

# Curriculum Vitae

Of

## Shulin Chen, PhD., P.E

Department of Biological Systems Engineering  
Washington State University  
Pullman, WA 99164-6120

Phone: (509)335-3743; Fax: (509)335-2272; email:  
[chens@wsu.edu](mailto:chens@wsu.edu)

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  - **Visiting students (joint training program)**
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## 4. SERVICES

- *REVIEWER FOR REFEREED JOURNALS*
- *REVIEWER FOR FUNDING AGENCIES*
- *SERVICE TO WASHINGTON STATE UNIVERSITY*
- *SERVICE TO THE COLLEGE OF AGRICULTURE, HUMAN AND NATURAL RESOURCE SCIENCES*
- *SERVICE TO THE COLLEGE OF ENGINEERING AND ARCHITECTURE*
- *SERVICE TO THE BIOLOGICAL SYSTEMS ENGINEERING DEPARTMENT*
- *SERVICE TO PROFESSIONAL SOCIETIES*
- *SERVICE TO INDUSTRY*
- *INTERNATIONAL SERVICES*

## 1. GENERAL INFORMATION

### EDUCATION

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<b>Ph.D.</b>	Biological and Environmental Engineering, Cornell University,	1991
<b>M.S.</b>	Agricultural Engineering, Beijing Agricultural Engineering University,	1984
<b>B.S.</b>	Agricultural Engineering, The Agricultural University of Hebei,	1981

### EXPERIENCE

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<b>08/03 – Present</b>	<b>Professor</b> , Department of Biological systems Engineering, Washington State University, Pullman, WA 99164
<b>06/12-Present</b>	<b>Adjunct Professor</b> , School of Chemical and Biological Engineering, Washington State University, Pullman, WA 99164
<b>01/09-present</b>	<b>Adjunct Professor</b> , Tianjin Institute of Industrial Biotechnology, Chinese Academy of Sciences, Tianjin, China
<b>06/06 to 12/07</b>	<b>Interim Director</b> , WSU Center for Bioproducts and Bioenergy, Washington State University, Pullman, WA 99164
<b>07/00 to 8/03</b>	<b>Associate Professor</b> , Department of Biological Systems Engineering, Washington State University, Pullman, WA 99164
<b>10/95 to 6/00</b>	<b>Assistant Professor</b> , Department of Biological Systems Engineering, Washington State University, Pullman, WA 99164
<b>11/92 to 10/95</b>	<b>Research Assistant Professor</b> , Department of Civil and Environmental Engineering, Louisiana State University, Baton Rouge, LA 70803
<b>1/90 to 11/92</b>	<b>Post-doctoral Researcher</b> , Department of Civil and Environmental Engineering, Louisiana State University, Baton Rouge, LA 70803
<b>1/86 to 12/89</b>	<b>Research Assistant</b> , Department of Agricultural and Biological Engineering, Cornell University, Ithaca, NY 14853

### HONORS AND AWARDS

- Team Interdisciplinary Awards, 2011. College of Agriculture, Human, and Natural Resource Sciences. Washington State University.
- USDA CSREES 2009 Partnership Award – Innovative Program Models
- Aquacultural Engineering Society Honorable Mention Paper Award. 2008. Nitrification kinetics of biofilm as affected by water quality factors. *Aquacultural Engineering*, 34:179-197.
- Team of Excellence Award, Climate Friendly Farming Project, WSU Extension, 2007.
- K.C. Wong Fellowships, Chinese Academy of Sciences K.C. Wong Education Foundation, 2006.
- Kellogg Fellow, 2002-2005.
- Superior paper award, 2004. Zhu, S. and Chen, S. 2002. *The impact of temperature on nitrification rate of fixed film biofilters*. *Journal of Aquaculture Engineering and the Aquacultural Engineering Society*, 26:221-237.
- Researcher of the Year, College of Engineering and Architecture, WSU, 2003.
- Outstanding Researcher, WSU Department of Biological Systems Engineering, 2002, 2003.

- Poster Certificates of Award. G.A. Cothron, M. Rahman, S., Chen, and R.F. Malone. *Water Balance Modeling and Performance Evaluation of Aquatic Treatment Systems for Polishing Lagoon Effluents*, 1995 WEFTC'95. Water Environment Federation, October 21-25, 1995. Miami Beach, Florida.

## CREENTIALS

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Member of Editorial Board, *Algal Research*  
 Associate Editor: *Frontiers in Bioenergy and Biofuel*  
 Member of Honorary Editorial Board, *Research and Reports in Biology*, Dove press  
 Member of Editorial Board, *Journal of Energy*  
 Member of Editorial Advisory Panel, *Biofuels*  
 Member of Editorial Board, *Chinese Journal of Biotechnology*  
 Registered Professional Engineer, Washington, 41674  
 Member of the American Association for the Advancement of Science (AAAS)  
 Member of the American Institute of Chemical Engineers  
 Member of the Society for Industrial Microbiology  
 Member of American Society of Agricultural and Biological Engineers  
 Member of Aquacultural Engineering Society  
 Member of American Chemical Society  
 Member of American Oil Chemical Society

## 2. RESEARCH AND SCHOLARLY OR CREATIVE ACTIVITIES

### RESEARCH INTERESTS AND EXPERTISE

Research field: Industrial biosystems engineering and its application in production of biofuel and bioproducts; Specific research interests: biorefinery and nature-inspired bioprocessing; Specialization: multi-scale modeling, design of biocatalyzing process and system for bioconversion, product separation and system integration.

*GRANTS AND CONTRACTS* (Served as Principal Investigator and Chen's share if served as Co-Principal Investigator)

Agency (Year)	Title	Grant Amount
LA Sea Grant, Co-P.I. (1992-1993)	Development of Operational Procedures for soft-shell Crawfish Production Using Eyestalk Ablation Technology	\$20,953
LA Sea Grant, Co-P.I. (1993-1994)	Design and Evaluation of Processes for Oil and Grease Removal from Seafood Processing Wastewater	\$18,400
USDA, P.I. (1994-1995)	Manipulation of Feed Ingredient Particle Size as a Means to Improve Catfish Waste Management	\$48,624
LA Sea Grant, P.I. (1993-1994)	Removal Efficiency of Suspended Particles by Granular Media Filters Used in High Density Recirculating Aquaculture Systems	\$12,805
LA DOE Quality, Co-P.I. (95-97)	Investigation into the Nature of Stormwater Runoff from Log Storage Facility in Louisiana	\$70,500

Gulf Coast Hazardous Substance Research Center, P.I. (94-95)	Leachability and Structural Integrity of Cement-based Phosphogypsum Stabilization Blocks as Artificial Reef, Oyster Substrates, and Coastal Structures	\$41,556
USDA, P.I. (94-96)	Characterization, Treatment and Disposal of Aquacultural Sludge	\$55,718
National Highway Cooperative Res. Prog. Co-P.I. (96-99)	Treatment of Highway Runoff Using Wet Detention Pond	\$400,000
WA Dairy Product Comm, P.I. (96-97)	Reducing Odor for Dairy Operations	\$44,835
USDA, P.I. (96-98)	Natural Systems for Agriculture Waste Treatment and Water Quality Management	\$145,573
Saltonstall-Kennedy Program, P.I.(96-98)	Optimal Design of a Water Recirculating System for Shellfish Depuration (and Wet Storage)	\$98,820
WRAC, P.I.(96-97),	Optimization of feed particle size	\$10,000
Water Research Center/USGS, Co-P.I.	A problem solving tool for mitigating the impact on water quality of management practices in small rural watersheds	\$170,107
WRAC, P.I. (1997-1998),	Optimization of feed particle size and development of pollution index for fish feed	\$12,600
NCHRP, Co-P.I. (1998-1999)	Treatment of Highway Runoff Using Wet Detention Pond Supplemental grant	\$90,000
Asotin AC P.I. (98-00)	Monitoring the water quality for Asotin Creek	\$17,000
PWI/EPA, P.I. (98)	Develop water quality module and technical assistance	\$27,000
Umatilla Tribe Co-PI (98-99)	Umatilla Watershed Assessment	\$40,000
Pomeroy CD, PI, (98-99)	Monitoring and modeling Pataha Creek water quality	\$29,000
USDA/UI, PI, 98-01	An integrated system approach to watershed restoration	\$106,310
WRAC/PI (98-99)	Optimization of feed particle size and development of pollution index for fish feed (Third year funding)	\$13,700
Partnership2020, PI, 98-99	Aquaculture short course	\$15,000
King County, PI, 99	Ammonia removal from animal waste through adsorption	\$13,600
Nez Perce Tribe/BPA Co-PI, (99-00)	Clearwater Watershed Assessment	\$134,000
Columbia CD, PI,99-01	Tucannon river water quality study	\$35,172
Columbia CD, P.I., 99-01	Touchet River Water Quality Monitoring	\$23,000
Pomeroy CD, P.I. (99-01)	Monitoring Pataha Creek Water Quality-extension	\$42,000
Wildlife Found., PI, 99-00	Four Mile Creek wetland study	\$5,000
USDA/NRI, P.I., 99-02	Integrated nutrient management modeling for dairy production systems featuring dynamics and optimization	\$340,000

USDA/Higher Challenge Grant, Co-PI, 00-02	Experimental learning in hydrological modeling for watershed management	\$99,534
USGS, P.I., 99-02	Watershed scale study on no-till farming for reducing sediment delivery	\$146,002
USDA, PI, 00-03	Improving water quality for salmon restoration through integrated research, education and extinction efforts	\$400,000
Department of Energy, PI,01-03	Value-added chemical from animal manure	\$800,000
WRAC, PI, (Y1) 2000-2001	Reduce P discharge from high density, flow through systems	\$31,540
WRAC, PI, (Y2) 2001-2002	Reduce P discharge from high density, flow through systems	\$29,565
USDA special grant, PI, 2001-2002	Aquaculture Washington: New biofilter and solids removal strategy for recirculating trout culture	\$44,334
WRAC, PI, (Yr 1) 2001-2002	Recirculating aquaculture industry in the western region	\$31,462
King County, Co-PI, 02-06	Agricultural drainage course maintenance practices for minimizing impact on salmon habitat	\$888,844
WRAC, PI (Yr 2) 2002-2003	Recirculating aquaculture industry in the western region	\$32,380
Kellogg Foundation, P.I. 02-05	Evaluation and adoption of stewardship practices for sustainable agriculture and environmental protection	\$90,000
IMPACT (Yr 1) PI, 02-03	Lactic acid production from cull potatoes	\$30,000
US Department of Energy, 02	Capability for Bioproduct research	\$40,000
USDA Special Grant, PI, (Yr 1) 03	Integration of aquaculture and agriculture systems	\$30,000
USDA Special grant, (Y1) PI 03	Reduce environmental impact from trout culture facilities	\$50,000
WRAC, PI, (Yr 3) 02-03	Reduce P discharge from high density, flow through systems	\$25,000
INTEC, P.I 1/03-6/03	Inventory of energy potential from biomass in Eastern Washington	\$36,206
Pomeroy CD, 03-05	Water quality monitoring of Pataha Creek	\$25,000
WA Dairy Product Commission P.I. (Year 1)- 2003	Simultaneous production of lactic acid and nisin from cheese whey permeate	\$42,537
IMPACT , P.I. (Year 2) 03-04	Lactic acid production from cull potatoes	\$29,000
WA Technology Center 03-04	Enzymetically enhanced anaerobic digestion	\$50,000
WRAC, PI, (Yr 4) 03-04	Reduce P discharge from high density, flow through systems	\$35,000
WRAC, PI (Yr 3) 03-04	Recirculating aquaculture industry in the western region	\$30,800
Vulcan foundation 03-08, Co-PI	Climate friendly farming –a new dairy nutrient management system	\$1,400,000 (chen's allocation)

Potato Commission P.I. 03-04	Producing nisin and lactic acid from potato processing by-product	\$8,000
WA DOE PI, 04	Little Spokane River TMDL Phase 1	\$15,600
USDA Special Grant, PI, (Yr 2) 03-04	Integration of aquaculture and agriculture systems	\$35,000
USDA Special grant, (Y2) PI 03-04	Reduce environmental impact from trout culture facilities	\$50,000
USDA Special Grant, PI, (Yr 1) 03-04	Partial recirculating aquacultural systems	\$35,000
USDA Special Grant, PI, (Yr 1) 03-04	Aquaculture Washington/Idaho	\$10,349
WADOE Phase II, 04-06, PI	TMDL study for Little Spokane River	<i>\$106,300</i>
WADOE 04, PI	Biomass Inventory Assessment	\$36,000
WA DOE, 04-05, PI	Land application of potato processing water review	<i>\$45,628</i>
WA DOE, 04-05, PI	Development of an Demonstration Anaerobic Digester	\$340,000
USDA Challenge Grant, 04-06	Biorefinery process analysis and design	\$120,000
STEEP 04-05	Best management practices for reducing soil erosion	<i>\$31,280</i>
IMPACT , P.I. (Year 3) 04-05	Lactic acid production from cull potatoes	\$30,000
USDA NRCS, 04-07	High quality fiber and fertilizer as co-products from anaerobic digestion	\$680,000
National Corn Grower Association (NCGA), PI, 05	Producing nisin and lactic acid using DDGS as nutrient source	\$40,000
USDA National Need Fellow, PI	Integrated Education and Research for Bioconversion and Applications Development: Addressing a New Agricultural Opportunities	\$138,000
Asotin CD, PI, 05-07	Asotin Creek water quality monitoring and assessment	\$79,224
WRAC, PI (Yr 4),PI, 04-05	Recirculating aquaculture industry in the western region	
WA Dairy Product Commission P.I. (Year 2-3)- 04-05	Simultaneous production of lactic acid and nisin from cheese whey permeate	\$76,648
Potato Commission PI. 05	Produce OMEGA-3 unsaturated fatty acids from potato waste	\$30,000
IMPACT, PI, 05	Produce OMEGA-3 unsaturated fatty acids from cull potato	\$30,000
USDA special grant, PI,05	Improving Solids Management of Raceway Systems for Minimizing Environmental Impacts in Trout Rearing Operations	\$57,500
JUB Engineering , PI, 05-06	Anaerobic digestion using waste tires – technical assistance	\$15,000
WTC Phase II, PI, 05	Innovative anaerobic digestion system	\$70,000
Andgar-WTC match, PI, 05	Enhanced manure digestion	\$40,000
USDASBIR-Andgar, PI,05	Anaerobic digestion of dairy manure for energy and high-value co-products	\$26,399
WTC phase I, PI, 05	Develop OMEGA-3 enriched algae from glycerol	\$40,000

American Premix-WTC, PI,05	Develop OMEGA-3 enriched algae from glycerol	\$8,000
USDADOE/UI, PI, 05-08	Increasing the Potential for the Utilization of Cellulose from Straw for Biofuel and Bioproduct Production	\$176,341
WA water Center, PI, 06	Developing a sediment model for use in the TMDL process	\$23,000
Potato Commission PI. 06	Produce OMEGA-3 unsaturated fatty acids from potato waste	\$30,000
IMPACT, PI, 06	Produce OMEGA-3 unsaturated fatty acids from cull potato	\$30,000
USDA, PI, 06	Water quality management for raceway systems	\$50,000
WA DOE, PI, 06-09	High solids digester for municipal applications	\$675,000
USDA/King County, PI, 06	Nutrient recovery from dairy digester	\$38,000
DOE/PSCA 06-08	Biodiesel quality	\$225,000
WSU/CSANR, 06-07	OMEGA-3 enriched algae	\$20,000
California Energy Commission, PI 07-08	Innovative design of high solids digestion plants for economic and renewable energy production	\$93,595
NSF SBIR, 07, PI as subcontractor	Development of a Two-Stage Culture Process for Production of Omega 3 Rich Algae from Biodiesel Waste Glycerol	\$25,000
USDANRCS, PI, 07-09	Phosphorus and Solids Removal from Anaerobic Digestion Effluent through Electrochemical Technology	\$398,454
USDASBIR, PI, 07	Moving Baffle	\$26,000
WSDA, PI, 07-08	Anaerobic digestion improvement and nutrient recovery	\$782,500
Potato Commission PI. 07	Produce OMEGA-3 unsaturated fatty acids from potato waste	\$30,000
WACETD, 07-08	Biofuel business potential in Washington	\$40,000
WSDA	Sugar beets as ethanol feedstock in Washington	\$40,000
NPCC, PI, 08-09	Enhancing summer in-stream flow and reducing temperature	\$224,766
WSU/CSANR,PI, 06-07	OMEGA-3 enriched algae	\$20,000
USDA NRI, PI, 08-11	An integrated, multifunction ammonia removal and nutrient recovery system	\$544,853
WA Dept. of Ecology, PI, 07-09	Evaluate Pretreatment Technologies for Converting Washington Biomass to Bioethanol	\$119,621
WA Dept. of Ecology, PI, 07-09	Biohydrogen and biodiesel co-production with treatment of high solid food waste	\$119,877
WA Dept. of Ecology, Co-PI, 07-09	Bio-refinery concept to convert softwood bark to transportation fuel	\$26,628(Chen's allocation)
USDA CSREES, PI, 08-09	Enhancing Bioenergy Education and Business Development Capabilities via Access to International Resources and Technologies	<b>\$99,025</b>
BioAlgene/Boeing, PI, 08	Screening algae for biodiesel production using wastewater	<b>\$80,000</b>
Boeing, PI, 08-09	Integrated algae production system for biofuel feedstock based on utilization of wastewater resources	<b>\$150,000</b>



BioAg, PI, 08-09	Producing fertilizer from AD effluent	<b>\$120,000</b>
WSUARC, PI, 08-09	Extracting Antioxidants from Fruit Processing Wastes in Washington Agriculture	<b>\$124,886</b>
Boeing, PI, 08-09	Life Cycle Assessment Models Of Biobased Aircraft Fuel Production	<b>\$176,757</b>
SPDA, PI, 08-09	Biomass processing facility evaluation	<b>\$40,000</b>
USDASBIR, 09	Nutrient recovery from anaerobic digesters	<b>\$20,000</b>
WSDA-WSU,09-10	Biofuel development using feedstocks from Washington Agriculture	<b>\$576,860</b>
SunGrant, Co-PI	Use pyrolysis sugar for ethanol and lipid production	<b>\$26,000</b>
USDA 09-10	Production of algae with high PUFA for fish feed	<b>\$35,000</b>
<b>Cumulative total</b>		<b>\$13,047,000</b>
<b>New Grants for 2010</b>		
Dept. Ecology 09-11	High solids anaerobic digestion of municipal solid waste	<b>\$128,412</b>
DOE/Forest Concept, 10-11	Evaluation of impact of particle characteristics on efficiency of enzymatic hydrolysis	<b>\$15,000</b>
DOE/NREL, 10-12	Anaerobic digestion of algal residues	<b>\$350,000</b>
USDOE 10	Washington State Algae Alliance	<b>\$2,000,000</b>
USDA-CIG Co-PI	Nutrient recovery for anaerobically digested dairy manure	<b>\$60,000</b>
<b>New Grants for 2011</b>		
WSDA-WSU,11-12	Biofuel development using feedstocks from Washington Agriculture	<b>\$310,000</b>
Sun Grant, 11-13, Co-PI	Production of Methane and Lipids from C1-C4 Oxygenated Compounds Produced from the Pyrolysis and Torrefaction of Lignocellulosic Materials.	<b>\$30,000</b>
Dept. of Ecology, 11-12	Waste to Fuel: high solids digester for treating food wastes	<b>\$75,001</b>
<b>New Grants for 2012</b>		
NSF SEP, PI	SEP: Consortium for nature-inspired lignocellulosic processing	<b>\$1,900,000</b>
Gates Foundation, 12-13, PI	Micronutrient fortification to improve infants' development with a low cost technology	<b>\$100,000</b>
WSU Research Challenge, PI	Revealing Novel Lignin Modifying Mechanism for Plant Cell Wall Deconstruction	<b>\$90,000</b>
Integrated Lipid Fuel, LLC,	Algae culture technologies for producing biofuel and high value co-products	<b>\$500,000</b>
<b>Cumulative total</b>		<b>\$18,600,000</b>
<b>New Grants for 2013</b>		
Prosser station,	Identification of photochemicals by LC-MS-MS	<b>\$21,000</b>
WSU/WSDA	Biofuel Technology development	<b>\$310,000</b>
DOE	Algae	<b>\$841,000</b>
USDA/NARA	ASPEN modeling of pretreatment processes	<b>\$89,716</b>
WA Ecology	Wastes to Fuels	<b>\$50,000</b>
Integrated Lipid Biofuels, LLC	Develop metabolomics capability	<b>\$60,000</b>
<b>Cumulative total</b>		<b>\$19,961,700</b>

## PUBLICATIONS

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### Special Journal Issues

Co-guest editor for the special issue of *Applied Biochemistry and Biotechnology*, International Conference on Biomass and Bioenergy.

Co-editor for the special issue of *Journal of Applied Energy*: Sustainable Energy Solutions in Agriculture.

### Refereed Journal Papers:

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Wuxi Chen, Wei Guo, Feng Gao, Limei Chen, Shulin Chen, Demao Li, 2017. Phospholipase A1-Catalysed Synthesis of Docosahexaenoic Acid-Enriched Phosphatidylcholine in Reverse Micelles System, *Applied Biochemistry and Biotechnology*, publication date:1/7/2017.

Zhang, K., Li, D., Chen, W., Chen, S., 2016. Regulation of the docosapentaenoic acid / docosahexaenoic acid ratio (DPA/DHA ratio) in *Schizochytrium limacinum* B4D1. *Applied Biochemistry and Biotechnology*, publication date: 11/10/2016.

Gao, X, S. Chen, in press. Parameterization of a light distribution model for green cell growth of microalgae: *Haematococcus pluvialis* cultured under red LED lights, *Algal Research*.

Pang, N. and S. Chen, 2017. Effects of C5 organic carbon and light on growth and cell activity of *Haematococcus pluvialis* under mixotrophic conditions, *Algal Research*, 21:227-235.

R He, C Li, L Ma, D Zhang, S Chen, 2016. Effect of highly branched hyphal morphology on the enhanced production of cellulase in *Trichoderma reesei* DES-15. 3 *Biotech*, 6:214

(290) X. Zhang; H. Lei; L. Zhu; Moriko Qian; Gayatri Yadavalli; Joan Wu; Shulin Chen, 2017. From plastics to jet fuel range alkanes via combined catalytic conversions, *Fuel*. 188:28-38

Zhao, B. S. Chen, 2016. Consolidated bioprocessing of microalgal biomass to carboxylates by a mixed culture of cow rumen bacteria using anaerobic sequencing batch reactor (ASBR), *Bioresource Technology*, publication date 10/1/2016.

Xiong, X. and S. Chen, 2016. Engineering Levoglucosan Metabolic Pathway in *Rhodococcus jostii* RHA1 for Lipid Production. *Journal of Industrial Microbiology and Biotechnology*. 8:1-10

Zhang, X. H. Lei, Lei Zhu, Moriko Qian, JC Chan, Xiaolu Zhu, Yupeng Liu, Gayatri Yadavalli, Di Yan, Lu Wang, Quan Bu, Yi Wei, Joan Wu, Shulin Chen, 2016. Development of a catalytically green route from diverse lignocellulosic biomasses to high-density cycloalkanes for jet fuels, *Catalysis Science & Technology*, 6:4210-4220.

Li, Tingting, S. Chen, 2016. Assessment of Photosynthesis Regulation in Mixotrophically Cultured Microalga *Chlorella sorokinian*, *Algal Research*. 19:30-38.

Yao, Y. S. Chen., 2016. A novel and simple approach to the good process performance of methane recovery from lignocellulosic biomass alone. *Biotechnology for Biofuels*, 9(1):1

- Xiong, X., X. Wang, and S. Chen, 2016. Engineering of an L-arabinose metabolic pathway in *Rhodococcus jostii* RHA1 for biofuel production. *Journal of Industrial Microbiology and Biotechnology*. 1-9;
- Zhang, X. Hanwu Lei, Shulin Chen, Joan Wu, 2016. Catalytic co-pyrolysis of lignocellulosic biomass with polymers: a critical review, *Green Chemistry*, 18:4145-4169.
- Azdarfar M., S. Chen, 2016. Solubilization of lignin in copolymer micelles in aqueous solution, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*. 503:1-10.
- Chen, L., X. Liu, D. Li, S. Chen., 2016. Preparation of stable microcapsules from disrupted cell of *Haematococcus pluvialis* by spray drying. *International Journal of Food Science and Technology*, 51(8):1834-1843.
- (280)Zhao, Y., F. Chen, S. Chen., 2016. Identification of NaHCO<sub>3</sub> stress responsive proteins in *Dunaliella salina* HTBS using iTRAQ-based analysis, *Journal of Proteomics & Bioinformatics*, 9:137-143.
- Zhang, X., H. Lei, S. Chen. 2016. Thermal behavior and kinetic study for catalytic co-pyrolysis of biomass with plastics. *Bioresource Technology*, 220:233-238.
- Zhang, X, H. Lei, L. Zhu, J. Wu, S. Chen, 2016. Enhancement of jet fuel range alkanes from co-feeding of lignocellulosic biomass with plastics via tandem catalytic conversions. *Applied Energy*, 173:418-430
- Wang, G. S. Chen, 2016. Exploring fatty alcohol-producing capability of *Yarrowia lipolytica*. *Biotechnology for Biofuels*, 9(1):1
- Zhang, X., H Lei, L Zhu, X Zhu, M Qian, G Yadavalli, D Yan, J Wu, S Chen, 2016. Optimizing carbon efficiency of jet fuel range alkanes from cellulose co-fed with polyethylene via catalytically combined processes, *Bioresource Technology*, 214:45-54.
- Chen, W. D. Li, S. Chen., 2016. Physicochemical properties and storage stability of microencapsulated DHA-rich oil with different wall materials, *Applied Biochemistry and Biotechnology*. *Applied Biochemistry and Biotechnology*, 1-14
- Hou, Y., Zhao, Y. F. Chen, S. Chen, CAH1 and CAH2 as key enzymes required for high bicarbonate tolerance of a novel microalga *Dunaliella salina* HTBS, *Enzyme and Microbial Technology*, *Enzyme and Microbial Technology*, 87:17-23.
- Mahesh V. Bule, Innu Chaudhary, Allan Gao, Shulin Chen, 2016. Effects of Extracellular Proteome on Wheat Straw Pretreatment during Solid-State Fermentation of *Phlebia radiata* ATCC 64658, *International Biodeterioration & Biodegradation*, 109:36-44
- Miao, C. and S. Chen, 2016. Hydrothermal Catalytic Deoxygenation of Palmitic Acid over Nickel Catalys, *Fuel*, 302-308.
- X. Zhang, H. Lei, L. Zhu, J. Wu, S. Chen. 2015. From lignocellulosic biomass to renewable cycloalkanes for jet fuels. *Green Chemistry*. 2015, 17 (10), 4736-4747.

- (270) Gao, L., D. Li, F. Gao, Z. Liu, Y. Hou, S. Chen, D. Zhang, 2015. Hydroxyl radical-aided thermal pretreatment of algal biomass for enhanced biodegradability, *Biotechnology for Biofuels*, 8(1):1
- Dong, Tao, S. Chen, 2015. Selective esterification to produce microalgal biodiesel and enrich polyunsaturated fatty acid using zeolite as a catalyst, *RSC Advances*. 5(103):84894-84900.
- Ma, J., Q. Zhao, LLM, Laurens, E. Jarvis, S. N.J. Nagle, S. Chen, C.S. Frear, 2015. Mechanism, kinetics and microbiology of inhibition caused by long-chain fatty acids in anaerobic digestion of algal biomass, *Biotechnology for Biofuels*, 8(1):1
- Dong, T., D. Gao, B. Rasco, S. Chen, 2015, Two-step microalgal biodiesel production using acidic catalyst generated from pyrolysis-derived bio-char, *Energy conversion and Management*, 105:1389-1396.
- Dong, Tao, S. Chen, 2015. Direct quantification of fatty acids in wet microalgal and yeast biomass via a rapid in situ fatty acid methyl ester derivatization approach. *Applied Microbiology and Biotechnology*, 99(23):10237-10247.
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Chen, S., Timmons, M. B., Aneshansley, D. J., and Bisogni, J. J. Jr. 1992. Bubble size distribution in a bubble column applied to aquacultural systems. *Aquacultural Engineering*, 11(4):267-280.

Chen, S., and Malone, R. F. 1992. A mathematical model for soft-shell crawfish production. *Aquacultural Engineering*, 11(4):217-229.

Weeks, N. C., Timmons, M. B., and Chen S. 1992. Feasibility of using foam fractionation for the removal of dissolved and suspended solids from fish culture water. *Aquacultural Engineering*, 11(4):251-265.

### ***Invited Book Contributions***

14 Wan, Y., B. Qi, J. Xing, Q. Liao, J. Sun and S. Chen, 2014. What We Can Learn From Natural Biomass-Utilization Systems for Developing Novel Bioreactors, Chapter 18 in Sun, J., S. Ding, and J. D. Doran-Peterson, Editors. *Biological Conversion of Biomass for Fuels and Chemicals - Exploration from Natural Utilization Systems*. Page 334-357. Royal Society of Chemistry. Cambridge, UK.

13 Ke, J., and S. Chen. 2014. Biological Pre-treatment of Biomass in Wood-feeding Termites, Chapter 10 in Sun, J., S. Ding, and J. D. Doran-Peterson, Editors. *Biological Conversion of Biomass for Fuels and Chemicals - Exploration from Natural Utilization Systems*. Page 177-194. Royal Society of Chemistry. Cambridge, UK.

12 Tianxi Zhang, Keith E. Bowers, Joseph H. Harrison and Shulin Chen 2009 Impact of Calcium on Struvite Precipitation from Anaerobically Digested Dairy Wastewater, *New Membranes*

*and Advanced Materials for Wastewater Treatment, American Chemistry Society.*

11 Chen, S., 2008. Industrial Biosystems Engineering, Concept and development. In Development in Industrial Biotechnology. Science Publisher, Beijing China (in Chinese)

10 Wen, Z. W. Liao, C. Liu and S. Chen, 2006. Value-Added Products from Animal Manure. In Yang, S.T., editor. Bioprocessing for Value-Added Products from Renewable Resources: New Technologies and Applications. Elsevier Science.

9 Fu, G., and S. Chen, 2005. Observed streamflow and its response to precipitation and temperature changes in the Yellow River with ArcGIS Geostatistical Analyst. In *Regional Hydrological Impacts of Climatic Change – Hydroclimatic Variability*. IAHS Publ. 296.

8 Chen, S., 2005. Food Waste, in Food Engineering, Barbosa-Canovas, G.V. (editor) *Encyclopedia of Life Support Systems* (EOLSS). UNESCO Publishing. 775-787.

7 Chen, S., S. Summerfelt, T. Losordo & R. Malone, 2002. Recirculating Systems, Effluents, and Treatments. Page 117-138 in Tomasso, JR (editor). *Aquaculture and the Environment in the United States*. United States Aquaculture Society/World Aquaculture Society, Baton Rouge, Louisiana, USA.

6 Chen, S., 2000. Mechanical Filtration. Page 363-367 in Stickney, R. R. (editor), *Encyclopedia of Aquaculture*, John Wiley and Sons.

5 Chen, S., 2000. Effluent: sludge. Page 286-289 in Stickney, R. R. (editor), *Encyclopedia of Aquaculture*, John Wiley and Sons.

4 Chen, S., and Fornshell, G., 2000. Effluent: Dissolved Compounds. Page 283-286 in Stickney, R. R. (editor), *Encyclopedia of Aquaculture*, John Wiley and Sons.

3 Golz, W., Malone, R. F., and Chen, S. 1997. Reducing the Environmental Impact of High Density Fish Production: An Integrated Approach to Solids Treatment for Recirculating Systems Using Expandable Granular Biofilters. Page 157-164 in Keller, B.J., Park, P.K., McVey, J.P., Takayanagi, K., and Hosoya, K (editors), *Interactions Between Cultured Species and Naturally Occurring Species in the Environment*. U.S.-Japan Cooperative Program in Natural Resources Technical Report No. 24, Texas A&M University Sea Grant College Program.

2 Chen, S., Langlinais, S., Malone, R., DeRamus, A., and Huner J. 1995. Design of Constructed Wetlands for Dairy Wastewater Treatment in Louisiana. Page 35-42. In Steel, K. F. (Editor), *Impact of Animal Waste on the Land-Water Interface*. CRC Press, Inc.

1 Chen, S., Stechey, D., and Malone, R. F. 1994. Suspended Solids Control in Recirculating aquacultural systems. Chapter 3 (page 61-100). In Timmons, M. B., and Losordo, T (Editors), *Engineering Design and Management of Aquaculture Water Reuse Systems*. Elsevier Science. 333pp.

### ***Non-refereed book and reports***



Yu, L., Ma, J., Chen, S., 2011. Developing and Commercializing High Solids Anaerobic Digesters (HSAD) for Converting Municipal Wastes to Fuel and Fertilizer, Project report to Washington State Department of Ecology.

Zhao, Q., Harrison, J., Neibergs, S., and Chen., S. 2011. Phosphorus and solids removal from anaerobic digestion effluent through electrochemical technology, Project report to CIG Grant Program, WSDA, NRI.

Hayk Khachatryan, Ken Casavant, and Eric Jessup, Jie Chen, Shulin Chen, and Craig Frear, 2010. Waste to Fuels Technology: Evaluating Three Technology Options and the Economics for Converting Biomass to Fuels, Project report to Washington State Department of Ecology.

Usama E Zaher, Chenlin Li, Liang Yu, Timothy Ewing, Shulin Chen, 2009. Producing Energy and Fertilizer from Organic Municipal Solid Waste: Enhancing hydrolysis and bacterial populations and mixing and thermodynamic modeling of new solid waste treatment technology.

Zaher, U., Cheong, D.Y., Wu, B., and S. Cheh., 2007. Producing Energy and Fertilizer from Organic Mnuicipal Solids Waste, Project report to Washsington State Depatment of Ecology.

Wei Liao, Craig Frear and Shulin Chen, 2007. Biomass Inventory Technology and Economics Assessment, Report 1. Characteristics of Biomass, Ecology Publication No. 07-07-025

Frear, C., Zhao, B., Fu, G. Richardson, M., and S., Chen, 2005. Biomass Inventory and Bioenergy Assessment – An evaluation of organic material resources for bioenergy production in Washington State. Publication N. 05-07-047, Washington Department of Ecology.

Zhao, B., Qiu, H., Wu, J., and Chen, S., 2005. An Independent Third Party Technical Review of Engineering Reports Submitted by Lamb-Weston, Pasco, WA for Land Treatment of Processing Wastewater, a Report submitted to WA department of Ecology.

Chen, S., 2004. Develop and operate a process containing enzymatic pretreatment and high-rate reactor for enhanced anaerobic digestion of dairy manure and biogas production, Report to Washington Technology Center.

Chen, S., C. Frear, B. Zhao, and G. Fu, 2003. Bioenergy inventory and assessment for Eastern Washington. Project report to Washington Department of Ecology.  
<http://www.ecy.wa.gov/biblio/0307021.html>

Chen, S., W. Liao, C. Liu, Z. Wen, R.L. Kincaid, J.H. Harrison, D.C. Elliot, A.E. Solana, M.D. Brown, and D.J., Stevens. 2003. Value-Added Chemicals form Animal Manure. Northwest Bioproduct Research Institute-Report No.1. Prepared for the U.S. Department of Energy under Contract DE-AC06-76RL01830.

Chen, S., Rynk, B., Hess, T., Kenimer, A., King, L., 2000. Natural Systems for Wastewater Treatment and Waste Management. Course teaching materials and CD.

Chen, S., and Barber, M. E., 2000. Water Quality Assessment, in Watershed Analysis and

Management (WAM) Guide for Tribes, EPA Watershed Analysis and Management Project.

## INVENTIONS

### US Patent Granted

9. **Chen; Shulin** (*Pullman, WA*), **Chakraborty; Moumita** (*Pullman, WA*), **Miao; Chao** (*Pullman, WA*), Sequential hydrothermal liquifaction (SEQHTL) for extraction of superior bio-oil and other organic compounds from oleaginous biomass US patent **9,522,965**; **Priority date: October 24, 2011.**
8. **Yu; Xiaochen** (*Pullman, WA*), **Zeng; Jijiao** (*Pullman, WA*), **Zheng; Yubin** (*Pullman, WA*), **Bule; Mahesh** (*Pullman, WA*), **Chen; Shulin** (*Pullman, WA*), Simultaneous saccharification and fermentation (SSF) of lignocellulosic biomass for single cell oil production by oleaginous microorganisms. US Patent 9,322,038. Filed July 6, 2012.
7. **YU; Xiaochen**; (*Pullman, WA*) ; **ZHENG; Yubin**; (*Pullman, WA*) ; **CHEN; Shulin**; (*Pullman, WA*), Microbial Oil Production From Biomass Hydrolysate By Oleaginous Yeast Strains. US Patent 8802409. Publication Number:20120083023. Filed September 6, 2011.
5. **Zhao; Quanbao**; (*Pullman, WA*) ; **Dvorak; Stephen W.**; (*Chilton, WI*) ; **Chen; Shulin**; (*Pullman, WA*) ; **Frear; Craig**; (*Pullman, WA*) ; **VanLoo; Bryan J.**; (*Lynden, WA*), Nutrient recovery systems and methods, US Patent number 8613894, priority date 6/10/2011.
6. **Chen; Shulin**; (*Pullman, WA*) ; **Frear; Craig**; (*Pullman, WA*) ; **Zhao; Quanbao**; (*Pullman, WA*), Integration of anaerobic digestion in algae-based biofuel systems; USPTO Number 8,287,732, publication number 20110091954, publication date 04/21/11, priority date 10/18/10.
4. **Liu; Yan**; (*East Lansing, MI*) ; **Liao; Wei**; (*East Lansing, MI*) ; **Frear; Craig**; (*Pullman, WA*) ; **Chen; Shulin**; (*Pullman, WA*), Pelletization process to control filamentous fungi morphology for enhanced reactor rheology and bioproduct formation, US Patent 8,343,741, priority date 12/18/08.
3. **Zhang; Tianxi**; (*Pullman, WA*) ; **Bowers; Keith E.**; (*Seattle, WA*) ; **Harrison; Joseph H.**; (*Puyallup, WA*), **Chen; Shulin**; (*Pullman, WA*), Compositions and methods for wastewater treatment, USPTO Patent Number 8,158,089., publication date 01/15/09, priority date 07/14/08.
2. **Chi; Zhanyou** (*Pullman, WA*), **Wen; Zhiyou** (Blacksburg, VA), **Frear; Craig** (Pullmann, WA), **Chen; Shulin** (Pullmann, WA). Heterotrophic algal high cell density production method and system. USPTO Patent Number 7,989,195. Issued August 2, 2011, filing date: Feb, 2008.
1. **Anping Jiang, Tianxi Zhang, Shulin Chen, Craig Frear**, Combined nutrient recovery and biogas scrubbing system integrated in series with animal manure anaerobic digestion, USPTO Patent Number 7,909,995, accepted date 03/22/11, priority data 06/03/08.

## PRESENTATIONS

### *Invited Presentations*

Chen S., 2016. Development of a Sequential Hydrothermal Liquefaction Platform for Processing Algal Biomass. Paper presented at the 4<sup>th</sup> Asia-Oceania Algae Innovation Summit. September 18-21, 2016.

Chen, S., et al. 2015. Re-configuring *Yarrowia lipolytica* lipogenesis platform towards free fatty acid and biofuel production. 2015 Metabolic Engineering and Green Manufacturing in Microorganisms, Beijing University of Chemical Technologies, July 8, 2015.

Chen, S., A New Generation of Anaerobic Digestion Technologies and Nutrient Recovery, A Keynote Presentation at the 18<sup>th</sup> World Congress of the International Commission of Agricultural and Biosystems Engineering (CIGR). September 16 – 19, 2014, Beijing, China.

Chen, S., 2013 Opportunities in nutraceutical industry development in Washington. Washington Clean Technology Alliance, July 31, 2013.

Chen, S., 2013 Opportunities and Challenges of New Bio-technology in Improving Urban Environment and for the benefit of Human Development. The 4<sup>th</sup> China (Binhai Tianjin) International Eco-City Forum Expo, Sub Forum: Green Technology and Eco-Cities. September 15, 2013.

Chen, S. Pierre Wensel, Tingting Li, Yubin Zheng, Moumita, Chakraborty, 2013, Integrated Algal Biorefinery Taking Advantages of Mixotrophic Growth, 35<sup>th</sup> Symposium on Biotechnology for Fuels and Chemicals, Portland, OR, April 28-May 2<sup>nd</sup>, 2013.

Chen, S., 2013. Co-products from algae. Presentation given at the 104<sup>th</sup> AOCS Annual Meeting and Expo as invited session Chair – algae proteins and co-product. April 28-May 1, 2012.

Chen, S. Peter Davey, Tao Dong, Pierre Wensel, William Hiscox, Gregory Helms, 2013. Fatty acid quantification from live and wet microalgae biomass. 245<sup>th</sup> American Chemical Society National Meeting and Exposition. New Orleans, LA, April 7-11, 2013.

Chen, S., 2012. Algae harvesting and extraction of bio-compounds and high value products. Invited sole speaker of the algae workshop at 5<sup>th</sup> Algae World Asia, November 8-9, Singapore.

Chen, S., 2012. Converting wastes to biofuels and biochemicals - opportunities, challenges and technologies. International Conference on Bioenergy and Biomass, Singapore (2-4 August 2012). <http://www.ngtbiomass.org/>

Chen, S., 2012. Nature-inspired biorefinery of lignocellulose. The 6th China Summit Forum on Industrial Biotechnology Development, Chengdu, China. October 19-22. <http://forum.bioindustry.cn/Tpl/default/Index/index.html>

Chen, S., 2012. Progress in research on nature-inspired system for processing lignocellulosic biomass. Third International Symposium on Bioenergy and Biotechnology, Wuhan, China. October, 14-20, 2012.

Chen, S., 2011. Strategy and Technical Approach for Developing Algal Biofuel in the Northwest. Pacific West Biomass Conference & Trade Show. January 10-12, 2011. Sheraton Seattle Hotel, Seattle, Washington.

Chen, S., 2011. Innovation and technology advances in algal biofuel development. 2011 Low-carbon Business Development Forum. April 22-34. Shenzhen, China.

Chen, S., 2011. Mechanism of lignin modification by termite and implications for lignocelluloses processing. Keynote presentation at the No. 395 Xiangshan Scientific Workshop. April 27-29. Xiangshan, Beijing.

Chen, S., 2011. Strategy and technical approach of developing algal biofuel in the Pacific Northwest. Pacific West Biomass Conference and Trade Show – A Biorefining and Biomass Power & Thermal Event. Jan. 10-12, 2011. Sheraton Seattle Hotel, Seattle, Washington.

Chen, S., 2010, Seattle bioenergy conference, November 7, 2010.

(30) Chen, S., 2010. Potential and challenges in biological pretreatment: a review. Keynote presentation at the international conference on Biorefinery, August 20-23, Beijing, China.

Chen, S., 2010. An integrated mixotrophic algal culture system for biofuel production. Joint 65th Northwest/22nd Rocky Mountain Regional Meeting of the American Chemical Society, June 20-23, Pullman, Washington.

Chen, S., 2010. Algae biofuel: potential, challenges, and status. Future Energy Conference, April 20-22, 2010, Portland, Oregon.

Chen, S., 2010. International Symposium on Bioenergy. February 5-8, 2010. Beijing, China

Chen, S., 2008. Biofuel Development in China, Bio-Industry conference, San Diego, June 17-20, 2008

Chen, S., 2008. Industrial Biosystems Engineering and Application in Biorefinery, Chinese Industrial Biotechnology Summit. April 17-19. Tianjin, China.

Chen, S., 2007. Cellulosic ethanol and anaerobic digestion research in the US. Chinese Energy Association Renewable Energy Workshop. December 7-9. Beijing, China

Chen, S., 2007. Fungal based on-site enzyme production for cellulosic biomass processing, University of Washington Deman Seminar Series. Nov. 12, 2007. Seattle, WA

Chen, S., 2007. Research and development status of cellulosic ethanol in the US. Invited presentation at the first Industrial Biotechnology Industry Conference. June 16-18, Shijiazhuang, China.

Chen, S., 2007. Innovative Anaerobic Digester Design and Nutrient Recovery. Invited panel presentation at the Harvesting Clean Energy Conference. January 28-30. Boise Idaho.

(20) Chen, S., 2006. Raceway Management Options for Phosphorous Discharge Reduction, invited presentation at the Idaho Aquacultural Conference. June 16-18, 2006. Twin Falls, Idaho.

Chen, S., 2006. Turning cull potato to valuable lactic acid and nutraceuticals. Invited presentation at the 7<sup>th</sup> international potato processing / storage convention. June 27 - 29, 2006. Warsaw Marriott, Poland.

Chen, S., 2006. Technical challenges in using fungal fermentation for organic acid production. Invited panel presentation at the Third Annual World Congress on Industrial Biotechnology and Bioprocessing. July 11-14, 2006. Toronto, Canada.

Chen, S., 2006. Research and application of fixed film biofilters for aquacultural application. NSF Center for Biofilm Engineering, Montana State University. March 30, 2006.

Chen, S., 2006. High value use of cull potatoes. Invited presentation at western Washington Potato Workshop. February 25, 2006. Bellingham. WA.

Chen, S., 2005. Bioproduct research – Opportunities and Innovation. Beijing University of Chemical Technologies. January 2-6, 2005. Beijing, China.

Chen, S. 2004. Bioproducts, Washington Mint Growers Annual Meeting, December 7, 2004. Pasco, Washington.

Chen, S., and J. Ling, 2004. Nitrification Kinetics. Biofilter Design Workshop. Oceanic Institute, November 7 to 11, 2004. Hawaii.

Chen, S., 2004. Development of tools and practices for the management of raceway effluents. United States Trout Farmers Association Meeting, September 14-17, 2004. Twin Falls, Idaho.

Brit Johnson and Shulin Chen, 2003. Effluent characterization and preliminary best management practices for raceway trout production. Aquaculture America 2003, February, 2003. Louisville, Kentucky.

(10) Chen, S., 2002. Advanced in theory and practice on recirculating systems. World Aquaculture 2002, Aquacultural Society Annual Meeting, April 22-27. Beijing, China.

Chen, S., 2001. Agriculture and the Environment. December 19, 2001. China Agricultural University. Beijing, China.

Chen, S. 2001. Waste management from recirculating aquacultural systems. Aquacultural Engineering Forum, November 12, 2001. Shepherdstown, West Virginia.

Chen, S., Watershed and water quality. Invited presentation at the 1999 Far West/WCPA Winter Conference. December 14-16, 1999. Spokane, Washington.

Chen, S., 1999. Solids removal and sludge management for recirculating aquaculture systems. An Aquaculture Engineering Forum. November 3-4, North Carolina State University. Raleigh, NC.

Chen, S. Solids removal and waste management for recirculating aquacultural systems. Invited presentation at the annual conference of the World Aquaculture Society. Aquaculture '98. February 15-19, 1998. Bally's Las Vegas, Las Vegas, Nevada.

Chen, S., 1997. Pollutant removal kinetics of constructed wetland. Presented at "Constructed Wetland for Pollution Control – a workshop, June 5-6. Spokane, Washington.

Chen, S., and Tang, J., 1996. How to Eliminate Wastewater in Food Processing Facilities. Invited presentation at the Washington Milk and Food Sanitarians Association Annual Meeting. September 26 & 27, 1996, West Coast Wenatchee Center Hotel. Wenatchee, Washington.

Chen, S., 1996. Aquacultural Sludge Treatment and Disposal, invited presentation at the Aquaculture Waste Management Workshop. College of Southern Idaho, August 24, 1996. Twin Falls, Idaho.

Chen, S., Ning, Z., and Malone, R. F., 1996. Aquaculture Sludge Treatment Using an Anaerobic and Facultative Lagoon System. Paper presentation at the Successes and Failures in Commercial Recirculating Aquaculture Conference, Sponsored by Virginia Polytechnic Institute and State University. , July 19-21, 1996. Roanoke, Virginia (Invited paper).

### **Featured in News/Publications**

Spot light: CFD modeling in Anaerobic digestion, Bioengineering and Biotechnology

KMW Radio, 3/20/08. Producing biohydrogen and biodiesel feedstock from food waste

### TEACHING AND ADVISING

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#### *COURSES TAUGHT*

•Water quality modeling • Natural systems for wastewater treatment • Advanced topics in misprocessing and biotreatment • Biorefinery process analysis and design • Biosystems Engineering for Fuels and Chemicals.

#### *ADVISING*

#### **Graduate students as major advisor**

<b>Student Name</b>	<b>Year of graduation</b>	<b>Degree</b>	<b>Thesis Title</b>
Gianna Cothren	1996	PhD	Longitudinal Dispersion in Subsurface Flow Constructed Wetland
Yunxiang Fan	1997	MS	Leaching Characteristics of Phosphogypsum Stabilized by Cement
Zheng Ning	1996	MS	Production, Characterization, and Disposal of Aquacultural Sludge

Matt Rahman	1995	MS	A Hydrological Model of a Lagoon System for Dairy Wastewater treatment
Jingwei Wu	1995	MS	Oil and Grease Removal from Catfish Processing Plant
Miho Nakano	1999	MS	Nitrogen removal from constructed wetlands
Brook Saucier	1999	MS	Design of recirculating systems for shellfish wet-storage
Gabriel Mancilla	2001	MS	Rill formation and velocity distribution in soil erosion processes
Gabriel Mancilla	2004	PhD	Sediment transport and delivery in watershed
Bingcheng Zhao	2001	PhD	Kinetics of denitrification in soil and the effect of perennial ryegrass on nitrate concentration in soil
Mike Martin	2002	MS	Modeling grounder water/surface water interaction in an agricultural watershed
Bill Johnson	2006	PhD	Design of nitrification biofilters for marine aquacultural applications
Jian, Ling	2005	PhD	Nitrification and the impact of organic matter in fixed-film biofilters: application to recirculating aquaculture systems
Brit Johnson	2003	MS	BMP for phosphorus removal from aquacultural effluents
Wei Liao	2005	PhD	Co-Production of Fumeric Acid and Chitin using <i>Rhizopus oryzae</i> fermentation on a nitrogen rich agricultural residue – Dairy manure
Yan Liu	2005	PhD	Co-Production of Lactic Acid and Chitin from a Pelletized filamentous <i>Rhizopus oryzae</i> Culture Using Cull Potatoes
Guobin Fu	2005	PhD	Modeling Water Availability and its Response to Climate Change in Spokane River Watershed
Dawn Shepard	2004	MS	A temperature model for agricultural drainage systems
Bo Hu	2007	PhD	Biological hydrogen production with bacteria immobilization
Kip Tylor	2007	MS	Treatment of effluent from intensive flow through aquacultural systems
Anping Jiang	2009	PhD	A new process for ammonia removal from effluent of anaerobic digesters treating high nitrogen wastes
Gangsheng Wang	2010	PhD	Modeling greenhouse gas emission from dairy farm systems
Mythreyi Chandoor	2010	MS	Key process in plant cell wall deconstruction in soil and engineered processes
Xiaochen Yu	2010	MS	Evaluation of pretreatment technologies for the simultaneous production of lipids and ethanol from lignocellulosic materials
Yubin Zheng	2010	MS	Culture of oleaginous yeast <i>Cryptococcus curvatus</i> for biodiesel feedstock with hydrogen fermentation effluent
Chao Miao	2011	MS	Subsequential hydrothermal liquefaction process for algae biomass conversion
Liang Yu	2012	PhD	Simulation of flow, mass transfer and bio-chemical reactions in anaerobic digestion
Jingwei Ma	2012	PhD	Mechanism, kinetics and microbiology of selection pressure driven biomass retention in solids containing agricultural waste treatment
Jijiao Zeng	2012	PhD	Degradation of wheat straw cell wall by white rot fungi <i>Phanerochaete chrysosporium</i>
Jing Ke	2012	PhD	Lignin unlocking process in wood-feeding termites for effective biomass sugar release
Nicholas paul Kennedy	2012	MS	Biogas purification: a novel technique using pretreated digester effluent
Peter Davey	2012	MS	Rapid Triacylglyceride Detection in Live Oleaginous Microorganisms with Quantification in Phototrophic Microalgal Cultures via Liquid State <sup>1</sup> H NMR
Difeng Gao	2012	MS	Lipid production from xylose and inhibitory effects from lignocellulose hydrolysate using <i>Mortierella isabellina</i>

Allan Gao	2012	MS	Pretreatment of Wheat Straw with Ozone and Soaking Aqueous Ammonia
Xiaochen Yu	11/10-5/13	PhD	Pretreatment technology for the simultaneous production of lipid and ethanol from lignocellulosic material
Yubin Zheng	11/10-12/13	PhD	Modifying yeast for co-production of biodiesel and high value products
Pierre Wensel	8/09-7/13	PhD	Algae culture using recycled nutrients
Jieni Lian	8/08-5/13	PhD	Utilization of pyrolytic products to produce lipid through fermentation
Tingting Li	8/09-5/14	PhD	Mixotrophic culture for efficient CO2 utilization
Tao Dong	8/09-12/13	PhD	In-situ process for biodiesel production
Chao Miao	8/11-7/14	PhD	Catalyst design for upgrading bio-oil to hydrocarbon
Difeng Gao	8/12-7/14	PhD	Control fungal morphology for lipid production
Xin Gao	8/10-5/13	MS	Lignin content determination with NMR
Xin Gao	5/13-5/15	PhD	Producing high value products from algae
Allan Gao	8/12-5/15	PhD	Pretreatment process optimization
Yuxiao Xie	8/11-12/14	MS	Co-product production from algae
Yuxiao Xie	1/15-	PhD	
Odgerel Bumandalai	8/12-7/14	MS	Identification of high value products from algae culture
Xi Wang	1/11-8/15	PhD	Metabolic engineering of cyanobacteria for fuel production
Shuai Zhang	8/12-1/15	MS	Nature inspired pretreatment process for lignocellulose
Shuai Zhang	1/15-	PhD	
Charles Degan	8/12-7/14	MS	Extraction of high value products from algae
Mohammada Azadfar	8/12-5/16	PhD	Lignin co-products from wheat straws
Ali Abghari	8/12-	PhD	Yeast based biochemical through synthetic biology
Pengdong Wang	8/13-7/18	MS/PhD	Engineering oleaginous yeast factory for producing biochemicals
Jose Martinez	8/13-7/18	MS/PhD	Biorefining systems for converting algal biomass
Samantha The	8/13-5/16	MS	Optimize light utilization for high productivity of algae culture
Sujala Bhattarai	8/13-7/17	PhD	Multi-scale modeling of nature-inspired lignocellulosic processing
Innu Chaudhary	8/13-12/16	PhD	Novel enzyme systems from termite for plant cell wall degradation
Ayca Seker	8/13-12/16	PhD	Extraction of polyphenols from fruit processing wastes
Rishikesh Ghogare	8/13-12/16	PhD	Develop yeast engineering platform for producing biochemicals
Iin Prlina	8/14-5/16	MS	Pretreatment of lignocellulosic materials for anaerobic digestion
Yaojing Qiu	8/14-5/16	MS	Harvesting long-chain fatty-acids from algae using anaerobic diges-
Yaojing Qiu	1/17-	PhD	
Na Pang	8/14-	MS/PhD	Mixotrophic algae growth
Marwan Gagaa	1/15-12/17	PhD	
Cindy Angela	8/15-5/17	MS	
Andre Bergeron	8/15-	PhD	
Maryam Dacaritouchae	8/15-	PhD	
Xiangyu Gu	8/15-	PhD	
Alia Nasir	8/16-	PhD	

### Other graduate committees served

Student	Department	Year	Degree	Thesis Title
Clay Loyless	Civil and Environmental Engineering, LSU	1995	MS	Oxygenation and CO2 Removal Using Airlift Pumps
Balaji Sastry	Civil and Environmental Engineering, LSU	1995	MS	Comparison of Plastic Beads and Tubes as Biofilter Media



Kevin Timmins	Civil and Environmental Engineering, WSU	1999	PhD	Highway runoff characteristics
Jose Maria Peralta	Biological Systems Engineering, WSU	1999	PhD	Modeling the hydrology of small watersheds in the pacific northwest
Tanja Koob	Civil and Environmental Engineering, WSU	2003	PhD	Treatment of highway runoff using wet detention ponds: water quality, operation, and maintenance considerations
Joe Green	Fisheries, UI	2002	PhD	Fish waste reduction by feed manipulations
Mei-Yin Wu	Environmental Science, WSU	2000	PhD	Oxygen supply to constructed wetlands
Chun-hsu Lin	Environmental Science, WSU	2000	PhD	A winter subroutine for WEPP
Todd Krause	Civil and Environmental Engineering, WSU	2000	MS	Develop a biofilter for lagoon emission control
Xin Dai	Agricultural and Biological Engineering, UI	2002	PhD	Transport and Survival Characteristics of Cryptosporidium parvum oocysts and Giardia lamblia cysts in overland water
Jaime Mejias	Biological Systems Engineering, WSU	2004	PhD	Animal waste management with emphases on phosphorus
Ahmed Bdour	Civil and Environmental Engineering, WSU	2003	PhD	Integrating erosion control model with a sediment transport model
Gilbert Gaboutloeloe	Biological Systems Engineering	2004	PhD	Oxygen transfer in constructed wetland
Tamilee Nennich	Animal Science	2005	PhD	Nutrient management of dairy cattle operations and the effect of changes in manure, feeding, and cropping systems.
Janet Snedecor	Civil Engineering	2004	MS	Recycling Jordan's Water: Identification of Monitoring Program Requirements
Mark Stone	Civil Engineering	2004	PhD	Water Yield Responses to High and Low Spatial Resolution Climate Change Scenarios in the Missouri River Basin
Chuncheng Tao	Biological and Agric. Engin. UI	2005	PhD	Enzymatic Isolation of EA from HEA Crambe Oil in a Hollow-Fiber Membrane Reactor: Selective Hydrolysis and Its Kinetics
Joseph Dietrich	Civil and Environmental Engineering, WSU	2004	PhD	Comparative Efficiencies of Disinfection Methods Applied to Dispersed and Particle Associated Pathogens
Bill Conroy	Civil Engineering, WSU	2005	PhD	A Coupled Upland-Erosion, In-stream Hydrodynamic-sediment Transport Model for Assessing Primary Impacts of Forest Management Practices on Sediment Yield and Delivery
Tao Wang	Food Science, UI	2004	MS	Production of Lactic Acid from Potatoes and Potato processing Waste Using Amyolytic Lactic Acid Bacterial Strains

Shantanu Agarwal	Food Science	2006	PhD	Non-Starter Lactic Acid Bacteria and Calcium Lactate Crystals Formation in Cheddar Cheese
Erik Coats	Civil Engineering	2005	PhD	Waste to Plastic: A Sustainable Approach for the Production and Use of Polyhydroxyalkanoates, and the Impact of Biological Phosphorus Removal Mechanisms
Nicole Uslar	Biological Systems Engineering	2011	PhD	Modeling nutrients management in dairy farms
Shuai Zhou	Biological Systems Engineering	2013	PhD	
Lishi Wang	Biological Systems Engineering	2013	PhD	
Shoujie Ren	Biological Systems Engineering	2012	PhD	Producing fuels from woody biomass through pyrolysis
Lu Wang	Biological Systems Engineering	2013	PhD	
Libing	Biological Systems Engineering		PhD	
Nanditha Murali	Chemical Engineering		PhD	
Xuesong Zhang	Biological Systems Engineering	2016	PhD	

### Post-docs, research associates and technicians

<i>Name</i>	<i>Dates Supervised</i>				
Guang-Te Wang	January	1994	To	September	1995
And		1998	To	August	1994
Mike Christensen	August	1994	To	September	1995
<i>Name</i>	<i>Dates Supervised</i>				
Shikui Xue	May	1996	To	October	1998
Songming Zhu	February	1998	To	December	2000
Kala Pandit	March	1999	To	June	1999
Shauna Masion	November	1998	To	April	2002
Bill Bowe		1995	To		2004
Bingcheng Zhao	May	2001	To	December	2005
Zhiyou Wen	November	2001	To	August	2005
Chuanbin Liu	December	2001	To	December	2005
Jonathan Lomber	April	2002	To	January	2007
Qiang Pan	November	2002	To	December	2004
Goksel Demirer	January	2003	To	August	2004
Dan Hardesty	May	2004	To	December	2005
Cary Swanson	May	2004	To	July	2005
Scott Economu	January	2004	To	April	2007
Tony Singh	September	2005	To	September	2007
Dae-Yeol Choeng	July	2006	To	October	2007
Yuzhou Luo	August	2006	To	December	2006

Abbas Alomari	May	2006	To	August	2006
Binxin Wu	September	2006	To	August	2007
Craig Frear	March	2003	To	June	2009
Marc St. Pierre	March	2005	To	October	2008
Zhanyou Chi	June	2005	To	November	2011
Tianxi Zhang	April	2005	To	July	2009
Usama Zaher	September	2005	To	October	2008
Chenlin Li	August	2007	To	September	2008
Zhiwu Wang	September	2007	To	March	2009
Zhiwei Chen	July	2007	To	June	2008
Zhimin Li	February	2007	To	January	2009
Deepak Singh	April	2007	To	July	2010
Nan Liu	December	2007	To	October	2009
Jie Chen	February	2008	To	March	2010
Ben Lucker	March	2008	To	December	2010
Quanbao Zhao	November	2008	To	June	2012
Kathleen Dorgan	October	2008	To	September	2010
Jim Ofallon	July	2009	To	December	2011
Xiaochao Xiong	September	2009	To	Present	
Sachin Gadekar	October	2009	To	March	2010
Chunyan Xu	October	2009	To	November	2010
Baisuo Zhao	December	2009	To	November	2012
Mahesh Bule	November	2010	To	January	2014
Moumita Chakraborty	February	2010	To	December	2012
Jing Ke	December	2012	To	May	2013
Liang Yu	January	2013	To	Present	
Tao Zhu	November	2014	To	Present	
Yiqing Yao	November	2015	To		

#### Visiting students (joint training program) supervised

Name	From	Year Advised	Research Topic
Rongping Li	Beijing Univ. of Chemical Technology	2006	Anaerobic co-digestion of municipal wastes and animal manure
Jianliang Li	Beijing Univ. of Chemical Technology	2009	Engineering yeast for xylose utilization
Qiulian Chang	Beijing Univ. of Chemical Technology	2009	Biogas purification for transportation fuel
Feiyan Xue	Beijing Univ. of Chemical Technology	2009	Co-products from oleaginous yeast
Changchun Hao	China Agricultural University	09-10	Protein extraction from algae
Jinjing Wang	Chinese Academy of Sciences	09-11	Yeast genetic engineering
Guokun Wang	Chinese Academy of Sciences	14-15	

#### Visiting scientists (funded by their own sources)

Name	From	Year Advised	Research Topic
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Dr. Yapeng Chao	Institute of Microbiology, CAS	08-09	Cellulase production, fuel quality
Dr. Qunsheng Li	Beijing Univ. of Chemical Technology	2009	Biogas separation and purification
Dr. Yucai Hu	Dailian Ocean University	10-11	Algal biofuel
Dr. Jun Wang	Jiangsu University of Sci. & Tech.	11-12	Separation and extraction
Dr. Jie Liu	Heilongjian Academy of Agricultural Sciences	11-12	Bioenergy-Anaerobic digestion
Dr. Changle Pang	China Agricultural University	12-13	Anaerobic digestion
Dr. Qian Li	Henan University	13-14	Biorefinery modeling
Dr. Yonghong Meng	Shanxi Normal University	14-15	Metabolic engineering
Dr. Hairong Yuan	Beijing Univ. of Chemical Technology	14-15	Anaerobic digestion
Dr. Ping Ai	Huazhong Agricultural University	14-15	Anaerobic digestion

Selected list of advisees (PhD Students and Post-Docs) placement

Name	Status	Year Advised	Placement
Gabriel Mancila	PhD student	1997-2003	Assistant Professor, University of Chile
Goksel Demer	Post-Doc Research Associate	2002-2005	Associate Professor, Middle East University, Turkey
Zhiyou Wen	Post-Doc Research Associate	2001-2005	Assistant Professor, Virginia Tech
Wei Liao	PhD student/Post Doc	2001-2007	Assistant Professor, Michigan State University
Chunanbin Liu	Post-Doc Research Associate	2001-2005	Research engineer, Genecore Corporation
Yan Liu	PhD student/Post Doc	2001-2007	Assistant Professor, Michigan State University
Bo Hu	PhD student	2004-2007	Assistant Professor, University of Puerto Rico
Binxin Wu	Post-Doc Research Associate	2006-2007	Senor Research Engineer, Mixing solutions
Zhiwu Wang	Post-Doc Research Associate	2007-2009	Assistant Professor, Ohio State University
Guobin Fu			
Tao Dong	Post-Doc Research Associate		
Xiaochen Yu	Post-Doc Research Associate		
Yubin Zheng	Post-Doc Research Associate		
Jieni Lian	Post-Doc Research Associate		
Jijiao Zeng	Post-Doc Research Associate		
Liang Yu	Post-Doc Research Associate		
Chao Miao	Post-Doc Research Associate		

Tingting Li	Post-Doc Research Associate		
Difeng Gao	Post-Doc Research Associate		

## SERVICES

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### *REVIEWER FOR REFEREED JOURNALS (partial list)*

Science  
 Bioengineering and Biotechnology  
 Biochemical Engineering Journal  
 Applied Microbiology and Biotechnology  
 Journal of Applied Microbiology  
 Process Biochemistry  
 Journal of hydrological Engineering  
 Transactions of the ASABE  
 Aquacultural Engineering  
 Bioresource Technology  
 Environmental Engineering Science  
 Journal of Environmental Engineering  
 Aquaculture

### *REVIEWER FOR FUNDING AGENCIES (Partial list)*

NSF, AAAS, USDA SBRI, NOAA, EPA, USGS, USDA NRI,  
 Chinese Natural Science Foundation, Australian Research Council  
 United States-Israel Bi-national Agricultural Research and Development Fund  
 Israel Science Foundation  
 Danish Council for Independent Research

### *SERVICE TO GOVERNMENTAL AGENCIES:*

Member of Washington State Bioenergy Team, 2007 to present  
 Recirculating System Sub-technical group leader, National Task Force on Aquacultural Effluent Studies  
 Proposal reviewer for NSF, DOE, USDA, WRAC, USGS Water Research Center  
 USDA SBIR proposal review panel  
 EPA review panel member

### *SERVICE TO WASHINGTON STATE UNIVERSITY:*

Search Committee Member for the faculty for the Center for Bioproducts and bioenergy, 2008  
 Search Committee for the Director of Center for Bioproducts and Bioenergy, 2007  
 WSU Bioproduct Research Initiative Coordinator, 2003-2006  
 Search Committee Member for the Dean of College of Agriculture, Human and Natural Resource Sciences, 2006  
 Organized the constructed wetland workshop sponsored by WSU, June, 1996  
 A workshop: Natural Systems for Wastewater Treatment and Water Quality Management, July 21, Toronto, Canada

Aquaculture Techniques and Opportunities - A Northwest Aquaculture Short Course, July 27-29, 1999  
Member Faculty Excellence Award Committee, 2000-2003  
Lead WSU/PNNL focus group on collaboration, 2006  
Established the Center for Byproducts and Bioenergy and Served as the Interim Director, 2006 – 2007  
Develop collaborative relationship between Washington State and Hanan Province.

*SERVICE TO THE COLLEGE OF AGRICULTURE, HUMAN AND NATURAL RESOURCE SCIENCES:*

College Tenure and Promotion Committee, 2008, 2009, 2010  
Search Committee Member, Director for the Center for Sustaining Agriculture and Natural Resources, 2008  
Co-leader: Land, Water, and Natural Resources Design Team, 2001  
WSU Representative, Regional Program Development Committee for Biochemical and Bioenergy Committee Member, School of Natural Resources and Environment  
Leadership Team Member, Center of Sustained Agriculture and Natural Resource Sciences

*SERVICE TO THE COLLEGE OF ENGINEERING AND ARCHITECTURE:*

College Outstanding Researcher Award Committee, 2005 to present  
Committee Staff Award Committee, 2006  
B.S. in Environmental Engineering Committee, 1999

*SERVICE TO THE BIOLOGICAL SYSTEMS ENGINEERING DEPARTMENT:*

Bin Ying Mentoring Committee, 2009-Present  
Chair, Scholarship and Development Committee, 2008 to present  
Biomass and Bioproduct Position Search Committee Chair, 2006-2007  
Biomass and Bioproduct Position Search Committee Chair, 2004-2005  
Nutrient management position search committee chair, 2003-2004  
Student Advisor, Soil-water-Environmental Engineering track, 1999  
Department Graduate Committee, Chair, 2000  
Department Safety Committee, Chair, 1996-2000  
Mentoring committee, Dr. Bin Yang, Dr. Sindhuja Sankaran

*SERVICE TO PROFESSIONAL SOCIETIES:*

Session Chair, AIChE annual meeting, 2010, 2011, 2012, 2013  
Session Co-Chair, American Oil Chemical Society annual meeting, 2013  
Program Committee, [World Congress on Industrial Biotechnology & Bioprocessing](#), 2010, 2011, 2012  
Session co-chair, 33<sup>rd</sup> Symposium of Biotechnology for Fuels and Chemicals, 2011  
Session organizer, AIChE International Annual Conference, 2009, 2010, 2011.  
Program Committee, Pacific Rim Industrial Biotechnology and Bioprocessing, 2010  
Board of Directors, Aquacultural Engineering Society, 1998 – 2001, 2004-2008  
Organizer, World Aquacultural Society 2002 Conference, 2001-2002  
Paper award committee, Aquacultural Engineering Society, 2000 – 2003  
Session organizer, Aquacultural Engineering Society Issue Forum, 2001 AES Program  
Session organization for ASAE International Annual Meeting, 1998

*SERVICE TO INDUSTRY:*

*Advisory board, Bioalgene 2012-*

*INTERNATIONAL SERVICES:*

Co-chair: No. 395 Xiangshan Scientific Workshop. April 27-29, 2011. Xiangshan, Beijing.

Editorial Board, *Biofuels*

Editorial Board, *Chinese Journal of Biotechnology*, 2008 to present

Organizing Committee, 1<sup>st</sup> International Biorefinery Conference, Beijing, China, October 20-23, 2007

Member of the Organizing Committee, International Conference on Biomass and Bioenergy, August 20-23, 2010, Beijing, China

Adjunct Professor, Institute of Microbiology, Chinese Academy of Sciences, 2007 to 2009

Adjunct Professor, Tianjin Institute of Industrial Biotechnology, Chinese Academy of Sciences, 2009 to Present

United Nations Development Program – Senior Technical Advisers Recruitment (STAR), technical adviser to Dalian Fisheries University, Dalian, China, 1996