

Biographical Sketch

Yixiang Xu, Ph.D.

Assistant Professor of Food Processing and Engineering
Agriculture Research Station,
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EDUCATION

B.Eng. 1993 Southwest Agricultural University-P. R. China, Food Science and Technology
M.S. 1996 Southwest Agricultural University-P. R. China, Food Science and Technology
Ph.D. 2005 University of Nebraska-Lincoln, Food Science and Technology (Focus on Food and Bioprocess Engineering)

Workshop: Hazard Analysis and Critical Control Point (HACCP), UNL, May 2003

RESEARCH EXPERIENCE

- ◇ Assistant Professor, Agricultural Research Station, Virginia State University, 09/2010-present
- ◇ Adjunct Assistant Professor, Department of Biological Systems Engineering, University of Nebraska, 02/2011-02/2016
- ◇ Research Assistant Professor, Department of Biological Systems Engineering, University of Nebraska, 12/2008-09/2010
- ◇ Post-doctorate Research Associate, Industrial Agricultural Products Center, University of Nebraska, 6/2005-11/2008
- ◇ Research Assistant, Food Science and Technology, University of Nebraska, 8/2001-5/2005
- ◇ Assistant Professor, Food Science and Technology, Ocean University of China, 7/1996 - 6/2001

PROFESSIONAL EXPERIENCES

Research Experience

- ◇ Assistant Professor, Agricultural Research Station, Virginia State University, 09/2010-present
- ◇ Research Assistant Professor, Department of Biological Systems Engineering, University of Nebraska, 12/2008-09/2010
- ◇ Post-doctorate Research Associate, Industrial Agricultural Products Center, University of Nebraska, 6/2005-11/2008
- ◇ Research Assistant, Food Science and Technology, University of Nebraska, 8/2001-5/2005
- ◇ Assistant Professor, Food Science and Technology, Ocean University of China, 7/1996 - 6/2001

Teaching Experiences

- ◇ Assistant Professor, Agricultural Research Station, Virginia State University, 09/2010-present
Guest Lecturer
 - a) Implementation of HACCP in Different Food Processing Practices, HMG 499 (Hospitality Seminar). September 15, 2011.
 - b) Food Science Program – From the Farm to the Dinner Table. PLSC 526 (SAS for plant Scientist). February 16, 2012

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- c) Starch Functionality in Food Systems. Diet 385 (Nutritional Biochemistry). October 12, 2012 and September 24, 2013.
- ◇ Research Assistant Professor, Department of Biological Systems Engineering, University of Nebraska, 12/2008-09/2010
Guest instructor
 - a) Principles in Process Engineering, Biological Systems Engineering, University of Nebraska-Lincoln
- ◇ Research Assistant, Food Science and Technology, University of Nebraska, 8/2001-5/2005
Teaching Assistant, 08/2002-12/2002 and 08/2003-12/2003
 - a) Food Chemistry Lab (senior/graduate level), 08/2002-12/2002
 - b) Heat and Mass Transfer (senior/graduate level), 08/2003-12/2003
- ◇ Assistant Professor, Department of Food Science and Technology, Ocean University of China, 07/1996-07/2001
Courses taught:
 - a) Cereal and Soy Processing Technology (senior level)
 - b) Food Processing Technologies (senior level)
 - c) Innovative Food Processing Technologies (senior level)
 - d) Biochemistry Lab (sophomore level)

Supervising Experiences

Employee (2)

- ◇ Edward Sismour, Research Specialist, School of Agriculture, Virginia State University
- ◇ Hui Gao, Technician, Department of Biological Systems Engineering, University of Nebraska

Master Students (4)

- ◇ Melisa Thomas, School of Agriculture, Virginia State University, Expected graduation date, December 2015.
- ◇ Shujing Zhang, Department of Biological Systems Engineering, University of Nebraska-Lincoln, graduation date: August, 2011.
- ◇ Fletcher, Shawntae Nolen, Virginia State University, College of Agriculture, Expected graduation date, May 2015.
- ◇ Sheanell Burton, Virginia State University, Department of Biology, Expected graduation date, May 2015.

Undergraduate students (9)

- ◇ Cory Grizzard, School of Agriculture, Virginia State University
- ◇ Donnica Dean, School of Agriculture, Virginia State University
- ◇ Sheanell Burton, Department of Chemistry, Virginia State University
- ◇ Stephanie Davis, School of Agriculture, Virginia State University
- ◇ Sarah Bragg, School of Agriculture, Virginia State University
- ◇ Alana Languaigne, School of Agriculture, Virginia State University
- ◇ Katryn Day, Department of Chemistry, Virginia State University
- ◇ Lakisha Duckett, Department of Chemistry, Virginia State University

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- ◇ David Johnson, Department of Chemistry, Virginia State University
- ◇ Krystle Jordan, School of Agriculture, Virginia State University
- ◇ Arrieyana Cartier, Department of Biology, Virginia State University

Interns (10)

- ◇ Julie Barbaro, School of Agriculture, Virginia State University
- ◇ Felicia Reese School of Agriculture, Virginia State University
- ◇ Kristin Hill, School of Agriculture, Virginia State University
- ◇ Cristina Shaner, School of Agriculture, Virginia State University
- ◇ Ivy Hakala, School of Agriculture, Virginia State University
- ◇ Stephanie Davis, School of Agriculture, Virginia State University
- ◇ Lantita Benjamin, School of Agriculture, Virginia State University
- ◇ Loivia Allen, School of Agriculture, Virginia State University
- ◇ Teara Hairston, School of Agriculture, Virginia State University
- ◇ Anna Nooe, School of Agriculture, Virginia State University

GRANTSMANSHIP (total amounts of \$880,000)

- (1) Dynamic changes in physicochemical and structural properties of chickpea pastes during the cooking processes. Sabra Dipping Company. (PI) \$8,800. FY 2014.
- (2) Nutritional, functional, and structural properties of raw and processes chickpeas. USDA Evans-Allen. (PI). Formula Fund, FY 2014-2017.
- (3) Fabrication and characterization of antimicrobial biodegradable nanocomposite films for food packaging application. USDA-NIFA-CBG. (PI). \$291,165. FY 2013-2016.
- (4) Building a bridge between farmers and food industry: setting standard criteria for chickpea physicochemical and functional properties for hummus preparation. Virginia Department of Agriculture & Consumer Services. (PI). \$29,186. FY 2013-2015.
- (5) Extend the shelf life of hummus using modified atmosphere packaging technology. Sabra Dipping Company. (PI) \$11,000. FY 2013.
- (6) Food safety research, teaching and outreach program for 1890-land grant universities. ARD Food Safety Consortium. (Co-PI). \$10,000. FY 2012-2013.
- (7) New crops for tobacco farmers in Virginia. II. Chickpea and sesame. Virginia Tobacco Commission. (Co-PI). \$185,000. FY 2013-2016.
- (8) Revitalization of Virginia tobacco farms through high value edamame production: Demonstration, education, and marketing (Phase II). Virginia Tobacco Commission. (Co-PI). \$163,003. FY 2013-2016.
- (9) Effect of blanching and storage conditions on in-pod and shelled vegetable soybean. (Edamame). Virginia Agricultural Council. (PI) \$12,000. FY 2011-2-12.
- (10) Production and post-harvest processing and packaging effects on the quality and safety of freshwater prawn *Macrobrachium rosenbergii* grown by Virginia producers. USDA Evans-Allen. (PI) Formula Fund, FY2011-2014.
- (11) Hybrid hazelnut: an alternative oilseed crop in Nebraska. Nebraska Department of Agriculture Specialty Crop Block Grant Program. (Co-PI) \$25,000. FY08-09.
- (12) Value-added green chemicals from the hemicellulose in DDGS. Nebraska Corn Board. (PI) \$34,032. FY08-09.

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- (13) Nutritional quality and oxidative stability of oil extracted from hybrid hazelnuts grown in Nebraska. Nebraska Department of Agriculture Specialty Crop Block Grant-Farm Bill. (PI). \$25,000. FY08-09.
- (14) Nutritional and anti-nutritional compositions of defatted Nebraska hybrid hazelnut meal. Nebraska Department of Agriculture Specialty Crop Block Grant Program. (Co-PI) \$25,000. FY09-10.
- (15) Identification of mycoflora species and mycotoxin contaminations in Nebraska hybrid hazelnuts and strategies for prevention. Nebraska Department of Agriculture Specialty Crop Block Grant-Farm Bill. (Co-PI) \$30,000. FY 09-10.
- (16) Increasing commercial value of byproducts from hybrid hazelnuts grown in NE-recovery of natural antioxidants and anti-cancer ingredients. Nebraska Department of Agriculture Specialty Crop Block Grant-Farm Bill. (Co-PI). \$30,000. FY 10-11.

PUBLICATIONS

Peer-Reviewed Publications (37)

- (1) Narina, S.S., Bhardwaj, H.L., Hamama, A.A., Burke, J.J., Pathak, S.C., Xu, Y.X. Seed protein and starch qualities of drought tolerant pigeonpea and native tepary bean. *Journal of Agricultural Science*, 6(11), 247-259.
- (2) Park, H., Graef, G., Xu, Y., Clemente, T. 2014. Stacking of a stearyl-ACP thioesterase with a dual silenced palmitoyl-ACP thioesterase and $\Delta 12$ fatty acid desaturase in transgenic soybean. *Plant Biotechnology Journal*. Doi 10.1111/pbi.12209.
- (3) Xu, Y.X., Sismour, E., Grizzard, C., Thomas, M., Pestov, D, Huba, Z., Wang, T., Bhardwaj, H.L. (2014). Morphological, structural, and thermal properties of starch nanocrystals affected by different botanic crops. *Cereal Chemistry*, 91, 383-388.
- (4) Xu, Y.X., Thomas, M., Bhardwaj, H.L. 2014. Chemical composition, functional properties, and microstructural characteristics of chickpea (*Cicer arietinum L.*) seed as affected by varieties and thermal processing. *International Journal of Food Science and Technology*, 49, 1215-1223.
- (5) Xu, Y.X., Grizzard, C., Sismour, E., Bhardwaj, H.L., Li Z. 2013. Resistant starch content, molecular structure and physicochemical properties of starches in Virginia-grown corn, potato, and mungbean. *Journal of Cereals and Oilseeds* 4(1), 10-18.
- (6) Xu, Y.X., Sismour, E.N., Narina, S.S., Dean, D., Bhardwaj, H.L., and Li, Z. 2013. Compositions and properties of seeds and starches from Virginia-grown chickpea (*Cicer arietinum L.*) cultivars. *International Journal of Food Science and Technology*, 48(3), 539-547.
- (7) Rutto, L., Xu, Y.X., Ramirez, E., Brandt, M. 2013. Mineral properties and dietary value of raw and processed stinging nettle (*Urtica dioica L.*). *International Journal of Food Science*, Article ID 857120, 9 pages.
- (8) Rutto, L., Xu, Y.X., Brandt, M., Ren, S., and Kering, M. 2013. Juice, ethanol, and grain yield potential of five sweet sorghum (*Sorghum bicolor [L.] Moench*) cultivars. *Journal of Sustainable Bioenergy Systems*, 3, 113-118.
- (9) Xu, Y.X., Sismour, E.N., Parry, J., Hanna, M.A., Li, H.W. 2012. Nutritional composition and antioxidant activity in hazelnut shells from US-grown cultivars. *International Journal of Food Science and Technology* 47(5): 940-946.

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- (10) Xu, Y.X., Sismour, E.N., Pao, S., Rutto, L., Grizzard, C., and Ren, S. 2012. Textural and microbiological qualities of vegetable soybean (edamame) affected by blanching and storage conditions. *Journal of Food Processing and Technology* 3:7.
- (11) Narina, S.S., Xu, Y.X., Hamama, A.A. Phatak, S.C., and Bhardwaj, H.L. 2012. Effect of cultivar and planting time on resistant starch accumulation in pigeonpea grown in Virginia. *ISRN Agronomy*, Article ID 576471, 4 pages.
- (12) Zhang, S.J., Xu, Y.X., and Hanna, M.A. 2012. Pretreatment of corn stover with twin-screw extrusion followed by enzymatic saccharification. *Applied Biochemistry and Biotechnology* 166 (2): 458-469.
- (13) Zhang, S.J., Keshwani, D.R., Xu, Y.X. and Hanna, M.A. 2012. Alkali combined extrusion pretreatment of corn stover to enhance enzyme saccharification. *Industrial Crops and Products* 37 (1): 352-357.
- (14) Xu, Y.X., Bianchini, A., and Hanna, M.A. 2011. Evaluation of Mold and Mycotoxin Contaminations in Hybrid Hazelnuts Grown in Nebraska. *Journal of Food Processing and Technology*, 2, 5.
- (15) Xu, Y.X., and Hanna, M.A. 2011. Nutritional and anti-nutritional compositions of defatted Nebraska hybrid hazelnut meal. *International Journal of Food Science and Technology*, 46, 2022-2049.
- (16) Xu, Y.X., and Hanna, M.A. 2010. Hydrolysis of hemicellulose in DDGS using dilute acid. *Industrial Crops and Products*, 32 (3), 512-517.
- (17) Xu, Y.X., and Hanna, M.A. 2010. Nutritional quality and oxidative stability of oil extracted from hybrid hazelnuts. *International Journal of Food Science and Technology*, 45 (11), 2329-2336.
- (18) Xu, Y.X., Hanna, M.A. and Isom, L. 2010. Adding value to carbon dioxide from ethanol fermentations. *Bioresource Technology*, 101 (10), 3311-3319.
- (19) Xu, Y.X., and Hanna, M.A. 2010. Evaluation of Nebraska hybrid hazelnuts: nut and kernel characteristics, proximate, oil and protein compositions. *Industrial Crops and Products*, 31 (1), 84-91.
- (20) Xu, Y.X. and Hanna, M.A. 2009. Synthesis and characterization of hazelnut oil-based biodiesel. *Industrial Crops and Products*, 29 (2-3), 473-479.
- (21) Xu, Y.X. and Hanna, M.A. 2008. Morphological and structural properties of two-phase coaxial jet electrosprayed BSA-PLA capsules. *Journal of Microencapsulation*, 25 (7), 469-477.
- (22) Xu, Y.X., Hanna, M.A., and Weber, R. 2008. Compaction of corn distillers dried grains. *Cereal Chemistry*, 85 (2), 158-164.
- (23) Xu, Y.X., Hanna, M.A., Isom, L. 2008. "Green" chemicals from renewable agricultural Biomass-a mini review. *The Open Agriculture Journal*, 2, 54-61.
- (24) Xu, Y.X., Hanna, M.A., and Josiah, S.J. 2007. Hybrid hazelnut oil characteristics and its potential oleochemical application. *Industrial Crops and Products*, 26, 69-76.
- (25) Xu, Y.X., and Hanna, M.A. 2007. Effect of eggshell powder as nucleating agent on the structure, morphology and functional properties of normal corn starch foams. *Packaging Science and Technology*, 20, 165-172.
- (26) Xu, Y.X., and Hanna, M.A. 2007. Synthesis and characterization of tripolyphosphate (TPP) cross-linked chitosan capsules using electrospraying technique, *Journal of Microencapsulation*, 24 (2), 143-151.

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- (27) Lee, S.-Y., Xu, Y.X., Hanna, M.A. 2007. Tapioca starch-poly(lactic acid)-based nanocomposite foams as affected by type of nanoclay. *International Polymer Processing*, 22 (5), 429-435.
- (28) Xu, Y.X., and Hanna, M.A. 2006. Electrospray encapsulation of water-soluble protein with polylactide. Effects of formulations on encapsulation efficiency and release. *International Journal of Pharmaceutics*, 320 (1-2), 30-36.
- (29) Xu, Y.X., Ren, X., Hanna, M.A. 2006. Chitosan/clay nanocomposites preparation and characterization. *Journal of Applied Polymer Science*, 99 (4), 1684-1691.
- (30) Xu, Y.X., Skotak, M., Hanna, M.A. 2006. Electrospray encapsulation of water-soluble protein with polylactide. I Effects of formulations and process on morphology and particle size. *Journal of microencapsulation*, 23 (1), 69-78.
- (31) Xu, Y.X., Miladinov, V., and Hanna, M.A. 2005. Starch acetate-maleate mixed ester preparation and characterization. *Cereal Chemistry* 82(3): 336-340.
- (32) Xu, Y.X., Zhou, J., and Hanna, M.A. 2005. Melt-intercalated starch acetate nanocomposite foam as affected by type of organoclay. *Cereal Chemistry* 82(1): 105-110.
- (33) Xu, Y.X., and Hanna, M.A. 2005. Preparation and properties of biodegradable foams from starch acetate and poly (tetramethylene adipate-co-terephthalate). *Carbohydrate Polymer* 59(4): 521-529.
- (34) Xu, Y.X., Dzenis, Y.A., and Hanna, M.A. 2005. Water absorption, thermal, and biodegradability of starch acetates foams. *Industrial Crops and Products* 21(3): 361-368.
- (35) Xu, Y.X., and Hanna, M.A. 2005. Physical, mechanical, and morphological characteristics of extruded starch acetate foams. *Journal of Polymer and Environment* 13(3): 221-230.
- (36) Xu, Y.X., Kim, K.M., Hanna, M.A., and Nag, D. 2005. Chitosan-starch composite film: Preparation and characterization. *Industrial Crops and Products* 21(2): 185-192.
- (37) Xu, Y.X., Miladinov, V., and Hanna, M.A. 2004. Synthesis and characterization of starch acetates with high degree of substitution. *Cereal Chemistry* 81 (6): 735-740.

Invited Book Chapters (3)

- (1) Hanna, M.A., Guan, J.J., and Xu, Y.X. 2006. Starch-based biodegradable packaging. Chapter in *Encyclopedia of Agricultural, Food and Biological Engineering (First edition)* Published on March 27, 2006.
- (2) Hanna, M.A., and Xu, Y.X. 2008. Starch-fiber blends composite. Book chapter in *Biodegradable Polymeric Blends and Composite from Renewable Resources*. Published on October 2008. ISBN: 978-0-470-14683-5.
- (3) Xu, Y.X. Hanna, M.A. 2009. Starch-based biodegradable packaging. Chapter in *Encyclopedia of Agricultural, Food and Biological Engineering (Second edition)*.

International/National Conference Presentations (15)

- (1) Xu, Y.X., Sismour, E., Grizzard, C., Thomas, M., Pestov, D. 2014. Morphological, structural, and thermal properties of starch nanocrystals affected by different botanic origins. American Society of Agricultural and Biological Engineers Annual Meeting, July 13-16, 2014, Montreal, Canada.
- (2) Xu, Y.X. 2013. Resistant starch as a prebiotic ingredient in functional food development. 17th Biennial Symposium of the Association of 1890 Research Directors, Inc., April 7-10, 2013. Jacksonville, FL.

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- (3) Xu, Y.X., Sismour, Pao, S., Rutto, L., Ren, S. 2012. Blanching and cold storage to enhance quality and shelf-life of vegetable soybean (Edamame). IFT Annual Meeting, June 25-28, 2012,
- (4) Xu, Y.X., Hanna, M.A. Dilute acid hydrolysis of hemicellulose in distiller's dried grains with soluble. AACC International Annual Meeting, September 13-16, 2009, Baltimore, MD.
- (5) Xu, Y.X., Hanna, M.A., and Weber, R. Compaction of corn distillers dried grains. 7th Corn Utilization & Technology Conference, June 2-4, 2008, Kansas City, MO.
- (6) Xu, Y.X., Hanna, M.A., and Weber, R. Densification of corn distillers dried grains using response surface methodology. AACC International Annual Meeting, October 7-10, 2007, San Antonio, TX. Las Vegas, NV.
- (7) Xu, Y.X. and Hanna, M.A. Effect of eggshell powder as nucleating agent on the structure, morphology and functional properties of normal corn starch foams. AACC International Annual Meeting, September 17-20, 2006, San Francisco, CA.
- (8) Xu, Y.X., and Hanna, M.A. Melt-intercalated starch acetate nanocomposite foams as affected by type of organoclay. 6th Corn Utilization & Technology Conference, June 5-7, 2006, Dallas, TX.
- (9) Xu, Y.X., and Hanna, M.A. Electrospray atomization for bovine serum albumin encapsulation into poly lactic acid. AACC International Annual Meeting, September 11-14, 2005, Orlando, FL.
- (10) Xu, Y.X., and Hanna, M.A. Preparation and characterization of chitosan/clay nanocomposite films. IFT Annual Meeting, July 15-20, 2005, New Orleans, LA.
- (11) Xu, Y.X., and Hanna, M.A. Development of starch acetate based biodegradable loose-fill packaging. AACC International Annual Meeting, September 19-22, 2004, San Diego, CA.
- (12) Xu, Y.X., and Hanna, M.A. Functional properties of starch acetate foams as affected by DS and solvent types. IFT Annual Meeting, July 12-16, 2004, Las Vegas, NV.
- (13) Xu, Y.X., and Hanna, M.A. Preparation and properties of biodegradable foams from starch acetate and poly (tetramethylene adipate-co-terephthalate). 4th Corn Utilization & Technology Conference, June 7-9, 2004, Indianapolis, IN.
- (14) Xu, Y.X., and Hanna, M.A. Preparation and characterization of chitosan-starch composite film. 12th World Food Science and Technology Congress, July 16-20, 2003, Chicago, IL.
- (15) Xu, Y.X., Hanna, M.A., and Marx, D.B. Effects of reaction conditions on starch acetylation. IFT Annual Meeting, July 12-16, 2003, Chicago, IL.

HONORS AND AWARDS

- ◇ Five Years of Dedicated Service Award, University of Nebraska-Lincoln (2010)
- ◇ Invited Moderator at American Association of Cereal Chemist International Annual Meetings (2005-2007)
- ◇ Invited Reviewer for the Leaders Opportunity Fund of The Canada Foundation for Innovation (2009)
- ◇ Franklin & Orinda Johnson Fellowship (2004-2005)
- ◇ Milton E. Mohr Fellowship (2003-2004)
- ◇ John and Louise Skala Distinguished Fellowship (2002-2003, 2003-2004, 2004-2005)
- ◇ AACC Engineering and Processing Division Travel Award (2004)

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MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

- ◇ Institute of Food Technologist (IFT)
- ◇ American Society of Agricultural and Biological Engineers (ASABE)
- ◇ Virginia Academy of Science

PROFESSIONAL AND UNIVERSITY SERVICES

- ◇ Editorial board member of Journal of Food Processing and Technology
- ◇ Reviewer for various high-rank refereed Journals
- ◇ Panelist for USDA-NIFA Improving Food Quality panel
- ◇ Committee member for Faculty Policy Committee at Virginia State University
- ◇ Serve as recruiting and standing committees in Department and School levels