LU-KWANG JU

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EDUCATION

Doctor of Philosophy (1988), Master of Science (1985)
Chemical Engineering, State University of New York at Buffalo, Buffalo, New York.

Bachelor of Science (1980)
Chemical Engineering, National Taiwan University, Taiwan, Republic of China

EXPERIENCE

The University of Akron, Akron, OH

2014-date Distinguished Professor, Department of Chemical & Biomolecular Engineering
2005-2014 Professor, Department of Chemical & Biomolecular Engineering
2005-2013 Department Chair, Department of Chemical & Biomolecular Engineering
2000-2005 Professor, Department of Chemical Engineering
1995-2000 Associate Professor, Department of Chemical Engineering
1990-1995 Assistant Professor, Department of Chemical Engineering

BioChem Technology, Inc., Malvern, PA

1987-1990 Senior Research Engineer
On-line Monitoring and Control of Wastewater Treatment (WWT) Processes
Use of Liquid Carriers in Tissue Culture for Aeration (PI: NASA SBIR Phase II)
Development and Application of Liquid Membrane Emulsions for in-situ Removal of Metabolic Wastes in Cell Culture (PI: NASA SBIR Phases I & II)

AFFILIATIONS AND HONORS

Fellow, American Institute for Medical and Biological Engineering
Editor, Biocatalysis and Agricultural Biotechnology (Elsevier)
Associate Editor, Journal of Surfactants and Detergents (AOCS Press/Wiley)
Member of Executive Committee for Ohio Bioprocess Research Consortium
Chairperson, American Oil Chemists' Society Biotechnology Division (2018-present); previously as Vice Chairperson, Secretary, and Newsletter editor (since 2012)
Member, International Advisory Board, Department of Chemical and Material Engineering, Tunghai University, Taichung, Taiwan
Member of American Chemical Society and American Oil Chemists' Society

2017 Archer Daniels Midland (ADM) Award for Best Paper in Protein and Co-Products in the category of engineering/technology for our paper titled "*Optimization of Enzymatic Process Condition for Protein Enrichment, Sugar Recovery and Digestibility Improvement of Soy Flour*" [JAOCS (2016) 93:1063-1073].
2003 Louis A. Hill Award, College of Engineering, University of Akron
2001 Outstanding Researcher Award, College of Engineering, University of Akron
1997 NASA-ASEE Summer Faculty Fellowship
1996 Favorite Faculty Member honored by Omicron Delta Kappa and Mortar Board
1989 NASA Tech Brief Award

RESEARCH INTEREST

Renewable biofuel and chemical feedstock

- Enzymatic separation of soy proteins and carbohydrates from soybean meal, for aquaculture and industrial uses of soy proteins
- Effective and environmentally friendly biopesticide for soy and other crops
- Phagotrophic algal platform for waste/water treatment and waste organics conversion to biofuel feedstock and other bioproducts
- Biomass conversion – guayule (rubber-bearing desert plant) biomass utilization, supercritical explosion and hydrolysis for biomass pretreatment
- Cellulase production – related fungal metabolism and kinetic modeling, novel process coupled with sophorolipid production for effective induction, affinity foam fractionation for environment-friendly and cost-effective enzyme collection and separation
- Production and applications of biosurfactants (rhamnolipids and sophorolipids) and sugar alcohols (arabitol and xylitol)

Environmental bioengineering

- Biofilm and microbe-influenced corrosion
- Monitoring/control of biological wastewater treatment and sludge digestion processes, particularly by using online fluorescence technology
- Biosurfactant-facilitated remediation
- Bacterial dissimilative nitrate/nitrite reduction (*e.g.* denitrification) and nitrification

Others

- Production of cyanobacterial gas vesicles for gas transfer in medical applications and cell/tissue cultures
- Development of denitrifying fermentation technology for production of biological materials

FUNDED RESEARCH

1. *Enzyme Processes to Maximize Value Creation from Soy Carbohydrate Waste Streams*, United Soybean Board, 10/1/18-9/30/19, $ 126,300.

2. *Development of a repair and permeability reducing additive for concrete subjected to unpredicted cracking*, Vandex International Ltd. (RPM Belgium), 6/1/18-5/31/20, $246,452 (Co-PI: Anil Patnaik; Ju portion of budget: $142,112).

3. *Soy hull nanocellulose as high-value rubber filler*, Ohio Soybean Council, 1/1/18-3/31/19, $60,000.

4. *Enzyme Processes to Maximize Value Creation from Soy Carbohydrate Waste Streams*, United Soybean Board, 10/1/17-9/30/18, $74,410.

5. *Microbiologically Influenced Corrosion of Stainless Steel 304L in Water Systems*, DoD FY13-TCC Project, 7/1/2013-6/30/2018, $212,129 (Co-PIs: Bi-min Zhang Newby and Gang Cheng).

6. *Rhamnolipids as Environment-Friendly Biopesticide for Soybean Production*, Ohio Soybean Council, 4/1/2013-9/30/2017, $232,663.

7. *Harvesting Phagotrophic Algae from High Strength Wastewater and Biological Sludge*, Ovivo, 10/15/2015-10/14/2016, $67,346

8. *Enzymatic Separation of Soy Proteins and Carbohydrates,* United Soybean Board, 10/1/10-9/30/16, $545,572 (excluding matching $499,854).

9. *Incorporating Phagotrophic Algae in Sludge Digestion Processes*, Ovivo, 7/1/2014-6/30/2015, $67,160.

10. *Improved Soy Based Fillers for Sheet Molding Compound*, United Soybean Board (subcontract from Premix, Inc.), 10/1/2012-3/31/2013 & 9/1/2013-6/30/2014, $60,061.

11. *Producing algal lipids from wastewater as economic and sustainable biodiesel feedstock*, Ohio Water Development Authority, 1/1/10-12/31/14, $199,994 from OWDA, $455,964 total with matching from UA, City of Akron, and Creative Fuel.

12. *Environmentally Benign Production of Rubber Chemicals,* Jiangsu Sinorgchem Technology, 7/1/2010-6/30/2012, $66,000.

13. *Monitoring of Microbiologically Influenced Corrosion and Its Correlation with Different Metabolic Activities*, DOD Corrosion program, 5/1/10-6/30/13, ~$90,000 (Ju's portion, PI: Bi-min Zhang Newby, co-PI: Gang Cheng, Joe Payer).

14. *Supercritical Methods for Biorefinery of Rubber-Bearing Guayule Biomass*, Biomass Research and Development Initiative, US Department of Agriculture and US Department of Energy, 5/12/08-5/11/13, $743,904 from federal agents, $1,618,732 total with matching from The University of Akron and Yulex company (co-PI: J. Richard Elliott, Katrina Cornish [Yulex]).

15. *Development of a Microbial Factory for Efficient Conversion of Biodiesel Glycerol to Value-Added Products*, US Department of Transportation (Sun Grant Initiative), 11/1/07-7/31/12, $124,000 (Ju's portion; PI: Sang-Jin Suh, Auburn University).

16. *Effects of a Marine Product Antifoulant, Zosteric Acid, on Biofouling and Biofilm Development: Multilevel Mechanistic Study from Microbial Receptor to Biofilm Morphology*, Sea Grant, 3/1/07-2/28/11, $314,946 (co-PI: Bi-min Zhang Newby [UA] and Sathish Sundaram [Henry Ford Health System, Detroit, MI]).

17. *Producing Arabitol and/or Xylitol from Biodiesel Glycerol*, United Soybean Board, 10/1/06-9/30/10, $248,288 (co-PI: Tsung M. Kuo, USDA-ARS-NCAUR).

18. *Evaluation of Guayule Biomass as Feedstock for Microbial Fermentation*, Yulex, 6/1/06-5/31/07, $48,890.

19. *Coupling Cellulase Fermentation with in situ Foam Fractionation,* USDA, 9/16/01-8/15/06, $911,000 (co-PI: Robert T. Tanner [Vanderbilt University] and Patrick Lee [Tennessee Valley Authority]).

20. *Investigating Fluorescence Characteristics of Wastewater in Triazine-Manufacturing Plant,* Syngenta Crop Protection, Inc., (St. Gabriel, LA), 6/1/03 – 6/30/05, $19,500.

21. *Novel Single-Tank Symbio Process: Biological Nutrient Removal Activities and Subsequent Sludge Digestion,* Enviroquip, Inc., (Austin, TX), 12/1/01 - 6/30/05, $74,213.

22. *Study Microaerobic Metabolism Using Luminescence Techniques,* NSF, 9/1/01-8/31/04, $245,518.

23. *Application of Thermal Treatment for Class A Biosolids*, Enviroquip, Inc., (Austin, TX), 6/1/01 - 9/30/01, $5,000.

24. *Phosphorus Release in Aerobic Digestion of Wastewater Biosolids*, Enviroquip, Inc., (Austin, TX), 7/1/00 - 6/30/01, $31,282.

25. *On-line Fluorescence Study of Aerobic Sludge Digestion: Phase I,* Enviroquip, Inc. (Austin, TX), 3/1/00 - 6/30/00, $50,890.

26. *Meeting Class B with Aerobic Sludge Digestion*, Enviroquip, Inc. (Austin, TX), 4/15/1999 - 10/14/1999, $26,370.

27. *Novel Denitrification-Enhanced Fermentation Technology: Rhamnolipid Production by* Pseudomonas aeruginosa, National Science Foundation, 1/15/1999 - 12/31/1999, $44,100; Ohio Board of Regents - $11,100.

28. *Development of Oxygen Measuring Devices Using Fluorescence and/or Phosphorescence Signals*, BioChem Technology, Inc. (King of Prussia, PA), 9/1/1998 - 8/31/1999, $12,054.

29. *Biological Wastewater Treatment Processes Monitored by NADH Probes*, BioChem Technology, Inc. (King of Prussia, PA), $55,000 (plus equipment supply and maintenance), 9/1/97-8/31/99.

30. *Study of Aerobic Sludge Digestion Systems by On-line Fluorescence Technology*, Ohio Urban University Program, 9/1/1997 - 8/31/1998, $15,000.

31. *Ohio Bioprocessing Research Consortium* (with Ohio State University, Cleveland Clinic Foundation and Battelle), OBR Investment Fund, 5/1/96-4/30/99, $1,500,000. (UA portion $419,000).

32. *Biomass Conversion to Ethanol*, REnewed energy (Warrensville Heights, OH), 3/1/1994 - 2/28/1995, $9,000.

33. *Assessment of Population Fractions of Denitrifiers in Wastewater Treatment Processes by On-line Culture Fluorescence Technology*, 11/13/92-1/31/94, Ohio Board of Regents, $3,500.

34. *Evaluation of Mass Transfer Characteristics of Encapsulated Liquid Membrane Emulsions Using a Simulated System*, BioChem Technology, Inc. (King of Prussia, PA), 8/15/91-8/14/93, $23,505.

35. *Enhancing Production in Viscous Fermentations by Water-in-Oil Cultivation Technology*, Air Products and Chemicals, Inc. (Allentown, PA), $3,500.

36. *Development and Application of Liquid Membrane Emulsions in Cell Culture*, NASA, 1/15/1989 - 1/14/1992, $550,000.

Internal Grants

37. *Rhamnolipid-based polymers*, UA NSF I-Corps Sites award, 2/18/15 – 2/28/16, $2,500.

38. *Hybrid GPCR-microcantilever system for high throughput prostate cancer drug screening and biomarker sensing*, UA Integrated Biosciences Initiative, 7/1/07 – 6/30/08, $8,000 (co-PI: B.-m. Zhang Newby [CBE], J. Zhe [ME], S. Sundaram [Henry Ford Health System]).

39. *Biological Wastewater Treatment Using Membrane Bioreactors*, UA Faculty Research Grant, 12/1/03 - 1/31/05, $3,500.

40. *Monitoring Nitrifiers by Reporter Genes*, UA Faculty Research Grant, 10/30/00 - 1/31/02, $3,500.

41. *Enhancing Industrial Fermentation by Denitrification: Rhamnolipid Production from Vegetable Oil*, UA Faculty Research Grant, 11/10/1997 - 1/31/1999, $3,500.

42. *Biosurfactant-Facilitated Bioremediation of Non-Aqueous Phase Contaminants*, College Environmental Engineering Grant Competition, 1996, $6,700 (co-PI: T. J. Cutright [CE]).

43. *Activated Sludge Kinetics Using NADH Fluorescence*, College Environmental Engineering Grant Competition, 1996, $3,500 (co-PI: W. B. Arbuckle [CE]).

44. *Development of Cyanobacterial Gas Vesicles for Oxygenation of Animal Cell Culture*, UA Faculty Research Grant, 11/10/1994 - 1/31/1996, $3,000.

45. *Biodegradation of Hydrocarbons under Microaerobic, Nitrate-Respiring Conditions*, UA Faculty Research Grant, 11/13/93-1/31/95, $3,000.

46. *Enhancing In-Situ Biodegradation of Aquifer Petroleum Contaminants by Applying Emulsion and Surfactant Technologies*, UA Faculty Research Grant, 3/13/1991 - 1/31/1992, $4,495.

47. *A Novel Emulsion Technology for Enhancing Production and Cell Cultivation in Viscous Fermentations*, UA Faculty Research Grant, 11/1/90-1/31/92, $4,442.

PATENTS

Licensed

1. Digestion of waste activated sludge with algae. (L.-K. Ju, H. K. Trivedi) U.S. Patent No. 9,783,442, October 10, 2017 (USPTO 62/056,341).

2. Producing algal biomass and products from solid organic materials. (L.-K. Ju, C. Li, S. Xiao) US Patent No. 10,000,402, June 19, 2018 (USPTO 61/829,311).

3. Multi-step method for producing algae products (L.-K. Ju, C. Li) CA2711257, 8/30/2016; EP2244551, 3/2/2016; ES2566752, 4/15/2016; US pending.

4. Treatment of oil and grease in water using algae. (L.-K. Ju, M. Hosseini) USPTO 61/861,511 (Application number: US 14/909,522; UA 1062, pending).

5. Algae having intracellular lipid particles and high lipid content. (L.-K. Ju, C. Li) PCT 13/959,098; original title "Formation of intracellular lipid particles to obtain very high lipid contents and increase lipid yield and productivity" (UA 969, pending).

Under license negotiation/consideration

6. Improved enzyme based methods of separating protein from protein-rich material (UA 1211). (L.-K. Ju) US PTO Application No. 15/133,777 (April 20, 2016)

7. Enzyme-based protein separation and enrichment from soy meal, wheat meal, and other protein-rich materials derived from plant seeds, fruits and other biomass. (L.-K. Ju, A. Loman, A. Coffman, Q. Li, S. Koganti) US Patent No. 9,809,630, 11/7/2017.

Approved

8. Production of arabitol. (L.-K. Ju, A. A. Loman) (UA 1282) US PTO Application No. 15/648,806, 1/18/2018. Approved to issue in September 2019.

9. Materials derived from fermentation-produced rhamnolipids and methods of production. (L.-K. Ju, S. Miao) US Patent No. 10,344,304, July 9, 2019 (UA 1114 PRV filed 3/20/2014, USPTO 61/955,849, PCT filed 3/19/2015).

10. Rhamnolipid based biopesticides. (L.-K. Ju, A. Sancheti) US Patent No. 9,992,998, June 12, 2018 (USPTO Application number: 15/463173).

11. Wound dressings with enhanced gas permeation and other beneficial activities. (L.-K. Ju, S. Dashtbozorg, N. Vongpanish) US Patent No. 9,468,700, 10/18/2016. (Provisional application filed on 1/25/2012, serial number 61/590,452; non-provisional application filed on 1/25/2013.)

12. Method for using semi-synthetic gas vesicles as ultrasound contrast agent, Ju, Lu-Kwang, US Patent No. 9,107,949, 8/18/2015.

13. Affinity foam fractionation for collection and purification of materials (UA 540). China Patent No. CN101166423 B (Mar 25, 2015); European Patent to be granted; US Patent application abandoned (10/25/2016).

14. Production of arabitol (UA 843). US Patent No. 9,062,329 (June 23, 2015); Disclosure of Invention submitted May 19, 2010; provisional patent application filed 7/23/2010; formal application filed 7/22/2011.

15. Process for producing cellulase (UA 629 US). US Patent No. 8,148,108 (April 3, 2012); application filed on 3/31/2008.

16. Gas Vesicles of Cells and Methods of Harvesting, Isolating, and Modifying Same. US Patent No. 7,022,509 (April 4, 2006).

17. Method of removing gas from a site using gas vesicles of cells. U.S. Patent No. 6,413,763 (July 2, 2002).

18. Compositions and methods relating to the production, isolation, and modification of gas vesicles. U.S. Patent No. 6,036,940 (March 14, 2000).

Pending

19. Production of fermentation products containing rhamnolipids. (L.-K. Ju, K. Invally) Disclosure of Invention submitted August 23, 2017 (UA 1358). Provisional application filed first on 8/24/2017, serial number USPTO 62/549,483; then refiled on 8/9/2018, USPTO: 62/716,660.

20. Enzyme-based soy processing to separate and collect all major components of soybean as intact oil bodies, protein bodies and hydrolyzed carbohydrate. (L.-K. Ju, A. A. Loman) (UA 1305). Provisional application filed 12/15/2017, serial number USPTO 62/599,365.

21. Method and System for Reducing Free Fatty Acid Content of a Feedstock. (L.-K. Ju, M. Hosseini) (UA 1061 PRV filed 8/2/2013, USPTO 61/861,507, 14/450,601).

22. Method of encapsulation and immobilization (UA 924). United States Provisional Patent Application No. 61/502,574, filed June 29, 2011. PCT/US12/44932 filed June 29, 2012.

23. Methods of Modifying Fungal Morphology (UA 772 PRV). Lu-Kwang Ju, Narayanan Srinivasan, Nicholas V. Callow. US Patent application filed July 28, 2010, Application number 12/845,321.

Disclosed

24. Supercritical methods for biomass pretreatment. Disclosure of Invention submitted (September 18, 2009).

25. Wound dressings with antimicrobial, antifouling, and healing enhancing biologics. Disclosure of Invention submitted (September 16, 2010).

26. Organic Phase Entrapment of Glucose Oxidase in Polymeric Particles. Disclosure 8/18/2007

Abandoned

27. Separation of polyols (UA 850). Disclosure submitted July 13, 2010; provisional application filed 10/1/2010, USPTO 61/388,796.

28. Method of maximizing production of biological products by active non-growing cells. US application filed 04/09/2003.

29. Production of biological materials by simultaneous aerobic and anaerobic respiration. US application filed 04/27/2001.

PUBLICATIONS

Under review

1. Rhamnolipid effects on water imbibition, germination and initial root and shoot growth of soybeans. (A. Sancheti and L.-K. Ju) *Chemosphere* (submitted 5/14/2019).

2. Rhamnolipid productivity in extended stationary phase of *Pseudomonas aeruginosa* fermentation: Factors for discontinued production. (M. Sodagari and L.-K. Ju) *Bioprocess and Biosystems Engineering* (submitted 11/23/2018)

3. The growth of algae on bacteria and its potential for industrial application. (C. Li, B. Woo, L.-K. Ju, J. Qin and H. Trivedi) *Nature Sustainability* (NATSUSTAIN-18071922A; revision submitted 5/9/2019).

4. Harnessing bioreactor environment in *Aspergillus niger* fermentation for effective production of carbohydrase enzymes directed for soybean bioprocessing. (Q. Li, A. A. Loman, S. M. M. Islam, N. V. Callow, C. S. Ray, L.-K. Ju) *Bioresource Technology* (submitted 3/27/2018)

5. Minimization of proteinaceous loss during enzyme processing of soy flour by heat treatment and improved understanding of ionic strength and protease effects. (S. M. M. Islam, A. A. Loman, Q. Li, L.-K. Ju) *Enzyme and Microbial Technology* (submitted 2/8/2018)

6. Elucidation of interfacial layer evolution on carbon steel along sulfate reducing bacterium-induced pitting corrosion by correlating electrochemical impedance spectroscopy monitoring with measurements of bioactivities, biofilm and corrosion deposits. (Y. Chen, H. Castaneda, L.-K. Ju) *Electrochimica Acta* (submitted 2/3/2016)

7. Mechanistic study of corrosion of aluminum alloy 2024 by *Aspergillus niger*. (X. Dai, H. Cong, L.-K. Ju, G. Cheng, B.-m. Zhang Newby*) *Corrosion Science* (submitted 9-8-2015)

8. Corrosion of carbon steel C1010 and aluminum alloy 3003 H14 in the presence of *Pseudomonas aeruginosa* and *Escherichia coli* biofilm. (H. Wang, M. Sodagari, G. Cheng, L.-K. Ju, B.-m. Zhang Newby*) *Corrosion* (submitted 5-6-2014).

9. Controlling the pellet size of *Trichoderma reesei* Rut C-30 by adjusting mixing intensity. (N. Callow and L.-K. Ju) to be submitted

In Print & In Press

1. Eco-friendly rhamnolipid based fungicides for protection of soybeans from *Phytophthora sojae*. (A. Sancheti, L.-K. Ju) *Pest Management Science*; https://doi.org/10.1002/ps.5418 (accepted 3/15/2019)

2. Development of self-crosslinked soy adhesive by enzyme complex from *Aspergillus niger* for production of all-biomass composite materials. (P. Zheng, N. Chen, S.M. M. Islam, L.-K. Ju, J. Liu, J. Zhou, W. Huang, L. Chen, H. Zeng*, Q. Lin*) *ACS Sustainable Chemistry & Engineering* 7(4), 3909–3916 (2019); https://doi.org/10.1021/acssuschemeng.8b04993

3. Glycerol and acetate additions to maximize lipid content in high-density cultures of phagotrophic microalga *Ochromonas danica*. (Z. Lin, C. Li, L.-K. Ju) *Journal of the American Oil Chemists' Society* 96, 231–238 (2019); https://doi.org/10.1002/aocs.12183

4. Conversion of wastewater-originated waste grease to polyunsaturated fatty acids-rich algae with phagotrophic capability. (S. Xiao and L.-K. Ju) *Applied Microbiology and Biotechnology* 103: 695–705 (2019); https://doi.org/10.1007/s00253-018-9477-4

5. A new approach for downstream purification of rhamnolipid biosurfactants. (K. Invally, A. Sancheti, and L.-K. Ju) *Food and Bioproducts Processing* 114, 122-131 (2019); https://doi.org/10.1016/j.fbp.2018.12.003

6. Phagotrophic microalgae production from waste activated sludge under nonsterile conditions (S. Xiao and L.-K. Ju) *Water Research* 145, 190-197 (2018); https://doi.org/10.1016/j.watres.2018.08.029

7. Reclamation of wastewater organics via two-stage growth of bacteria-then-oleaginous phagotrophic algae (C. Li and L.-K. Ju) *Bioprocess and Biosystems Engineering*, 41, 1757-1766 (2018); https://doi.org/10.1007/s00449-018-1998-9

8. Energy-efficient ultrasonic release of bacteria and particulates to facilitate ingestion by phagotrophic algae for waste sludge treatment and algal biomass and lipid production. (S. Xiao and L.-K. Ju) *Chemosphere* 209, 588-598 (2018); https://doi.org/10.1016/j.chemosphere.2018.06.120

9. Leveraging pH profiles to direct enzyme production (cellulase, xylanase, polygalacturonase, pectinase, α-galactosidase, and invertase) by *Aspergillus niger*. (Q. Li, A. A. Loman, N. V Callow, S. M. M. Islam and L.-K. Ju) *Biochemical Engineering Journal* 137, 247-254 (2018); https://doi.org/10.1016/j.bej.2018.06.008

10. Single-step enzyme processing of soybeans into intact oil bodies, protein bodies and hydrolyzed carbohydrates. (A. A. Loman, N. V. Callow, S. M. M. Islam, and L.-K. Ju) *Process Biochemistry* 68, 153-164 (2018); https://doi.org/10.1016/j.procbio.2018.02.015

11. High monomeric sugar yields from enzymatic hydrolysis of soybean meal and effects of mild heat pretreatments with chelators. (S. M. M. Islam, A. A. Loman and L.-K. Ju) *Bioresource Technology* 256, 438-445 (2018); https://doi.org/10.1016/j.biortech.2018.02.054

12. Minimization of fermentation inhibitor generation by carbon dioxide-water based pretreatment and enzyme hydrolysis of guayule biomass. (S. M. M. Islam, J. R. Elliott, L.-K. Ju) *Bioresource Technology* 251, 84-92 (2018); https://doi.org/10.1016/j.biortech.2017.12.032

13. Production of arabitol from enzymatic hydrolysate of soybean flour by *Debaryomyces hansenii* fermentation. (A. A. Loman, S. M. M. Islam, L.-K. Ju) *Applied Microbiology and Biotechnology* 102 (2), 641-653 (2018); https://doi.org/10.1007/s00253-017-8626-5

14. Maximize rhamnolipid production with low foaming and high yield. (M. Sodagari, K. Invally, L.-K. Ju) *Enzyme and Microbial Technology* 110, 79-86 (2018); https://doi.org/10.1016/j.enzmictec.2017.10.004

15. Enhancement of resource recovery and sludge digestion by cultivation of phagotrophic algae with alkali-pretreated waste activated sludge and waste ketchup (C. Li, L.-K. Ju) *Process Safety and Environmental Protection* 113, 233-241 (2018); https://doi.org/10.1016/j.psep.2017.10.004

16. Biolytic effect of rhamnolipid biosurfactant and sodium dodecyl sulfate against phagotrophic alga *Ochromonas danica*. (K. Invally, L.-K. Ju) *Journal of Surfactants and Detergents* 20(5), 1161-1171 (2017) DOI: 10.1007/s11743-017-2005-1

17. Enzyme-based processing of soybean carbohydrate: Recent developments and future prospects. (A. A. Loman, L.-K. Ju) *Enzyme and Microbial Technology* 106, 35-47 (2017); https://doi.org/10.1016/j.enzmictec.2017.06.013

18. CO_2-H_2O based pretreatment and enzyme hydrolysis of soybean hulls. (S. M. M. Islam, Q. Li, A. A. Loman, L.-K. Ju) *Enzyme and Microbial Technology* 106, 18-27 (2017); https://doi.org/10.1016/j.enzmictec.2017.06.011

19. Enzyme recycle and fed-batch addition for high-productivity soybean flour processing to produce enriched soy protein and concentrated hydrolysate of fermentable sugars. (A. A. Loman, S. M. M. Islam, Q. Li, L.-K. Ju) *Bioresource Technology* 241, 252-261 (2017); http://doi.org/10.1016/j.biortech.2017.05.118

20. Soybean hull induced production of carbohydrases and protease among *Aspergillus* and their effectiveness in soy flour carbohydrate and protein separation. (Q. Li, A. A. Loman, A. Coffman, and L.-K. Ju) *Journal of Biotechnology* 248, 35–42 (2017); http://dx.doi.org/10.1016/j.jbiotec.2017.03.013

21. Improved understanding of CO_2–water pretreatment of guayule biomass by high solids ratio experiments, rapid physical expansion, and examination of textural properties. (E. Moharreri, T. Jafari, S. L. Suib, N. Srinivasan, A. F. Ghobadi, L.-K. Ju, J. R. Elliott*) *Ind. Eng. Chem. Res.*, 56 (3), 645–652 (2017); http://pubs.acs.org/doi/abs/10.1021/acs.iecr.6b03318

22. Growth and lipid production of a phagotrophic alga feeding on *Escherichia coli* cells: A new approach for algal biomass and lipid production from wastewater bacteria (Z. Lin and L.-K. Ju) *Environmental Engineering Science* 34(7), 461-468 (2017); DOI: 10.1089/ees.2016.0355

23. Corrosion of aluminum alloy 2024 caused by *Aspergillus niger*. (X. Dai, H. Wang, L.-K. Ju, G. Cheng, H. Cong, B.-m. Zhang Newby*) *International Biodeterioration & Biodegradation* 115, 1-10 (2016); http://dx.doi.org/10.1016/j.ibiod.2016.07.009

24. Optimization of enzymatic process condition for protein enrichment, sugar recovery and digestibility improvement of soy flour. (A. A. Loman, L.-K. Ju) *Journal of the American Oil Chemists' Society* 93(8), 1063-1073 (2016); doi: 10.1007/s11746-016-2854-1

25. Soybean bio-refinery platform: Enzymatic process for production of soy protein concentrate, soy protein isolate and fermentable sugar syrup. (A. A. Loman, S. M. M. Islam, Q. Li, L.-K. Ju) *Bioprocess and Biosystems Engineering* 39(10), 1501-1514 (2016); http://link.springer.com/article/10.1007/s00449-016-1626-5

26. Rhamnolipid adsorption in soil: Factors, unique features, and considerations for use as green antizoosporic agents. (S. Soltani Dashtbozorg, J. Kohl, L.-K. Ju) *Journal of Agricultural and Food Chemistry* 64(17), 3330–3337 (2016); doi: 10.1021/acs.jafc.6b00215

27. Soybean carbohydrate as fermentation feedstock for production of biofuels and value-added chemicals. (A. A. Loman, L.-K. Ju) *Process Biochemistry* 51, 1046-1057 (2016); doi:10.1016/j.procbio.2016.04.011

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2. Simultaneous nitrification and denitrification through low-DO operation. (L.-K. Ju, L. Huang and H. K. Trivedi) Water Environment Federation 79th Annual Conference & Exposition, Dallas, TX, October 21-25, 2006.

3. Phosphorus release in aerobic sludge digestion. (L.-K. Ju, H. K. Shah and J. Porteous) Water Environment Federation 75th Annual Conference & Exposition, Chicago, IL, September 28-October 2, 2002.

4. Cellulase production by *Trichoderma reesei*: Glucose repression and use of wastepaper hydrolyzate as soluble inducing substrate. (L.-K. Ju) 8th International Conference of Biochemical Engineering of China, Hangzhou, Thejiang, April 14-17, 2002.

5. Enzymatic removal of phenol from wastewater. (F.N. Sánchez, M.C. Vargas, B. Suárez, N.E. Ramírez and L.-K. Ju) *In Situ and On-Site Bioremediation: The Sixth International Symposium Proceedings* (2001).

6. Gas microcarriers for cell culture: from perfluorocarbons to cyanobacterial gas vesicles. (L.-K. Ju) *Proceedings of the 3rd US-China ChE Conference* (2000).

7. Rhamnolipid production under denitrification. (L.-K. Ju) *Proceedings of the 3rd US-China ChE Conference* (2000).

8. Production and purification of sophorolipids. (L.-K. Ju and Y. Hu) *Proceedings of 1999 Conference of Food Engineering* (1999).

9. Production of cyanobacterial gas vesicles for use in shear-sensitive cell cultures. (L.-K. Ju, J. M. Segatta, M. J. Zeleznik and A. Sundararajan) *Proceedings of 1999 Conference of Food Engineering* (1999).

10. On-line fluorometric study on biological wastewater treatment processes. (L.-K. Ju, P. B. Nallagatla, H. K. Trivedi, X. Yang and J. F. Lee) *Proceedings of 1995 Mid-America Chinese Professional Annual Convention*, 154-161 (1995).

11. Biological oxygen transfer enhancement in bioreactors. (L.-K. Ju and A. Sundararajan) *Proceedings of 42nd Annual Canadian Chemical Engineering Conference*, 33-34 (1992).

INVITED LECTURES, SEMINARS, WORKSHOPS

1. Lipids from a phagotrophic alga *Ochromonas danica* with versatile substrate capabilities. AOCS-JOCS Joint Symposium (Kobe, Japan), September 6, 2018 (presented as an invited AOCS delegate).

2. BioAlgaNyx™ – A Bioengineered Technology for Resource Recovery and Sludge Management. Webinar for Ovivo national meeting (Salt Lake City, UT), March 8, 2016.

3. Soy-related research. Seminar at Bridgestone Americas Tire Operations, Akron, OH, July 10, 2014.

4. Waste-to-energy via a phagotrophic algae platform. Keynote speech. Biotechnology and Bioengineering Conference, held at Tunghai University, Taichung, Taiwan, June 27-28, 2014.

5. Soybean game changers: Meal competitiveness. Invited talk and panel discussion at CONNECTIONS 2012 U.S. Soy in Action, St. Louis, MO, December 5, 2012.

6. Algae-based biofuel. Invited talk to Northern Ohio Chapter, Air & Waste Management, Akron, OH, November 7, 2012 (PhD student Zhongye Lin presented).

7. Glycolipid biosurfactants produced by microorganisms: Rhamnolipids and sophorolipids. Seminar at Lubrizol Advanced Materials, Inc., Cleveland, Ohio, September 20, 2012.

8. Enzymatic separation of soy proteins and carbohydrates. Invited presentation to United Soybean Board (USB) New Uses Committee, Beau Rivage Resort, Biloxi, MS, February 23, 2011.

9. Production of arabitol, an important biorefinery building block. Seminar at Department of Biological Sciences, Auburn University, Auburn, Alabama, October 29, 2010.

10. Production of biorefinery building block – arabitol by osmotolerant yeast fermentation. Seminar at Department of Chemical and Environmental Engineering, University of Toledo, Toledo, OH, September 16, 2010.

11. Biomass Utilization and Biodiesel Feedstock Development. Seminar at Department of Chemical and Materials Engineering, National Ilan University, Taiwan, June 8, 2010.

12. Biomass Utilization and Biodiesel Feedstock Development. Seminar at Department of Chemical and Materials Engineering, Tunghai University, Taichung, Taiwan, May 24, 2010.

13. Biomass Utilization and Biodiesel Feedstock Development. Afton Chemical Corporation, Richmond, VA. January 29, 2010.

14. Biorefinery: Some Aspects in Lignocellulose Utilization and Biodiesel Sustainability. Plenary lecture. 13th Biochemical Engineering Conference in Taiwan. June 27-28, 2008.

15. Heterocystous Cyanobacteria: Gas Vesicle Production and Others. Seminar at Department of Chemical Engineering and Materials Science, Yuan Ze University, Chung-Li, Taiwan, June 25, 2008.

16. Conversion of Biodiesel Glycerol to Value-Added Bioproducts. Invited talk at International Symposium of Industrial Biotechnology (ISIB) 2007, Beijing, China; August 7-9, 2007.

17. Bioprocess Engineering Research at The University of Akron. Seminar at Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, Taipei, Taiwan, August 2, 2007.

18. Heterocystous Nitrogen-Fixing Cyanobacteria: Gas Vesicle Production and Others. Seminar at Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan, August 1, 2007.

19. Some Applications of Polymers in Bioprocesses. Seminar at Department of Polymer Engineering, The University of Akron, Akron, OH, March 3, 2006.

20. Membrane Bioreactor Technology Workshop: Biohydraulics - Process Optimization Tools and Guidelines. Washington DC, March 1 & Philadelphia, PA, March 2, 2006.

21. Fundamentals of Biohydraulics. Invited talk at Membrane Workshop IX, "Biohydraulics: The Key to Sustaining Optimum MBR Performance" sponsored by Enviroquip, Inc. (Austin, TX). October 30, 2005 at Willard Hotel, Washington, DC (Water Environment Federation 78th Annual Conference & Exposition, Washington, DC, October 30 – November 4, 2005.)

22. Partnership on Developing Value-Added Products from Glycerol as Biodiesel Byproduct. Seminar at USDA-ARS-NCAUR, Peoria, IL, July 22, 2005.

23. Enviroquip Membrane Bioreactor Workshop, Austin, TX, May 12-13, 2005.

24. Biological and Process Fundamentals in Biological Nutrient Removal and Membrane Bioreactor Processes for Wastewater Treatment. Invited speaker for in-house training workshop, Enviroquip, Inc., Austin, TX, May 11, 2005.

25. Gas microcarriers for cell culture: From perfluorocarbons to cyanobacterial gas vesicles. Seminar at Department of Biological Sciences, Auburn University, Auburn, Alabama, October 24, 2003.

26. Membrane biofouling in MBR applications. Invited talk at Membrane Workshop VII, "Membrane Bioreactors for Ultimate Nutrient Removal" sponsored by Enviroquip, Inc. (Austin, TX). October 12, 2003 at Universal Studio in Los Angeles, CA (Water Environment Federation 76th Annual Conference & Exposition, Los Angeles, CA, October 11 - October 17, 2003.)

27. Use of online fluorescence techniques in sludge digestion and wastewater treatment. (L.-K. Ju and L. Huang) Northeast Section of the Ohio Water Environment Association, Canton, OH, January 17, 2003.

28. Aerobic sludge digestion: Effects of low DO and phosphorus release. Northeast Section of the Ohio Water Environment Association, Canton, OH, January 17, 2003.

29. Nitrification and denitrification in biological wastewater treatment. Invited talk at Syngenta Crop Protection, Inc., St. Gabriel, LA, November 14, 2002.

30. Aerobic Digestion Workshop VI, "biological Nutrient Removal: If you nitrify, why not denitrify?" Featured presentation sponsored by Enviroquip, Inc. (Austin, TX). September 29, 2002 at the Museum of Science and Industry in Chicago, IL (Water Environment Federation 75th Annual Conference & Exposition, Chicago, IL, September 28 – October 2, 2002.)

31. Gas microcarriers for cell culture: from perfluorocarbons to cyanobacterial gas vesicles. Seminar at Department of Chemical Engineering, Chinese Culture University, Taipei, Taiwan, April 25, 2002.

32. Gas microcarriers for cell culture: from perfluorocarbons to cyanobacterial gas vesicles. Seminar at Department of biochemical Engineering, East China University of Science and Technology, Shanghai, China, April 19, 2002.

33. Gas microcarriers for cell culture: from perfluorocarbons to cyanobacterial gas vesicles. Seminar at Department of Chemical Engineering, Zhejiang University, Hangzhou, Zhejiang, China, April 18, 2002.

34. Treatment of high COD-low BOD wastewater. Invited lecture at Center for Environmental Studies and Department of Chemical Engineering, University of Surabaya, Surabaya, Indonesia; April 10, 2002.

35. Process Control of Biological Wastewater Treatment. (L.-K. Ju and H. K. Trivedi) Northeast Section of the Ohio Water Environment Association, Canton, OH, January 18, 2002.

36. Aerobic Digestion Workshop V, "Can 3% Digestion Meet New Challenges?".. Featured presentation sponsored by Enviroquip, Inc. (Austin, TX). October 14, 2001 at the Chateau Elan Winery & Resort in Braselton, Georgia (Water Environment Federation 74th Annual Conference & Exposition, Atlanta, Georgia, October 14-19, 2001.)

37. Aerobic digestion Workshop IV. (Sponsored by Enviroquip, Inc., Austin, TX.) Anaheim, CA, October 15, 2000.

38. Workshops on Biological Wastewater Treatment and Sludge Digestion. (One-day crash course sponsored by Enviroquip, Inc., Austin, TX.) Atlanta, GA, May 2, 2000; Orlando, FL, May 3, 2000; and Houston, TX, June 6, 2000.

39. Enzyme production, purification, and application in bioremediation. Invited lecture and workshop, Ecopetrol-ICP (Bucaramanga, Santander, Colombia), November 21-27, 1999.

40. Aerobic digestion Part III: Fine-tuning the controlled aerobic digestion process. (Sponsored by Enviroquip, Inc., Austin, TX), New Orleans, Louisiana, October 10, 1999.

41. Gas microcarriers for cell culture: from perfluorocarbons to cyanobacterial gas vesicles. Seminar at Department of Chemical Engineering, Vanderbilt University, Nashville, TN, April 19, 1999.

42. Fluorescence profiles of aerobic sludge digestion processes. Invited talk, Enviroquip, Inc., Austin, TX, March 25, 1999.

43. Monitoring of biological wastewater treatment. Symposium for Biotechnology, Bioprocessing & Bioengineering: Who Is Doing What & Why? Invited Talk, Ohio University, Athens, OH, September 25-26, 1998.

44. Enrichment culture of nitrifiers from wastewater biosolids. Invited talk, BioChem Technology, Inc., King of Prussia, PA, August 7, 1998.

45. Challenges of bioprocessing in microgravity. Microgravity Fluid Physics Branch, Microgravity Science Division, NASA Lewis Research Center, Cleveland, OH, June 6, 1997.

46. On-line fluorometric study of biological wastewater treatment processes. Seminar at Department of Chemical Engineering, Ohio State University, Columbus, OH, February 19, 1997.

47. On-line fluorometric study of biological wastewater treatment processes. Extrapolations Lecture Series, Kimberly-Clark Corporation, Neenah, WI, May 17, 1996.

48. On-line fluorometric study on biological wastewater treatment processes. Invited talk, Argonne National Laboratory, Argonne, IL, June 23, 1995.

49. On-line fluorometric study on biological wastewater treatment processes. Seminar at Department of Chemical Engineering, Zhejiang University, Hangzhou, Zhejiang, China, June 8, 1995.

50. On-line monitoring of biological wastewater treatment processes. Seminar at Department of Biomedical Engineering, The University of Akron, Akron, OH, September 20, 1991.

51. Use of perfluorocarbon emulsions in cell culture. Invited talk, Akron Sigma Xi Meeting, December 5, 1990.

CONFERENCE PRESENTATIONS

1. Recent developments in production of rhamnolipid biosurfactant and its applications. (K. Invally, A. Sancheti, and L.-K. Ju) SIMB Annual Meeting 2018, Chicago, IL.

2. Effects of rhamnolipid on phagotrophic algae as sensitive ecologically important model organism. (K. Invally, S. Xiao, and L.-K. Ju) Session: Biosurfactants and Additives; 108th AOCS Annual Conference & Expo, May 9, 2018, Minneapolis, MN.

3. Better understanding of enzymatic soy processing through modeling monomeric sugar release. (S.M. M. Islam and L.-K. Ju) Session: Biocatalysis II; 108th AOCS Annual Conference & Expo, May 7, 2018, Minneapolis, MN.

4. Rhamnolipid composition, modification, and soil adsorption. (S. Miao, S. Soltani Dashtbozorg, A. Sancheti, K. Invally, L.-K. Ju) Session: Biosurfactants and Biodetergents; 107th AOCS Annual Conference & Expo, May 4, 2015, Salt Lake City, UT.

5. Waste grease conversion by phagotrophic algae. (S. Xiao, N. Vongpanish, J. Kohl, L.-K. Ju) Session: Biocatalysis II; 107th AOCS Annual Conference & Expo, May 3, 2015, Salt Lake City, UT.

6. How do starving sulfate reducing bacteria corrode carbon steel anaerobically: mechanism, characterization, monitoring and mitigation? (Y. Chen, H. Castaneda, B.-m. Zhang Newby, G. Cheng, J. M. Senko, L.-K. Ju) DoD and Allied Nations Corrosion Conference, November 16-18, 2015, Pittsburgh, PA.

7. Microbiologically Influenced Corrosion Induced by Sulfate Reducing Bacteria in Stainless Steel. (K. Invally, L.-K. Ju) DoD and Allied Nations Corrosion Conference, November 16-18, 2015, Pittsburgh, PA.

8. Enzyme production and use for enriching soy meal protein and removing indigestibility. (L.-K. Ju, Q. Li, A. A. Loman, S. M. M. Islam) Session: Biocatalysis II; 11th International Symposium on Biocatalysis and Biotechnology, September 13-17, 2015, Banff, Alberta, Canada.

9. Enzyme production for enriching protein from soy meal as aquaculture feed. (Q. Li, A. A. Loman, L.-K. Ju) Session: Fermentation/cell culture: Industrial biotechnology products to biopharmaceuticals; 65th Annual SIMB Meeting and Exhibition, August 3, 2015, Philadelphia, PA.

10. Waste oil/grease conversion and biodiesel feedstock production by phagotrophic algae. (C. Li, J. Kohl, S. Xiao, M. Hosseini, Z. Lin, N. Vongpanish and L.-K. Ju) Session: Biocatalysis II; 106th AOCS Annual Conference & Expo, May 5, 2015, Orlando, FL.

11. Enhancing oxygen permeability in hydrogel wound dressing by cyanobacterial gas vesicles. (N. Vongpanish and L.-K. Ju) Session: Naturally-derived and sustainable biomaterials; 2014 AIChE Annual Meeting, November 20, 2014, Atlanta, GA.

12. Supercritical CO_2 based pretreatment of guayule biomass for high sugar yield and low inhibition hydrolysate. (S. M. M. Islam, J. R. Elliott and L.-K. Ju) Session: Biomass characterization, pretreatment and fractionation I; 2014 AIChE Annual Meeting, November 17, 2014, Atlanta, GA.

13. Versatile algal platform for converting waste organics to biofuel feedstock. (C. Li, J. Kohl, S. Xiao, Z. Lin, M. Hosseini, Q. Zhang, S. Soltani Dashtbozorg, A. Raya, and L.-K. Ju) First Ohio Conference on Sustainable use of Green House Gases, August 18, 2014, Columbus, Ohio.

14. Waste-to-energy via a phagotrophic algae platform. (C. Li, Z. Lin, M. Hosseini, J. Kohl, Q. Zhang, S. Soltani Dashtbozorg, A. Raya, and L.-K. Ju) 2014 Biotechnology and Bioengineering Conference, June 27-28, 2014, Taichung, Taiwan.

15. Enzymatic treatment of soybean meal. (A. Al Loman, Q. Li, N. V. Callow, S. M. M. Islam and L.-K. Ju) 105th AOCS Annual Conference & Expo, May 6, 2014, San Antonio, TX.

16. Engineering strategies to improve cellulase production: *Trichoderma reesei* as a pellet. (N. V. Callow and L.-K. Ju) 2013 AIChE Annual Meeting, November 7, 2013, San Francisco, CA.

17. A new phagotrophic microalgae-based wastewater treatment process to convert organic into algal biomass and lipids. (C. Li and L.-K. Ju) 2013 AIChE Annual Meeting, November 6, 2013, San Francisco, CA.

18. Growth and lipid production of a microalga capable of phagotrophic, heterotrophic and phototrophic metabolisms. (C. Li, Z. Lin, H. Starvaggi and L.-K. Ju) 2013 AIChE Annual Meeting, November 7, 2013, San Francisco, CA.

19. Biological activities of rhamnolipids and their incorporation and release from hydrogel formulations. (S. Soltani Dashtbozorg, S. Miao, M. Sodagari and L.-K. Ju,) 104th AOCS Annual Conference & Expo, April 28 – May 1, 2013, Montreal, Quebec, Canada.

20. Enriching soy proteins from meal by an enzymatic approach. (A. Al Loman, A. Coffman, Q. Li, S. Koganti and L.-K. Ju) 104th AOCS Annual Conference & Expo, April 28 – May 1, 2013, Montreal, Quebec, Canada.

21. Severe pitting corrosion caused by a starving sulfate-reducing bacterium surviving on carbon steel and effect of surface roughness. (Y. Chen, X. He, R. Howdyshell, S. Howdyshell, B.-m. Zhang Newby, G. Cheng, H. Castaneda, J. M. Senko, L.-K. Ju) Corrosion 2013, NACE Conference, March 17-21, 2013, Orlando, FL.

22. Rhamnolipid production by long-term *Pseudomonas aeruginosa* fermentation. (M. Sodagari and L.-K. Ju) 2012 AIChE Annual Meeting, October 30, 2012, Pittsburgh, PA.

23. Purification of arabitol from fermentation broth of *Debaryomyces hansenii* using glycerol as substrate. (A. Al Loman and L.-K. Ju) 2012 AIChE Annual Meeting, October 30, 2012, Pittsburgh, PA.

24. Rhamnolipid production and applications. (M. Sodagari, Y. Chen, S. Soltani Dashtbozorg, N. Callow and L.-K. Ju) 103rd AOCS Annual Conference & Expo, April 29 – May 2, 2012, Long Beach, CA.

25. Developing slow flow systems for monitoring initial stages of biofilm formation on microbiologically induced corrosion. (H. Wang, M. Sodagari, Yajie Chen, Yao Chen, X. Shan, G. Cheng, J. Payer, L.-K. Ju, and B.-m. Zhang Newby) DoD Corrosion Conference 2011, July 31 - August 6, 2011, Palm Springs, CA.

26. Use of algae to modify waste oil for biodiesel production. (M. Hosseini and L.-K. Ju) 102st AOCS Annual Meeting & Expo, May 1-4, 2011, Cincinnati, OH.

27. Rhamnolipid production and purification. (M. Sodagari, Y. Chen, J. L. Lilly, N. M. Pinzon, and L.-K. Ju) 102st AOCS Annual Meeting & Expo, May 1-4, 2011, Cincinnati, OH.

28. Production and purification of arabitol from biodiesel byproduct glycerol. (S. Koganti, A. Al Loman, L.-K. Ju) 102st AOCS Annual Meeting & Expo, May 1-4, 2011, Cincinnati, OH.

29. Developing slow flow systems for monitoring initial stages of biofilm formation on microbiologically induced corrosion. (H. Wang, M. Sodagari, Yajie Chen, Yao Chen, X. Shan, G. Cheng, J. Payer, L.-K. Ju, and B.-m. Zhang Newby) 241st ACS National Meeting & Exposition, March 27-31, 2011, Anaheim, CA.

30. Initial bacterial attachment in slow flowing systems: the effects of substrate surface hydrophobicity. (H. Wang, M. Sodagari, Y. Chen, X. He, B.-m. Zhang Newby, L.-K. Ju) 241st ACS National Meeting & Exposition, March 27-31, 2011, Anaheim, CA.

31. Effects of attachment of *Pseudomonas aeruginosa*, *Pseudomonas putida* and *Escherichia coli* in the presence of rhamnolipids. (M. Sodagari, H. Wang, Y. Chen, X. He, B.-m. Zhang Newby, L.-K. Ju) 241st ACS National Meeting & Exposition, March 27-31, 2011, Anaheim, CA.

32. Production of *Trichoderma* cellulase. (L.-K. Ju, N. V. Callow, C.-M. Lo, Q. Zhang, N. Srinivasan) 6th International Symposium on Biocatalysis and Biotechnology, November 17-19, 2010, Seoul, Korea.

33. Optimization of guayule biomass pretreatment. (E. Moharreri, A. Ghobadi, R. Elliott, L.-K. Ju) Paper 374L, AIChE Fall National Meeting, Salt Lake City, 2010.

34. Effects of solid surface hydrophobicity on initial bacterial attachment under slow flow. (H. Wang, M. Sodagari, Y. Chen, B.-m. Zhang Newby, L.-K. Ju) 84th Colloid & Surface Science Symposium, ACS Division of Colloid and Surface Science, June 20-23, 2010, Akron, OH.

35. Arabitol production from glycerol by yeast fermentation. (S. Koganti, T. M. Kuo, L.-K. Ju) 101st AOCS Annual Meeting & Expo, May 16-19, 2010, Phoenix, AZ.

36. Reduction of bacterial attachment of *Pseudomonas aeruginosa*, *Pseudomonas putida* and *Escherichia coli* by rhamnolipids. (A. Raya, N. M. Pinzon, M. Sodagari, H. Wang, X. He, B.-m. Zhang Newby, L.-K. Ju) ACS 239th National Meeting, March 22, 2010, San Francisco, CA.

37. Rhamnolipid production by free and immobilized denitrifying *Pseudomonas aeruginosa*. (N. M. Pinzon, L.-K. Ju) accepted for presentation in the ACS National Meeting, August 16-20, 2009, Washington D.C.

38. Production of arabitol from biodiesel byproduct glycerol using *Debaryomyces hansenii*. (N. M. Pinzon, M. Sodagari, L.-K. Ju) accepted for presentation in the ACS National Meeting, August 16-20, 2009, Washington D.C.

39. Supercritical CO_2 hydrolysis and explosion as pretreatment of guayule bagasse for fermentation feedstock. (N. Srinivasan and L.-K. Ju) accepted for presentation in the First International Congress on Sustainability Science and Engineering, August 9-12, 2009, Cincinnati, OH

40. Rhamnolipid production by denitrifying *Pseudomonas aeruginosa*. (L.-K. Ju, N. M. Pinzon, M. Sodagari) 100th AOCS Annual Meeting & Expo, Orlando, FL, May 3-6, 2009.

41. Initial attachment of *Pseudomonas aeruginosa PAO1* for biofilm formation: Design of flow system for reproducible measurements and effects of environmental factors. (A. Raya, N. M. Pinzon, M. Sodagari, B.-m. Zhang Newby, L.-K. Ju) 5th Annual Conference on Undergraduate and Graduate Student Research, The University of Akron, Akron, OH, March 26, 2009. Student poster winner.

42. Supercritical CO_2 hydrolysis and explosion as pretreatment of guayule bagasse for fermentation feedstock. (N. Srinivasan, N. M. Pinzon and L.-K. Ju) Fall 2008 ACS National Meeting & Exposition, August 17 - 21, 2008, Philadelphia, PA.

43. Cell immobilization and biosurfactant-induced pellet formation as potential means to retain Trichoderma reesei cells during in situ affinity foam fractionation for cellulase collection. (Q. Zhang, C.-M. Lo, N. Srinivasan, L.-K. Ju) Fall 2008 ACS National Meeting & Exposition, August 17 - 21, 2008, Philadelphia, PA.

44. Denitrifying fermentation technology: Rhamnolipid production from biodiesel byproduct glycerol. (N. M. Pinzon and L.-K. Ju) Fall 2008 ACS National Meeting & Exposition, August 17 - 21, 2008, Philadelphia, PA.

45. Cellulase production by continuous culture of *Hypocrea jecorina* Rut C-30 using acid hydrolysate prepared to retain more oligomers for induction. (C.-M. Lo and L.-K. Ju) Fall 2008 ACS National Meeting & Exposition, August 17 - 21, 2008, Philadelphia, PA.

46. Fermentation behaviors of *Hypocrea jecorina* RUT C-30 for cellulase production using lactose as substrate. (C.-M. Lo, Q. Zhang, L.-K. Ju) 30th Symposium on Biotechnology for Fuels and Chemicals, New Orleans, LA, May 4-7, 2008.

47. Rhamnolipids-enabled affinity foam fractionation of *Trichoderma* β-glucosidase. (Q. Zhang, C.-M. Lo, L.-K. Ju) 30th Symposium on Biotechnology for Fuels and Chemicals, New Orleans, LA, May 4-7, 2008.

48. Rapid analysis of rhamnolipid biosurfactant by methylene blue complexation. (N. M. Pinzon, L.-K. Ju) 30th Symposium on Biotechnology for Fuels and Chemicals, New Orleans, LA, May 4-7, 2008.

49. Conversion of biodiesel glycerol to value-added bioproducts. (L.-K. Ju, T. M. Kuo, N. M. Pinzon, C.-M. Lo, S. Koganti) International Symposium of Industrial Biotechnology (ISIB) 2007, Beijing, China, August 7-9, 2007.

50. Production and Applications of Biosurfactants Rhamnolipids and Sophorolipids. (L.-K. Ju, N. M. Pinzon, Q. Zhang, S. Koganti) 98th AOCS Annual Meeting, Quebec City, QC, Canada, May 13-16, 2007.

51. Simultaneous Nitrification and Denitrification through Low-DO Operation: Nitrite Shunt, Enhanced Bio-P Removal, Online NAD(P)H Fluorescence Monitoring and Bulking Prevention. (L. Huang, H. K. Trivedi and L.-K. Ju) Water Environment Federation 79th Annual Conference & Exposition, Dallas, TX, October 21-25, 2006.

52. Developing Value-Added Biodiesel Byproducts by Glycerol Fermentation. (L.-K. Ju, J. Xu, T. M. Kuo, S.-J. Suh and J. Huang) 97th AOCS Annual Meeting & Expo, St. Louis, MO, April 30-May 3, 2006.

53. Heterocyst differentiation and H_2 production in N_2-fixing cyanobacteria. (N. M. Pinzon, S. Sundaram and L.-K. Ju) 2005 Annual AIChE Meeting, Cincinnati, OH, October 30-November 4, 2005.

54. Affinity Foam Fractionation of *Trichoderma* Cellulase. (Q. Zhang, C.-M. Lo and L.-K. Ju) 27th Symposium on Biotechnology for Fuels and Chemicals, Denver, CO, May 1-4, 2005.

55. Cellulase Fermentation: Observations on Foam Fractionation and pH-Based Control for Continuous Production (C.-M. Lo, Q. Zhang and L.-K. Ju) 27th Symposium on Biotechnology for Fuels and Chemicals, Denver, CO, May 1-4, 2005.

56. Intriguing metabolic adjustment of *Pseudomonas aeruginosa* during transition from anaerobic denitrifying to microaerobic denitrifying state. (Chen, F.; Xia, Q.; Klettlinger, N.; Ju, L. K.) 229th ACS National Meeting, San Diego, CA, March 13-17, 2005.

57. Lipase-catalyzed oligomerization of lactonic sophorolipids in organic solvents. (L.-K. Ju) 36th ACS Great Lakes Regional Meeting 2004, Peoria, IL, October 17-20, 2004.

58. Modeling 7,10,12-trihydroxy-8(E)-octadecenoic acid production by *Pseudomonas aeruginosa* PR3. (F. Chen and L.-K. Ju) 36th ACS Great Lakes Regional Meeting 2004, Peoria, IL, October 17-20, 2004.

59. Improving biopolymer production with pH sensitive polymeric surfactants. (J. Shuman, R. Taylor and L.-K. Ju) Regional Undergraduate Research Symposium in Polymer Science & Engineering, Akron, OH, August 5, 2004.

60. Monitoring microaerobic denitrification of *Pseudomonas aeruginosa* by online NAD(P)H fluorescence. (F. Chen, Q. Xia and L.-K. Ju) 7th Biennial Symposium, International Society of Environmental Biotechnology, Chicago, IL, June 18-21, 2004.

61. Exploring in situ foam fractionation for cellulase production in Trichoderma reesei fermentation: Factors affecting foaming behaviors and use of sawdust hydrolysate as substrate. (L.-K. Ju, Q. Zhang, C.-M. Lo, P. Lee) 26th Symposium on Biotechnology for Fuels and Chemicals, Chattanooga, TN, May 9-12, 2004.

62. Emulsion fermentation for production of highly viscous biopolymers. (A. S. Restrepo, N. M. Pinzon, S. G. Kuttuva, L.-K. Ju) Abstracts of Papers, BIOT-100, 227th ACS National Meeting, Anaheim, CA, March 28-April 1, 2004.

63. pH-Sensitive surfactants for water-in-oil xanthan fermentation. (A. S. Restrepo, L.-K. Ju, J. M. Bell, J. Y. Xu) Abstracts of Papers, BIOT-258, 225th ACS National Meeting, New Orleans, LA, March 23-27, 2003.

64. Degradation and synthesis kinetics of quorum-sensing autoinducer in *Pseudomonas aeruginosa* fermentation. (L.-K. Ju, C.-C. Chen, F. Chen and L. Riadi) 2002 Annual AIChE Meeting, Indianapolis, IN, November 3 - 8, 2002.

65. Polyethyleneimine-induced flocculation and flotation of cyanobacterium *Anabaena flos-aquae* for gas vesicle production. (L.-K. Ju, M. J. Zeleznik, J. M. Seggata and S. A. Arrington) 2002 Annual AIChE Meeting, Indianapolis, IN, November 3 - 8, 2002.

66. Phosphorus release in aerobic sludge digestion. (L.-K. Ju, H. K. Shah and J. Porteous) Water Environment Federation 75th Annual Conference & Exposition, Chicago, IL, September 28-October 2, 2002.

67. Cellulase production by *Trichoderma reesei*: Glucose repression and use of wastepaper hydrolyzate as soluble inducing substrate. (L.-K. Ju) 8th International Conference of Biochemical Engineering of China, Hangzhou, Thejiang, April 14 - 17, 2002.

68. Enzymatic removal of phenol from wastewater. (F.N. Sánchez, M.C. Vargas, B. Suárez, N.E. Ramírez and L.-K. Ju) *In Situ and On-Site Bioremediation: The Sixth International Symposium Proceedings* (2001).

69. Cellulase production by *Trichoderma reesei*: Use of wastepaper hydrolysate as soluble inducing substrate. (L.-K. Ju and O. A. Afolabi) 2000 Annual AIChE Meeting, Los Angeles, CA, November 12 - 17, 2000.

70. Rhamnolipid production by *Pseudomonas aeruginosa* under denitrification. (L.-K. Ju, C. Chayabutra, C.-C. Chen) 2000 Annual AIChE Meeting, Los Angeles, CA, Nov. 12-17, 2000.

71. Online fluorescence monitoring of aerobic sludge digestion. (L.-K. Ju, R. Arunachalam and H. K. Shah) 2000 Annual AIChE Meeting, Los Angeles, CA, November 12 - 17, 2000.

72. Gas microcarriers for cell culture: from perfluorocarbons to cyanobacterial gas vesicles. (L.-K. Ju) US-China ChE Conference, Beijing, China, September 26-29, 2000.

73. Rhamnolipid production under denitrification. (L.-K. Ju) US-China ChE Conference, Beijing, China, September 26-29, 2000.

74. Production and purification of sophorolipids. (L.-K. Ju and Y. Hu) 1999 Annual AIChE Meeting, Dallas, TX, October 31 - November 5, 1999.

75. Production of cyanobacterial gas vesicles for use in shear-sensitive cell cultures. (L.-K. Ju, J. M. Segatta, M. J. Zeleznik and A. Sundararajan) 1999 Annual AIChE Meeting, Dallas, TX, October 31 - November 5, 1999.

76. On-line fluorescence profile of aerobic sludge digestion. (L.-K. Ju and X. Li) 1999 Annual AIChE Meeting, Dallas, TX, October 31 - November 5, 1999.

77. Influence of sorption processes on the biodegradation of hydrophobic organic compounds. (N. Ramirez, L.-K. Ju and T. Cutright) II Simposio Internacional de Microbiologia Ambiental, Santafe de Bogota, Colombia, May 24-28, 1999.

78. Xanthan gum production using water-in-oil cultivation technology. (L.-K. Ju, S. G. Kuttuva, A. Sundararajan and S. Zhao) 1998 Annual AIChE Meeting, Miami Beach, FL, November 15-20, 1998.

79. Denitrification-enhanced production of rhamnolipids. (C. Chayabutra, J. Wu and L.-K. Ju) 1998 Annual AIChE Meeting, Miami Beach, FL, November 15-20, 1998.

80. Isolation of gas vesicles from buoyant cultures of cyanobacteria and their modification by glutaraldehyde crosslinking. (A. Sundararajan, S. Kashyap and L.-K. Ju) 1996 Annual AIChE Meeting, Chicago, IL, November 10-15, 1996. Second-Place Award for **Best Student Presentations** in Division 15 (Food, Pharmaceutical & Bioengineering).

81. Enhancing enzymatic saccharification of waste newsprint by surfactant addition. (J. Wu and L.-K. Ju) 1996 Annual AIChE Meeting, Chicago, IL, November 10-15, 1996.

82. Monitoring and kinetic study of nitrification using dissolved oxygen electrode and NADH fluorometer. (P. B. Nallagatla and L.-K. Ju) 1996 Annual AIChE Meeting, Chicago, IL, November 10-15, 1996.

83. Oxygen transfer characteristics of multiple-phase dispersions simulating water-in-oil xanthan fermentations. (S. G. Kuttuva and L.-K. Ju) 1996 Annual AIChE Meeting, Chicago, IL, November 10-15, 1996. Third-Place Award for **Best Student Presentations** in Division 15 (Food, Pharmaceutical & Bioengineering).

84. On-line fluorometric study on biological wastewater treatment processes. (L.-K. Ju, P. B. Nallagatla, H. K. Trivedi, X. Yang and J. F. Lee) 1995 Mid-America Chinese Professional Annual Convention, Chicago, IL, June 24 & 25, 1995.

85. Biodegradation of organic sulfur compounds in fuels by *Sulfolobus acidocaldarius*. (P. Kankipati and L.-K. Ju) AIChE Annual Meeting, San Francisco, CA, November 13-18, 1994.

86. Hydrocarbon fermentation by *Pseudomonas aeruginosa*. (J. Wu and L.-K. Ju) AIChE Annual Meeting, San Francisco, CA, November 13-18, 1994.

87. Microbial desulfurization of petroleum: Fundamental study on dibenzothiophene desulfurization by *Sulfolobus acidocaldarius*. (P. Kankipati and L.-K. Ju) International Petroleum Environmental Conference, Houston, TX, March 2-4, 1994.

88. Mass transfer characteristics of lactic acid in liquid membranes. (L.-K. Ju and A. Verma) AIChE Annual Meeting, St. Louis, MO, November 7-12, 1993.

89. Fluorometric study on microbial nitrate metabolism. (L.-K. Ju and H. K. Trivedi) AIChE Annual Meeting, St. Louis, MO, November 7-12, 1993.

90. On-line monitoring of culture fluorescence in wastewater treatment processes. (L.-K. Ju and H. K. Trivedi) Ohio Symposium on Advances in Culture Science and Technology OCAPA, Cleveland, OH, May 29-30, 1993.

91. Enhanced xanthan gum fermentations using water-in-oil cultivation technology. (L.-K. Ju and S. Zhao) Akron Chemist Symposium, Kent, OH, December 17, 1992.

92. Biological oxygen transfer enhancement in activated sludge systems: Fact or artifact? (A. Sundararajan and L.-K. Ju) Akron Chemist Symposium, Kent, OH, December 17, 1992.

93. Study of denitrification using an on-line fluorescence technique. (H. K. Trivedi and L.-K. Ju) Akron Chemist Symposium, Kent, OH, December 17, 1992.

94. Mass transfer in liquid membrane emulsions and encapsulated liquid membrane emulsions. (A. Verma and L.-K. Ju) Akron Chemist Symposium, Kent, OH, December 17, 1992.

95. Enhanced xanthan gum fermentations using water-in-oil cultivation technology. (L.-K. Ju and S. Zhao) AIChE Annual Meeting, Miami Beach, FL, November 1-6, 1992.

96. Monitoring of denitrification in activated sludge processes using an on-line fluorescence technique. (L.-K. Ju and H. K. Trivedi) AIChE Annual Meeting, Miami Beach, FL, November 1-6, 1992.

97. Biological oxygen transfer enhancement in bioreactors. (L.-K. Ju and A. Sundararajan) 42nd Annual Canadian Chemical Engineering Conference, Toronto, Ontario, October 18-21, 1992.

98. Biological oxygen transfer enhancement in diffused-air bioreactors. (A. Sundararajan and L.-K. Ju) AIChE Annual Meeting, Los Angeles, CA, November 17-22, 1991.

99. On-line monitoring of biological activity in wastewater treatment processes based on the culture fluorescence. (L.-K. Ju, W. B. Armiger, X. Yang and J. F. Lee) AIChE Summer National Meeting, Pittsburgh, PA, August 18-21, 1991.

100. Use of perfluorocarbon emulsions in cell culture for enhanced oxygen transfer. (L.-K. Ju and W. B. Armiger) AIChE Annual Meeting, San Francisco, CA, November 5-10, 1989.

101. The oxygen transfer coefficients in electrolyte solutions and its relation to oxygen diffusion coefficients. (M. J. Stalker, L.-K. Ju and C. S. Ho) 192th ACS National Meeting, Anaheim, CA, September 7-12, 1986.

102. Simultaneous determination of the oxygen diffusion coefficients and solubilities in fermentation media. (L.-K. Ju and C. S. Ho) 192th ACS National Meeting, Anaheim, CA, September 7-12, 1986.

103. The oxygen diffusion coefficients in fermentation media: Its measurement and its relation to interfacial oxygen transfer coefficients. (C. S. Ho, L.-K. Ju, and M. J. Stalker) Fifth International Conference on Biochemical Engineering, Henniker, New Hampshire, July 27-August 1, 1986.

104. Measuring oxygen diffusion coefficients in complex fermentation media with a polarographic oxygen electrode. (L.-K. Ju, E. Livio, and C. S. Ho) ACS Annual Meeting, Chicago, IL, September 1-6, 1985.

105. Measuring oxygen diffusion coefficients in electrolyte solutions with polarographic oxygen electrodes. (L.-K. Ju and C. S. Ho) Seventh Symposium on Biotechnology for Fuels and Chemicals, Gatlinburg, TN, May 14-17, 1985.

DISSERTATIONS AND THESES DIRECTED

Doctoral Dissertations

1. Sancheti, Ashwin. Rhamnolipids as Biopesticide (tentative), in progress.

2. Invally, Krutika. Process optimization for rhamnolipids production and their environmental impacts, December 2018.

3. Xiao, Suo. Phagotrophic algae based approaches for advanced treatment of waste activated sludge, waste grease and high BOD wastewaters, December 2018.

4. Islam, S. M. Mahfuzul. Valorization of guayule and soy biomass through pretreatment, enzyme production, and enzymatic hydrolysis, May 2018.

5. Vongpanish, Napaporn. Cyanobacterial Gas Vesicles: Methods for Improved Collection and Preparation for Medical Applications (tentative), in progress.

6. Li, Qian. Production of Carbohydrases for Developing Soy Meal as Protein Source for Animal Feed, 2017.

7. Loman, Abdullah Al. Enzyme based processing of soybean meal: Production of enriched protein product and utilization of carbohydrate as fermentation feedstock for arabitol production, 2016.

8. Chen, Yajie. Microbiologically influenced corrosion of carbon steel caused by sulfate reducing bacteria, 2016.

9. Soltani Dashtbozorg, Soroosh. Microbial Rhamnolipids as Environmentally Friendly Biopesticide: Congener Composition Produced, Adsorption in Soil, and Effects on *Phytophthora sojae*, 2015.

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24. Chayabutra, Chawala. Biosynthesis of Rhamnolipids and Their Roles in Bioremediation, 1999.

25. Wu, Jian. Rhamnolipids Production by Fermentation of *Pseudomonas aeruginosa* and Application in Enzymatic Hydrolysis of Cellulose, 1997.

26. Sundararajan, Anand. Production and Modification of Cyanobacterial Gas Vesicles and Their Application as Oxygen Carriers in Animal Cell Culture, 1997.

M.S. Theses:

1. Kohl, Jacob. Renewable Biofuels and Bioproducts from Algal and Lignocellulosic Biomass (tentative), in progress.

2. Coffman, Anthony M. Production of Carbohydrases by Fugus *Trichoderma Reesei* Grown on Soy-Based Media, 2013.

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14. Kashyap, Sunil. Production of Cyanobacterial Gas Vesicles: Characteristics of Cultivation and Flotation of *Anabaena flos-aquae*, 1997.

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