 ~ present Canadian Institute of Food Science and Technology (CIFST)
- 2004 ~ present Canadian Society for Chemical Engineers (CSChE)

1996 ~ 2001 Chinese Institute of Food Science and Technology (CIFST)
1995 ~ 2001 Professional Engineer licensed in China

LEADERSHIP EXPERIENCE:

2006 ~ 2007

- **Social director**, Chinese Scholar and Student Association at University of Toronto, Canada

2005 ~ 2007

- **Departmental steward** of CUPE 3902 (Teaching Assistant Union) at University of Toronto

2005 ~ 2006

- **Project coordinator**, Graduate Student Technology Tour in the Leaders of Tomorrow program of CEGSA (Chemical Engineering Graduate Student Association) at University of Toronto, Canada

2004 ~ 2005

- **Social Director and Student Appealing Committee member**, CEGSA (Chemical Engineering Graduate Student Association) at University of Toronto, Canada