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**Short Bio**

*Samir Kumar Khanal is Professor of Environmental Engineering, Dept. of Molecular Biosciences and Bioengineering, University of Hawai'i at Mānoa (UHM). Prof. Khanal started his tenure-track faculty position in 2008 at UHM. Before joining UHM, he was a Post-doctoral Research Associate for 2 years and then Research Assistant Professor for 4 years in the Dept. of Civil, Construction and Environmental Engineering at Iowa State University. He received BS (Hons) in Civil Engineering from Malaviya National Institute of Technology, Jaipur, India, and MS in Environmental Engineering from Asian Institute of Technology, Bangkok, Thailand. His PhD degree is in Environmental Engineering from the Hong Kong University of Science and Technology, Hong Kong. Prof. Khanal is globally recognized researcher in the field of anaerobic digestion, nanobubble technology, aquaponics and waste-to-resources. He has supervised/mentored 14 PhD, 21 MS, 26 UG and 13 high school students, 12 Post-docs, 15 Visiting Scholars, and 2 Junior Researchers. He has over 145 refereed publications in top-rated international journals, 17 book chapters, and 10 books including one best-selling book (Anaerobic Biotechnology for Bioenergy Production: Principles and Applications) and one textbook (Bioenergy: Principles and Applications) to his name. Prof. Khanal has also delivered over 150 plenary/keynote/invited/guest lectures nationally/internationally and is one of the most productive researchers with Scopus H-index of 50.0 (citation ~9600) and Google Scholar H-index of 59.0 (citations ~13,900). He is globally renowned in the field of anaerobic digestion, bioenergy, aquaponics and nano-bubble technology applications. As evidenced from his achievements and research impact, Prof. Khanal was awarded the highly prestigious Board of Regents' Medal for Excellence in Research by the University of Hawai'i at Manoa (2018), Elsevier's Impactful Research Award (2018) and CTAHR Dean's Award for Excellence in Research by the College of Tropical Agriculture and Human Resources, University of Hawai'i at Manoa (2016). Prof. Khanal was also awarded Pandey Research Excellence Award, International Bioprocessing Association (2021), and Outstanding Alumni Award-2021, Dept. of Civil and Environmental Engineering, The Hong Kong University of Science and Technology (2021). Prof. Khanal also was ranked world's top 2% scientists by Stanford University's Study (<https://data.mendeley.com/datasets/btchxktzyw/2>). He is an Editor of Bioresource Technology and serves on the Editorial Board/Advisory Board of four other journals. He has also served as a leading guest editor of several special issues related to Anaerobic Digestion and Waste-to-Resources for Bioresource Technology. He has served on various committees of other professional societies, including IWA-AD-17 world congress, International Bioprocessing Association (IBA). Prof. Khanal is a professional engineer in the state of Iowa.*

## EDUCATION AND ACADEMIC TRAINING

- Post-doctoral Research Associate, Department of Civil, Construction and Environmental Engineering, **Iowa State University**, Ames, IA; Mar 2002 - Feb 2004.  
Major: Environmental Biotechnology
- Doctor of Philosophy, **The Hong Kong University of Science and Technology**, Hong Kong; Feb 1998 - Feb 2002.  
Major: Environmental Engineering (Environmental Biotechnology)
- Master of Engineering (M. Eng.), **Asian Institute of Technology**, Bangkok, Thailand; Jan 1996 - Aug 1997.  
Major: Environmental Engineering (Water and Wastewater Engineering)
- Bachelor of Engineering (*First class with honors*), **Malaviya National Institute of Technology**, Jaipur, India; Sep 1988 - Jan 1993.  
Major: Civil Engineering

## AWARDS

- Award to Advisee Ty Shitanaka (M.S. candidate), Graduate Research Fellowship Program Honorable Mention, National Science Foundation, April 2022.
- Award to Advisee Ty Shitanaka (M.S. candidate). 1<sup>st</sup> place Early Graduate Division 3-minute elevator pitch competition, CTAHR, University of Hawaii at Manoa, April 2022.
- Outstanding Alumni Award - 2021, Dept. of Civil and Environmental Engineering, The Hong Kong University of Science and Technology.
- Pandey Research Excellence Award -2021, *International Bioprocessing Association (IBA)*
- Award to Advisee, Kyle Marcelino (M.S. candidate), Outstanding Postgraduate Researcher (Oral presentation) at the International Conference on Sustainable Biowaste Management, Hong Kong (2021).
- Award to Advisee, Renisha Karki (M.S. candidate), Outstanding Postgraduate Researcher (Poster presentation) at the International Conference on Sustainable Biowaste Management, Hong Kong (2021).

- Award to Advisee, Ty Shitanaka (M.S. candidate), Graduate Dean's Award for Graduate Research (2021).
- Board of Regents' Medal for Excellence in Research, University of Hawai'i at Mānoa (2018). (*The highest research award bestowed by the University of Hawai'i System*)
- Elsevier's Impactful Research Award in Bioresource Technology (2018).
- Award to Advisee, Duc Nguyen (Ph.D. candidate), People's Choice Award in CTAHR 3-Minute Elevator Pitch Competition (2018).
- Award to Advisee, Duc Nguyen (Ph.D. candidate), 30<sup>th</sup> Anniversary Best Ph.D. Student Oral Presentation in the 30<sup>th</sup> College of Tropical Agriculture and Human Resources Student Research Symposium (2018).
- Award to Advisee, Fernanda R. Oliveira (Ph.D. candidate), Gamma Sigma Delta PhD Student Oral Presentation in the 30<sup>th</sup> College of Tropical Agriculture and Human Resources Student Research Symposium (2018).
- Award to Mentees, Gowoon Jung, Kacie Niimoto, Marissa Kuwabara and Sara Lin (Seniors in Biological Engineering), Senior design project *Design of Small-Scale Water Treatment Systems for the Ala Wai Canal*, 1<sup>st</sup> Place in American Water Works Association (AWWA) "Fresh Ideas" Contest (2018).
- Award to Advisees, Duc Nguyen (Ph.D. candidate, University of Hawaii at Manoa), Shilva Shrestha (Former M.S. student, now Ph.D. candidate at University of Michigan at Ann Arbor) and Nanshi Dong (Ph.D. student, Tongji University, Shanghai, China), Outstanding Poster Award (2017) at 15<sup>th</sup> International Water Association's *World Congress on Anaerobic Digestion*. (*Total of 20 posters selected from over 600 posters presented in the congress*)
- CTAHR Dean's Award for Excellence in Research, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa (2016). (*Awarded to one best researcher from the college annually*)
- Award to Advisee, Brent Wakizawa (Senior in Biological Engineering), College of Tropical Agriculture and Human Resources Symposium, MBBE Best Undergraduate Oral Presentation Award in (2017).
- Award to Advisees, Sreelakshmi Kutty and Ariana Kim (High School Intern, St. Andrew's Priory High School, Honolulu, HI), Second place in environment category at the Intel International Science and Engineering Fair (ISEF), Phoenix, Arizona (May 8-13, 2016).

- Award to Advisees, Sreelakshmi Kutty and Ariana Kim (High School Intern, St. Andrew's Priory High School, Honolulu, HI) selected to represent the State of Hawaii in the U.S. Stockholm Junior Water Prize (SJWP) National Competition, University of North Carolina, Charlotte, NC (Jun 17-18, 2016).
- Award to Advisee, Fernanda R. Oliveira (Ph.D. student), CTAHR Ph.D. Student Poster Presentation Award of Merit in the 28<sup>th</sup> College of Tropical Agriculture and Human Resources Symposium (2016).
- Award to Advisee, Sumeth Wonkiew (Ph.D. candidate), MBBE Best Ph.D. Student Poster Presentation in the 28<sup>th</sup> College of Tropical Agriculture and Human Resources Symposium (2016).
- Award to Advisees, Zackery Morrison and Noeloikeau Charlot (Seniors in Biological Engineering), MBBE Best Undergraduate Student Oral Presentation in the 28<sup>th</sup> College of Tropical Agriculture and Human Resources Symposium (2016).
- Award to Advisee, Surendra K.C (Ph.D. candidate), DAAD Short-term Research Fellowship, Bonn, Germany to conduct anaerobic digestion research at Hohenheim University, Stuttgart, Germany (Jan to May 2016).
- NSF Conference Grant to Advisees, Edward Drielak (M.S. candidate); Shilva Shrestha (M.S. student); Chayanon Sawatdeenarunat (Ph.D. student); and Duc Nguyen (Ph.D. student) to attend/present at S-1041: *The Science and Engineering for a Bio-based Industry and Economy Annual Meeting and Symposium* in Wooster, OH (Aug 11-12, 2015).
- Award to Advisees, Sreelakshmi Kutty and Ariana Kim (High School Intern, St. Andrew's Priory High School, Honolulu, HI), *Utilization of Invasive Macro-algae for High-value Products*, Third Place in Chemistry Category at Intel International Science and Engineering Fair (ISEF), Pittsburgh, PA (May 10-15, 2015).
- Award to Advisees, Sreelakshmi Kutty and Ariana Kim (High School Intern, St. Andrew's Priory High School, Honolulu, HI), *Algal-biofuel*, First Place in Energy and Environment Category in the State of Hawai'i (2015).
- Award to Advisee, Shilva Shrestha (M.S. candidate). 3<sup>rd</sup> place, CTAHR M.S. Oral Award of Merit in the 27<sup>th</sup> College of Tropical Agriculture and Human Resources Symposium (2015).

- Award to Advisee, Laura Martinez, Gamma Sigma Delta Undergraduate Poster Presentation. 26<sup>th</sup> College of Tropical Agriculture and Human Resources Symposium (2014).
- Excellent Reviewer for *Bioresource Technology (BITE)* (IF: 6.667) (2014).
- Award to Advisee, Pradeep Munasinghe - Best Poster Award at the Third International Conference on Materials, Energy and Environment (ICMEE2014), Honolulu, HI (Jul 2014).
- DAAD Research Fellowship, Germany to conduct research at State Institute of Agricultural Engineering and Bioenergy, Hohenheim University, Stuttgart, Germany (2013).
- Award to Advisee, Saoharit Nitayavardhana - Best Student Oral Presentation Award at the International Conference on Challenges in Environmental Science and Engineering (CESE-2012), Melbourne, Australia (Sep 9-13, 2012).
- Award to Advisee, Devin Takara - Ka Hana Po'okela Service Award, College of Tropical Agriculture and Human Resources Symposium, University of Hawaii at Manoa (2012).
- Award to Advisee, Devin Takara - College of Tropical Agriculture and Human Resources Symposium, MBBE Best Ph.D. Oral Presentation Award (2012).
- Award to Advisees: Sarah Tamashiro and Lindsay Fujimoto (High School Interns, St. Andrew's Priory School, Honolulu, HI): High school students selected to represent Hawaii in International Science Fair for three years in a row. Hawaii Academy of Science (HAS) (2009, 2010 and 2011).
- Award to Advisee, Sreelakshmi Kutty (Middle School Intern, St. Andrew's Priory High School, Honolulu, HI), *Anaerobic digestion of green grass*, First Place in Junior Division (2011).
- Helen Jones Farrar Award in Bioengineering to Advisee, Devin Takara (Ph.D. student, University of Hawaii at Manoa): Achievement Rewards for College Scientists (ARCS) Foundation (2010).
- Award to Advisees, Devin Takara and Saoharit Nitayavardhana, Outstanding Poster Awards in Ph.D. Category (1<sup>st</sup> and 3<sup>rd</sup> among 50 posters) in the College of Tropical Agriculture and Human Resources Symposium (2010).
- 2008 R & D 100 Award for Fungal Process for Ethanol Plant Stillage Treatment. (With J (Hans) van Leeuwen, Mary Rasmussen and Anthony L. Pometto III).

International Water Association (IWA) Project Innovation Award-2008.  
(With J (Hans) van Leeuwen, Mary Rasmussen and Anthony L. Pometto III).

- American Association of Environmental Engineering Excellence Award-2008: University Research Grand Prize, Washington, D.C. "Value-Added Products from Dry-Grind Corn Milling Stillage by Fungal Processing."  
(With J (Hans) van Leeuwen, Mary Rasmussen and Anthony L. Pometto III).

## PUBLICATIONS

(Over 140 refereed journal papers, 17 book chapters, 1 reference book, 1 textbook, 7 edited books (**1 bestseller**), 1 conference proceedings, 1 report and 1 manual (Scopus *H-index* 50; citation over 9600; Google scholar *H-index* 59; citation over 13,900; Research gate (RG) Score 53 with citation over 10,653).

### Books

- Biomass, Biofuels, Biochemicals – Green-Economy: Systems Analysis for Sustainability. (eds. Ganti Murthy, Edgard Gnansounou, Samir Kumar Khanal, Ashok Pandey). **Elsevier Inc.**, USA. (Jan 2022; 404pp).
- *Anaerobic Digestion Series - Advances in Bioenergy Vol. 5.* (eds. Yebo Li and Samir Kumar Khanal). **Elsevier Inc.**, USA. (Jun 2020; 344 pp).
- *Current Developments in Biotechnology and Bioengineering: Sustainable Bioresources for Emerging Bioeconomy.* (eds. Rupam Kataki, Ashok Pandey, Samir Kumar Khanal and Deepak Pant). **Elsevier Inc.**, USA. (Jul 2020; 536 pp).
- *Current Developments in Biotechnology and Bioengineering: Resource Recovery from Wastes.* (eds. Sunita Varjani, Ashok Pandey, Edgard Gnansounou, Samir Kumar Khanal, Sindhu Raveendran). **Elsevier Inc.**, USA. (Jan 2020; 481 pp).
- *Biofuels: Alternative Feedstocks and Conversion Processes for the Production of Biofuels* (2<sup>nd</sup> Edition). (eds. Ashok Pandey, Christian Larroche, Claude-Gilles Dussap, Edgard Gnansounou, Samir Kumar Khanal, and Steven Ricke). **Elsevier Inc.**, USA. (Mar 2019; 867 pp).
- *Waste Biorefinery: Potential and Perspectives.* (eds. Ashok Pandey, Thallada Bhaskar, Ventaka Mohan, D.-J. Lee and Samir Kumar Khanal). **Elsevier Inc.**, USA. (Mar 2018; 816 pp).
- *Bioenergy: Principles and Applications.* (Yebo Li and Samir Kumar Khanal). **John-Wiley & Sons**, USA. (Oct 2017; 600 pp) (**Textbook**). (Equal contribution)

(29-chapter textbook, SKK contributed 11 chapters and compiled solution manual). Widely used as a textbook on Bioenergy/Biofuel globally.

- *Fungal Biorefineries*. (eds. Sachin Kumar, Pratibha Dheeran, Mohammad Taherzadeh and Samir Kumar Khanal). **Springer**, Germany. (May 2018; 246 pp).
- Proceedings of the first international conference on “Recent Advances in Bioenergy Research” (eds. Sachin Kumar, Samir Kumar Khanal and Yogender Kumar Yadav). **Springer**, Germany. (Spring 2016).
- *Anaerobic Biotechnology for Bioenergy Production: Principles and Applications*. (1<sup>st</sup> edition, **Bestseller**), **Wiley-Blackwell Publishing**, USA. (Oct 2008; 320 pp). Widely used as a foundation book in anaerobic field.
- *Bioenergy and Biofuel from Biowastes and Biomass*. (**Bestseller**). **American Society of Civil Engineers**, USA. (Apr 2010; 505 pp); Lead Editor and Contributor.

### **Book Chapters**

1. Wongkiew, S., Hu, Z., Hua, N. T., and **Khanal, S.K.** 2020. Aquaponics for resource recovery and organic food productions. *In Current Developments in Biotechnology and Bioengineering: Sustainable Bioresources for Emerging Bioeconomy*. (eds. Rupam Kataki, Ashok Pandey, Samir Kumar Khanal and Deepak Pant). Elsevier Inc., USA. Pp 475-494.
2. **Khanal, S.K.**, Nindhia, T.G.T., and Nitayavardhana, S., Biogas from wastes: processes and applications. 2019. *In Sustainable Resource Recovery and Zero Wastes Approaches*. (eds. Mohammad Taherzedah, Kim Bolton, Jonathan Wong and Ashok Pandey). Elsevier Inc., USA. Pp 165-174.
3. Yasin, M., Chab, M., Chang, I.S., Atiyeh, H., Munasinghe, P.C., and **Khanal, S.K.** 2019. Syngas fermentation into biofuels and biochemicals. *In Biofuels: Alternative Feedstocks and Conversion Processes for the Production of Biofuels* (2<sup>nd</sup> Edition). (eds. Ashok Pandey, Christian Larroche, Claude-Gilles Dussap, Edgard Gnansounou, Samir Kumar Khanal, and Steven Ricke). Elsevier Inc., USA. Pp 301-327.
4. Nguyen, D., Nitayavardhana, S., Sawatdeenarunat, C., Surendra, K.C., and **Khanal, S.K.** Biogas production by anaerobic digestion: Current status and perspectives. 2019. *In Biofuels: Alternative Feedstocks and Conversion Processes for the Production of Biofuels* (2<sup>nd</sup> Edition). (eds. Ashok Pandey,

- Christian Larroche, Claude-Gilles Dussap, Edgard Gnansounou, Samir Kumar Khanal, and Steven Ricke). Elsevier Inc., USA. Pp 763-778.
5. Sawatdeenarunat, C., Wangnai, C., Songkasiri, W., Panichnumsin, P., Saritpongteeraka, K., Boonsawang, P., **Khanal, S.K.**, Chairapat, S. 2019. Biogas production from industrial effluents. In *Biofuels: Alternative Feedstocks and Conversion Processes for the Production of Biofuels (2<sup>nd</sup> Edition)*. (eds. Ashok Pandey, Christian Larroche, Claude-Gilles Dussap, Edgard Gnansounou, Samir Kumar Khanal, and Steven Ricke). Elsevier Inc., USA. Pp 301-327. Pp 779-816.
  6. Rajendran, K., Surendra, K.C., Tomberlin, J.K., and **Khanal, S.K.** 2018. Insect-based biorefinery for bioenergy and biobased products: A critical review. In *Waste Biorefinery: Potential and Perspectives*. (eds. Ashok Pandey, Thallada Bhaskar, Ventaka Mohan, D.-J. Lee and Samir Kumar Khanal). Elsevier Inc., USA. Pp 657-669.
  7. **Khanal, S.K.** Giri, B., Nitayavardhana, S., and Gadhamshetty, V. 2017. Anaerobic reactor/digester: Design and development. In *Current Developments in Biotechnology and Bioengineering*. (eds. D.-J. Lee, J. Jegatheesan, P. Hallenbeck, H. H. Ngo, and A. Pandey). Elsevier Inc., USA. pp 261-279.
  8. Takara, D., and **Khanal, S.K.** 2012. Biomass pretreatment for biofuel production. In *Sustainable Bioenergy and Bioproducts*. (eds. K. Gopalakrishnan, H. van Leeuwen, and R. Brown). Springer-Verlag Inc., London, UK. pp 59-70.
  9. Shrestha, P., Pometto III. A.L., **Khanal, S.K.**, and Van Leeuwen, J. 2012. Second-generation biofuel production from corn-ethanol industry residues. In *Sustainable Bioenergy and Bioproducts*. (eds. K. Gopalakrishnan, H. van Leeuwen, and R. Brown). Springer-Verlag Inc., London, UK. pp 71-87.
  10. **Khanal, S.K.**, and Munasinghe, P. 2011. Biomass-derived syngas fermentation into biofuels. In *Biofuels: Alternative Feedstocks and Conversion Processes*. (eds. A. Pandey, C. Larroche, S.C. Ricke, C.G. Dussap and E. Gnansounou). Elsevier Inc., USA. pp 79-98.
  11. **Khanal, S.K.**, and Lamsal, B.P. 2010. Biofuel and bioenergy production: some perspectives. In *Biofuel and Bioenergy from Biowastes and Lignocellulosic Biomass*. (eds. Samir K. Khanal et al.). American Society of Civil Engineers. Reston, VA, USA. pp 1-22.



12. Takara, D., Shrestha, P., and **Khanal, S.K.** 2010. Lignocellulosic biomass pretreatment. In *Biofuel and Bioenergy from Biowastes and Lignocellulosic Biomass*. (eds. Samir K. Khanal et al.). American Society of Civil Engineers. Reston, VA, USA. pp 158-171.
13. Shrestha, P., Lamsal, B.P., and **Khanal, S.K.** 2010. Preprocessing of lignocellulosic biomass for biofuel production. In *Biofuel and Bioenergy from Biowastes and Lignocellulosic Biomass*. (eds. Samir K. Khanal et al.). American Society of Civil Engineers. Reston, VA, USA. pp 172-200.
14. Lamsal, B.P., Shrestha, P., and **Khanal, S.K.** 2010. Enzymatic hydrolysis of lignocellulosic biomass for biofuel production. In *Biofuel and Bioenergy from Biowastes and Lignocellulosic Biomass*. (eds. Samir K. Khanal et al.). American Society of Civil Engineers. Reston, VA, USA. pp 201-224.
15. Gadhamshetty, V., Nirmalakhandan, N., **Khanal, S.K.**, and Johnson, G.R. 2010. Bioreactor systems for biofuel/bioelectricity production. In *Biofuel and Bioenergy from Biowastes and Lignocellulosic Biomass*. (eds. Samir K. Khanal et al.). American Society of Civil Engineers. Reston, VA, USA. pp 275-312.
16. Shrestha, P., Rasmussen, M.R., Nitayavardhana, S., **Khanal, S.K.**, and Van Leeuwen, J. 2010. Bioreactor systems for biofuel/bioelectricity production. In *Biofuel and Bioenergy from Biowastes and Lignocellulosic Biomass*. (eds. Samir K. Khanal et al.). American Society of Civil Engineers. Reston, VA, USA. pp 389-410.
17. **Khanal, S.K.**, Takara, D., Shrestha, P., and Lamsal, B.P. 2010. Ultrasound applications in biofuel and bioenergy production. In *Green Chemistry for Environmental Sustainability* (eds. A. Mudhoo and S. K. Sharma). CRC Press Taylor & Francis Group LLC, Boca Raton, Florida. pp 303-313.

### **Report**

**Khanal, S.K.**, Turn S., and Kinoshita, C. 2009. Conversion Technology. In *Hawaii Bioenergy Master Plan Report*. <http://www.hnei.hawaii.edu/bmpp/home.asp>

### **Manual**

**Khanal, S.K.**, and Takara, D. (2011). *Bioenergy Laboratory Manual for High and Middle School Science Teachers*.

## Refereed Journal Papers

### Year 2023

1. Ji, M., Wang, J., **Khanal, S.K.**, Wang, S., Zhang, J., Liang, S., Xie, H, Wu, H. and Hu, Z. (2023). Water-energy-greenhouse gas nexus of a novel high-rate activated sludge-two-stage vertical up-flow constructed wetland system for low-carbon wastewater treatment. *Water Research*. 229: 119491.
2. Wang, X., Lei, Z., Zhang, Z., Shimizu, K., Lee, D.J., and Khanal, S.K. (2023). Use of nanobubble water bioaugmented anaerobically digested sludge for high-efficacy energy production from high-solids anaerobic digestion of corn straw. *Science of The Total Environment*. 863: 160825.
3. Khan, M., Chuenchart, W., Surendra, K.C., and **Khanal, S.K.** (2023). Applications of artificial intelligence in anaerobic co-digestion: Recent advances and prospects. *Bioresource Technology (in-press)*.

### Year 2022

4. Marcelino, K. R., Li, L., Wonkiew, S., Surendra, K.C., Shitanaka, T., Nhan, H.T, Lv, H., and **Khanal, S.K.** (2022). Nanobubble Technology Applications in Environmental and Agricultural Systems: Opportunities and Challenges. *Critical Reviews in Environmental Science and Technology (CREST)*. <https://doi.org/10.1080/10643389.2022.2136931>
5. Zhou, S., Marcelino, K. R., Wongkiew, S., Sun, L., Huang, J., **Khanal, S. K.**, and Lu, H. (2022). Microbubble and nanobubble technology in water and wastewater treatment and ecological restoration: A critical review. *ACS Environ. Sci. & Technol Eng.* 2 (9): 1558–1573
6. Dana, W.A.R., Lie, D., Adnyana, W.B., Nindhia, T.G.T., **Khanal, S.K.**, and Nindhia, T.S. (2022). Comparison of fuel consumption and emission of small two-stroke engine of electric generator fueled by methanol, biogas and mixed methanol-biogas. *Journal of Applied Engineering Science*. 20 (4): 1034-1039.
7. Guo, Y., Tao, X., Zhu, W., Ji, Y, **Khanal, S.K.**, Surendra, K.C., Li, Guoting. (2022). Effects of straw biochar on heavy metal Cu in soil under different conditions. *Communications in Soil Science and Plant Analysis*. <https://doi.org/10.1080/00103624.2022.2112211>

8. Oberoi, A.S., Surendra, K.C., Wu, D., Lu, H., Wong, J.W.C., and **Khanal, S.K.** (2022). Anaerobic membrane bioreactors for pharmaceutical-laden wastewater treatment: A critical review. *Bioresource Technology*. 361:127667.
9. Xu, J., **Khanal, S.K.**, Kang, Y., Zhu, J., Huang, X., Zong, Y., Pang, W., Surendra, K.C. and Xie, L. (2022). Role of interspecies electron transfer stimulation in enhancing anaerobic digestion under ammonia stress: Mechanisms, advances, and perspectives. *Bioresource Technology*. 360: 127558.
10. Wells, J.M., Crow, S.E., **Khanal, S.K.**, and Turn, S.Q. (2022). Lignin chemical controls on bioconversion of tropically grown C4 bioenergy grasses to biofuels and biobased products. *Bioresource Technology Reports*. 18: 101015.
11. Harirchi, S., Wainaina, S., Sar, T., Nojoudi, S.A., Parchami, M., Parchami, M., Varjani, S., **Khanal, S.K.**, Wong, J.W.C., Awasthi, M.K., and Taherzadeh, M.J. 2022. Microbiological insights into anaerobic digestion for biogas, hydrogen or volatile fatty acids (VFAs): a review. *Bioengineered*. 13 (3): 6521-6557.
12. Aksorn, S., Kanokkantapong, V., Polprasert, C., Noophan, P., **Khanal, S.K.**, and Wongkiew, S. (2022). Effects of Cu and Zn contamination on chicken manure-based bioponics: Nitrogen recovery, bioaccumulation, microbial community, and health risk assessment. *Journal of Environmental Management*. 311: 114837.
13. Surendra, K.C., Angelidaki, I., and **Khanal, S.K.** (2022). Bioconversion of waste-to-resources (BWR-2021): Valorization of industrial and agro-wastes to fuel, feed, fertilizer, and biobased products. *Bioresource Technology*. 347:126739.
14. Siddiqui, M.A., Biswal, B.K., Heynderickx, P.M., Kim, J.H., **Khanal, S.K.**, Chen, G.H., and Wu, D. (2022). Dynamic anaerobic membrane bioreactor coupled with sulfate reduction (SrDMBR) for saline wastewater treatment. *Bioresource Technology*. 346:126447.
15. Karki, R., Chuenchart, W., Surendra, K.C., Sung, S., Raskin, L., and **Khanal, S.K.** (2022). Anaerobic co-digestion of various organic wastes: Kinetic modeling and synergistic impact evaluation. *Bioresource Technology*. 343:126063.

16. Wongkiew S., Polprasert, C., Koottatep, T., Limpiyakorn, T., Surendra, K.C., and **Khanal, S.K.** (2022). Chicken manure-based bioponics: Effects of acetic acid supplementation on nitrogen and phosphorus recoveries and microbial communities. *Waste Management*. 137: 264-274.
17. Cruz, I.A., Chuenchart, W., Long, F., Surendra, K.C., Andrade, R. S. Bilal, M., Liu, H., Figueiredo, R. T., **Khanal, S.K.\*.**, Ferreira, L.F.R. (2022). Application of machine learning in anaerobic digestion: Perspectives and challenges. *Bioresource Technology*.345: 126433.
18. He, M., Zhu, X., Dutta, S., Khanal, S.K., Lee, K.T., Masek, O., Tsang. C.W. (2022). Catalytic co-hydrothermal carbonization of food waste digestate and yard waste for energy application and nutrient recovery. *Bioresource Technology*. 344: 126395.
19. Zeng, Q., Zan, F., Hao, T.W., **Khanal, S.K.**, and Chen, G.H. (2022). Sewage sludge digestion beyond biogas: Electrochemical pretreatment for biochemicals. *Water Research*. 208: 117839.

### **Year 2021**

20. Sharma, P., Ngo, H. H., Khanal, S.K., Larroche, C., Kim, S.-H., and Pandey. A., (2021). Efficiency of transporter genes and proteins in hyperaccumulator plants for metals tolerance in wastewater treatment: Sustainable technique for metal detoxification. *Environmental Technology & Innovation*. 23: 101725.
21. Zeng, Q., Wang, Y., Zan, F., **Khanal, S.K.**, and Hao T. (2021). Biogenic sulfide for azo dye decolorization from textile dyeing wastewater. *Chemosphere*. 283: 131158.
22. **Khanal, S.K.**, Lü, F., Wong, J.W.C., Wu, D., and Oechsner, H. (2021). Anaerobic digestion beyond biogas. *Bioresource Technology*. 337: 125378.
23. Siddiqui, M.A., Biswal, B.K., Saleem, M., Guan, D., Iqbal, A., Wu, D., **Khanal, S. K.**, and Chen, G.H. (2021). Anaerobic self-forming dynamic membrane bioreactors (AnSFDMBRs) for wastewater treatment - Recent advances, process optimization and perspectives. *Bioresource Technology*. 330:125101.
24. Karki, R., Chuenchart, W., Surendra K.C., Shrestha, S., Raskin, L., Sung, S., Hashimoto, A., and **Khanal, S.K.** (2021). Anaerobic co-digestion: Current status and perspectives. *Bioresource Technology*. 330: 125001.

25. Kim, S.H., Kumar, G.P., Chen, W.H., and **Khanal, S.K.** (2021). Renewable hydrogen production from biomass and wastes (ReBioH2-2020). *Bioresource Technology*. 319: 125024.
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127. Shrestha, P., Rasmussen, M., **Khanal, S.K.**, Pometto, A.L., and Van Leeuwen, J. (2008). Solid-state fermentation of corn fiber by *Phanerochaete chrysosporium* and subsequent fermentation of hydrolysate into ethanol. *Journal of Agriculture and Food Chemistry*. 56 (11): 3918-3924.



128. Xie, B., **Khanal, S.K.**, Van Leeuwen, J., Veysey, S.W., and Thompson, M.L. (2008). Sorption of steroidal hormones by two Iowa soil materials: detection and modeling. *Soil Science*. 173 (9): 602-612.

### Year 2007

129. **Khanal, S.K.**, Montalbo, M., Van Leeuwen, J., Srinivasan, G., and Grewell, D. (2007). Ultrasound enhanced glucose release from corn in ethanol plants. *Biotechnology and Bioengineering*. 98 (5): 978-985.
130. Ho, J., **Khanal, S.K.**, and Sung, S. (2007). Anaerobic membrane bioreactor for treatment of synthetic municipal wastewater at ambient temperature. *Water Science and Technology*. 55 (7): 79-86.
131. **Khanal, S.K.**, Grewell D, Sung, S., and Van Leeuwen, J. (2007). Ultrasound applications in wastewater sludge pretreatment: A review. *Critical Reviews in Environmental Science and Technology*. 37 (4): 277-313. **(Most cited paper)**.

### Year 2006

132. **Khanal, S.K.**, Xie, B., Ong, S.K., Thompson, M.L., Sung, S., and Van Leeuwen, J. (2006). Fate, transport and biodegradation of natural estrogens in the environment and engineered systems - A review. *Environmental Science and Technology*. 40 (21): 6537-6546. **(Most cited paper)**.
133. Chen, W.-H., Chen, S.-Y., **Khanal, S.K.**, and Sung, S. (2006). Kinetic study of biological hydrogen production by anaerobic fermentation. *International Journal of Hydrogen Energy*. 31 (15): 2170-2178.
134. Akin, B., **Khanal, S.K.**, Sung, S., Grewell, D., and van Leeuwen, J. (2006). Ultrasound pre-treatment of waste activated sludge: effect of specific energy input and total solids on sludge disintegration. *Water Science and Technology –Water Supply*. 6 (6): 35-42.
135. **Khanal, S.K.**, and Huang, J.-C. (2006). Online oxygen control for sulfide oxidation in anaerobic treatment of high sulfate wastewater. *Water Environment Research*. 78 (4): 397-408.
136. **Khanal, S.K.**, Chen, W.-H., Li, L., and Sung, S. (2006). Biohydrogen production in continuous flow reactor using mixed microbial culture. *Water Environment Research*. 78 (2): 110-117.

137. Foulkes, B., **Khanal, S.K.**, and Sung, S. (2006). Bioleaching of zinc and copper from anaerobically digested swine manure: effect of sulfur levels and solid contents. *Water Environment Research*. 78 (2): 202-208.
138. Jasti, N., **Khanal, S.K.**, Pometto, A.L., and Van Leeuwen, J. (2006). Fungal treatment of corn processing wastewater in an attached growth system. *Water Science and Practice*. 1 (3): 1-8.

### Year 2005

139. **Khanal, S.K.**, and Huang, J.-C. (2005). Effect of high influent sulfate on anaerobic wastewater treatment. *Water Environment Research*. 77 (7): 3037-3046.

### Year 2004

140. **Khanal, S.K.**, Chen, W.-H., Li, L., and Sung, S. (2004). Biological hydrogen production: effects of pH and intermediate products. *International Journal of Hydrogen Energy*. 29 (11): 1123-1131.
141. Huang, J.-C., and **Khanal, S.K.** (2004). Treatment of high sulfate and high strength wastewater in a single stage anaerobic reactor. *Water Science and Technology-Water Supply*. 4 (1): 35-45.

### Year 2003

142. **Khanal, S.K.**, and Huang, J.-C. (2003). Anaerobic treatment of high sulfate wastewater with oxygenation to control sulfide toxicity. *J. Environmental Engineering, ASCE*. 129 (12): 1104-1111.
143. **Khanal, S.K.**, Shang, C., and Huang, J.-C. (2003). Use of oxidation-reduction potential (ORP) to control oxygen dosing for online sulfide oxidation in anaerobic treatment of high sulfate wastewater. *Water Science and Technology*. 47 (12): 183-189.
144. **Khanal, S.K.**, and Huang, J.-C. (2003). ORP based oxygenation for sulfide control in anaerobic treatment of high sulfate wastewater. *Water Research*. 37 (9): 2053-2062.
145. Eckhardt, H., and **Khanal, S.K.** (1999). Suitability of Bangkok sewage and nightsoil sludges for agricultural use with emphasis on potentially toxic elements. *Journal of Environmental Science and Health - Part A*

*Toxic/Hazardous Substances and Environmental Engineering*. 34 (10): 2007-2021.

## **PRESS RELEASE/NEWS CLIPPINGS**

- Excellence in science springs from diverse pursuits as youth, *Star Advertiser*, July 19, 2016.
- Khon 2 Hawaii News "High school students make waves with invasive algae research." May 21, 2015.  
(<http://khon2.com/2015/05/21/high-school-students-make-waves-with-invasive-algae-research/>)
- Hawaii Public Radio's morning talk show The Conversation! Oct 7, 2014 at 8:40 am; tackling food waste with black soldier flies.
- Partnership to Tackle Innovative Methods of Converting Food Wastes  
(<http://www.highbeam.com/doc/1P3-3449067731.html>)
- Effectual St. Andrew's senior keeps her feet on the ground, *Star Advertiser*, May 30, 2011.  
([http://www.staradvertiser.com/news/20110530\\_Effectual\\_St\\_Andrews\\_senior\\_keeps\\_her\\_feet\\_on\\_the\\_ground.html](http://www.staradvertiser.com/news/20110530_Effectual_St_Andrews_senior_keeps_her_feet_on_the_ground.html))
- UH Tests Ethanol Waste as Animal Feed, *Star Bulletin*, Vol. 13, Issue 174 - Sunday, Jun 22, 2008.  
(<http://starbulletin.com/2008/06/22/news/story02.html>)
- Iowa State researchers use fungus to improve corn-to-ethanol process.  
([http://www.eurekalert.org/pub\\_releases/2008-05/isu-isr052708.php](http://www.eurekalert.org/pub_releases/2008-05/isu-isr052708.php))
- Researchers Improve Soy Processing by Boosting Protein and Sugar Yields. *ScienceDaily*.  
(<http://www.sciencedaily.com/releases/2007/02/070215133344.htm>)
- From Corn to Ethanol in a Jiffy. *BusinessWeek*, pp 107, Jul 2006.  
([http://www.businessweek.com/magazine/content/06\\_27/c3991080.htm](http://www.businessweek.com/magazine/content/06_27/c3991080.htm))
- Ultrasonics Boosts Release Rates of Corn Sugars for Ethanol Production. *ScienceDaily*.  
(<http://www.sciencedaily.com/releases/2006/06/060601213717.htm>)

- Biotechnology Update.  
([http://www.biotech.iastate.edu/biotech\\_update/PDF/jun06.pdf](http://www.biotech.iastate.edu/biotech_update/PDF/jun06.pdf))
- Turning Corn Fiber into Ethanol.  
(<http://www.physorg.com/news68392594.html>)
- Fast Corn-to-Ethanol Approach Discover. *SHORTLINER*, Vol. LVI (14), Aug 2006.

## PROFESSIONAL POSITION AND ACADEMIC EXPERIENCE

- Professor (Aug 2018 to present), Department of Molecular Biosciences and Bioengineering, University of Hawai'i at Mānoa.
- Associate Professor (Aug 2012 to Jul 2018), Department of Molecular Biosciences and Bioengineering, University of Hawai'i at Mānoa.
- Assistant Professor (Jan 2008 to Jul 2012) (granted early tenure and promotion), Department of Molecular Biosciences and Bioengineering, University of Hawai'i at Mānoa.
- Collaborating Professor, Department of Civil and Environmental Engineering, University of Hawaii at Manoa (Jan 2015 to present).
- Visiting Professor, School of Environmental Science and Engineering, Sun-Yat Sen University, Guangzhou, China (Jun to Jul 2016; Dec 2016 to Jan 2017; Jul to Aug 2017, Dec 2017 to Jan 2018, May to Aug 2018, May to Aug, 2019, Dec 2018, Dec 2019).
- Visiting Professor, School of Environmental Science and Engineering, Tongji University, Shanghai, China (Jun 2016; Jun 2017).
- Visiting Professor, State Institute of Agricultural Engineering and Bioenergy, Hohenheim University, Stuttgart, Germany (Jun to Aug 2014).
- DAAD Research Fellow, State Institute of Agricultural Engineering and Bioenergy, Hohenheim University, Stuttgart, Germany (May to Jul 2013).
- Instructor, Sustainable Engineering, Université Catholique de Lille, Lille, France (Jul 1 to Aug 2, 2013).
- Visiting Scientist, German Biomass Research Center, Leipzig, Germany (May to Jul 2012).
- Graduate Chair, Biological Engineering Program, University of Hawai'i at

Mānoa (Jan 2009 to 2018).

- Instructor, Sustainability: Green and Global, American Business School, Paris, France (Jun 6 to Jul 13, 2011).
- Faculty Affiliate, Renewable Energy and Island Sustainability (REIS), University of Hawai'i at Mānoa (Sep 2009 to present).
- Faculty Affiliate, Water Resources Research Center (WRRC), University of Hawai'i at Mānoa (Apr 2011 to present).
- Collaborating Professor, Department of Civil, Construction and Environmental Engineering/Biorenewable Resources Technology, Iowa State University (Jan 2008 to present).
- Visiting Professor, Hohenheim University, Stuttgart, Germany (Dec 2010 to Jan 2011).
- Research Assistant Professor, Department of Civil, Construction and Environmental Engineering; Biorenewable Resources and Technology; Biotechnology; Environmental Science, Iowa State University (Mar 2004 to Dec 2007).
- Visiting Assistant Professor, Environmental Engineering Program, Asian Institute of Technology (AIT), Thailand (Jul to Aug 2005; May to Sep 2006; Jun to Sep 2007).
- Post-doctoral Research Associate, Department of Civil, Construction and Environmental Engineering, and Biorenewables, Iowa State University (Mar 2002 to Feb 2004).
- Research/Teaching Assistant, Department of Civil Engineering, The Hong Kong University of Science and Technology (Feb 1998 to Feb 2002).

## **PATENTS**

- Anaerobic biorefinery concept of mono-digestion of lignocellulosic biomass using horizontal bioreactor (Provisional Patent Filing date: 03/28/2017; Provisional Patent Application No. US62/478,007; Co-invented with Chayanon Sawatdeenarunat).
- ORP-based micro-aeration system for process stability control in anaerobic digestion process (Provisional Patent Filing date: 03/03/2017; Provisional Patent Application No. US62/467,049; Co-invented with Duc Ngyuen).
- Useful products from fungal cultivation on coproducts from dry-grind ethanol

production (Jun 12, 2015).

[US Patent No. 9,079,786; Co-inventor with Hans van Leeuwen, Anthony L. Pometto III].

- Fungal Cultivation on Alcohol Fermentation Stillage for Useful Products and Energy Savings (Jul 9, 2013).

[US Patent No. 8,481, 295; Co-inventor with Hans van Leeuwen, Anthony L. Pometto III, Mary L. Rasmussen and Debjani Mitra].

- Micro-Aeration of Sulfide Removal from Biogas (Feb 5, 2013).

[US Patent No. 8,366, 932; Co-inventor with Shihwu Sung and Thanapong Duangmanee].

## PROFESSIONAL REGISTRATION

- Registered Professional Engineer (PE), Environmental Engineering, State of Iowa, USA (Registration # 17553).

## RESEARCH GRANTS

### (A) University of Hawai'i at Mānoa

1. Biomaterial and biofuel potential of Hawaiian native algal species (PI).

Funding Agency: Hawaii Department of Agriculture (HDOA); Amount: \$100,000 (Dec 2022 – Nov 2023).

2. Developing technologies to ameliorate global climate change (PI).

Funding Agency: Bioenergy Systems Inc. (BESI); Amount: \$110,000 (Sep 2022 – Aug 2024).

3. Industrial hemp anaerobic digestion study (PI).

Funding Agency: *Agripelago Corporation*; Amount: \$ 38,847 (June 2022 – May 2023).

4. Technology-driven climate resilient aquaculture–aquaponic system in coastal region of the United States and the Mekong delta region in Vietnam (PI).

Funding Agency: *USDA-FAS Scientific Cooperation Research Program (SCRIP)*;

Amount: \$ 49,969 (Sep 2022 – Aug 2024).

5. Valorization of organic wastes into high quality feed and organic fertilizer through integration of black soldier fly and earthworm (PI).

Funding Agency: USDA-HATCH; Amount: \$45,000 (Jul 2022-Jun 2023)

6. Development of a state-of-the-art aquaculture and aquaponic system: integrating biochar filtration and nanobubble technology (PI).

Funding Agency: *Center for Tropical and Sub-tropical Aquaculture*; Amount: \$ 39,964 (Aug 2022 – Jul 2023).

7. Nanobubble technology for enhanced microalgal biomass production for aquatic feed application (PI).

Funding Agency: *Western Sun Grant Regional Center through U.S. Dept. of Agriculture*; Amount: \$ 150,000 (Jan 2022 – June 2023).

8. Biodegradable cellulosic bio-polymer to replace plastics for military food packaging and food service (Lead Researcher).

Funding Agency: US Dept of Defense via BESI; Amount: \$150,000 (Jun 2021 – May 2025).

9. Instrument Grant for the Purchase of NanoSight NS 300 (PI).

Funding Agency: USDA-HATCH; Amount: \$89,000 (May, 2021)

10. Machine learning in anaerobic co-digestion with micro-aeration (PI).

Funding Agency: USDA-HATCH; Amount: \$35,000 (Jul 2021-Jun 2022)

11. Nanobubbles application in aquaculture and aquaponic system (PI)

Funding Agency: USDA-AFRI; Amount: \$200,000 (Nov 2020 – Oct 2022).

12. Nanobubble technology applications in agriculture and environmental remediation (PI).

Funding Agency: *Capacity Fund, CTAHR*; Amount: \$80,000 (Dec 2019 – Dec 2021).

13. Organic Bioconversion to Animal Feed via Black Soldier Flies (BSF) Larvae (PI).

Funding Agency: *Hawaii Dept. of Agriculture (HDOA)*; Amount: \$150,000 (Mar 2020 – Aug 2021).

14. Water Quality in Aquaculture with Case Study of Vietnam (PI).  
Funding Agency: *US Dept. of Agriculture*; Amount: \$50,000 (Jul 2019 – Jun 2021).
15. Anaerobic Digestion of High-solids Feedstock: Evaluation of Microbiome and Bioenergetics (PI).  
Funding Agency: *USDA-ARS Supplemental Research grant*; Amount: \$80,000 (Oct 2018 – Sep 2021).
16. Nanobubble Technology for Aquaculture and Aquaponics (PI)  
Funding Agency: *Hawaii Dept. of Agriculture (HDOA)*; Amount: \$60,000 (Jun 2019 – Aug 2020).
17. Biological Conversion of Farm Waste/AD Digestate into Biofuel and Animal Feed Via Insect Farming (PI).  
Funding Agency: *Western Sun Grant Regional Center through U.S. Dept. of Agriculture*; Amount: \$ 150,000 (Jul 2018 – Aug 2019).
18. Algal Biomass to Ethanol and Aquatic Feed (PI).  
Funding Agency: *Kuehnle AgroSystems, Inc.*; Amount \$18,000 (Jan 2018 – May 2018).
19. High-yielding Bioenergy Feedstock Production, Characterization and Pretreatment for Bioenergy Production (PI).  
Funding Agency: *USDA-ARS*; Amount \$65,000 (Dec 2017 – Aug 2018).
20. Novel Bio-Chars Production from Northeastern Forestry Feedstocks and Their Land Application to Enhance Environmental Sustainability of Agricultural Production Systems (Co-PI).  
Funding Agency: *Northeast Regional Sun Grant Center*; Amount: \$360,000 (Jan 2018 – May 2019) (Khanal's part: \$70,000).
21. Anaerobically-digested Slurry (Digestate) and Digestate-derived Biochar Applications as a Fertilizer for Organic Farming (Co-PI).  
Funding Agency: *USDA-Supplemental Research/ Extension grant*; Amount: \$80,000 (Oct 2017 – Sep 2019). (Khanal's part: \$10,000)
22. Utilization of Local Agri-processing By-products to Produce Fungal Protein for Aquatic Feed Production (PI).  
Funding Agency: *Center for Tropical and Sub-tropical Aquaculture*; Amount:



\$ 200,000 (Nov 2015 – Oct 2018).

23. Fundamental Understanding of Anaerobic Digestion of Energy Crops for Bioenergy Production (PI).

Funding Agency: *USDA-Supplemental Research/ Extension grant*; Amount: \$80,000 (Oct 2016 – Sep 2018).

24. Sustainable Integrated Food Production through Aquaponic Systems (PI).

Funding Agency: *USDA-Specialty Crops*; Amount: \$32,000 (Oct 2016 – Jan 2018).

25. Characterization of High Yield Energy Crops for Bioenergy Potential (PI).

Funding Agency: *Biomass Research and Development Initiative-USDA (supplemental)*; Amount: \$ 175,000 (Sep 2016 – May 2018).

26. Donation to Khanal's Bioenergy and Environment Research Group by *ProtaCulture*; Amount over \$40,000.

27. Developing ORP-based Process Control for High Solids Anaerobic Digestion (PI).

Funding Agency: *United States Dept. of Agriculture (USDA-AFRI)*; Amount: \$150,000 (Sep 2013 – Aug 2016).

28. Nitrogen Transformations in Aquaponics and its Implications to Climate Change (PI).

Funding Agency: *United States Dept. of Agriculture (USDA-AFRI)*; Amount: \$500,000 (Sep 2013 – Aug 2018).

29. Conversion of High-Yield Tropical Biomass into Sustainable Biofuels (Co-PI).

Funding Agency: *Biomass Research and Development Initiative (BRDI), United States Dept. of Agriculture and US Dept. of Energy*; Amount: \$ 6,000,000 (Sep 2012 – Aug 2017). (Khanal's part: \$575,000).

30. Developing Anaerobic Digestion Biorefinery Using High Yield Tropical Feedstocks (PI).

Funding Agency: *Western Sun Grant Regional Center through U.S. Dept. of Transportation*; Amount: \$ 200,000 (Jan 2014 – Jun 2016).

31. Can Biologically-derived Nitrogen be Used as a Fertilizer for Organic Farming? (PI).

Funding Agency: *USDA-Supplemental Research/ Extension grant*; Amount: \$99,847 (Oct 2013 – Sep 2015).

32. Converting Food Waste into Biofuel and Animal Feed through Insect Farming (PI).

Funding Agency: *HATCH Grant*; Amount \$40,000 (Oct 2014 – Jun 2015).

33. Analytical Instrument for Bioenergy, Aquaculture and Climate Change Research, Instruction and Extension in CTAHR (PI).

Funding Agency: *CTAHR Instructional, Extension or Research Instrumentation Award*; Amount: \$ 40,000 (May 2013 – Sep 2013).

34. Enhancing Biodiesel Feedstock and Co-product Production Using Oleaginous Fungi (PI).

Funding Agency: *Pacific Biodiesel, Inc.*; Amount: \$ 10,000 (Oct 2012 – Sep 2014).

35. Green Processing of High Yield Tropical Grass to Biobased Product and Biobutanol (PI).

Funding Agency: *Western Sun Grant Regional Center*; Amount: \$ 200,000 (Sep 2011 – Aug 2014).

36. Global Mapping of N<sub>2</sub>O Emission from Aquaculture and Its Implications to Climate Change: Fate of N<sub>2</sub>O in Water Recirculating Aquaponic System (US Lead Researcher).

Funding Agency: *National Research Foundation of Korea*; Amount: \$ 270,000 (Khanal's part 70,000) (Oct 2011 – Sep 2014).

37. An Integrated BioGas-Solar Dehydration System: Increasing Sustainability through Value-Added Agriculture (Lead University Partner).

Funding Agency: *Small Business Innovative Research (SBIR) Phase II-USDA-NIFA*; Amount \$500,000 (\$50,000 for Khanal) (Sep 2011 – Aug 2014).

38. Nitrogen Transformation in Aquaculture-Aquaponic System and Its Implication to Climate Change (PI).

Funding Agency: *USDA-Supplemental Research/Extension grant*; Amount: \$61,000 (Feb 2011 – Jan 2013).

39. Lignocellulosic Biomass Conversion into Ethanol Through Syngas Fermentation with Simultaneous Recovery of Acetic Acid using Mesoporous Silica Nanoparticle Materials (PI).

Funding Agency: *USDA-TSTAR*; Amount \$144,807 (Oct 2009 – Sep 2013).

40. A Collaborative Effort for Utilizing Regionally-based Feedstocks and Co-Products for Aquaculture Production (Co-PI with C. Tamaru).

Funding Agency: *USDA-ARS*; Amount \$600,000 (Award to Khanal: \$100,000)(Jul 2009 – Jun 2012).

41. Development of High Yield Feedstocks y for Renewable Energy (Co-PI with A. Hashimoto).

Funding Agency: *US Department of Energy (USDOE)*; Amount \$ 6.0 Million (Award to Khanal: \$306,449)(Oct 2009 – Sep 2013).

42. Value-added Processing of Sugarcane-ethanol Vinasse: Production of Protein-rich Fungal Biomass as a Fish Feed Ingredient (PI).

Funding Agency: *USDA-ARS*; Amount \$79,987 (Sep 2008 – Aug 2013).

43. Integrated Education and Research in Clean Energy and Island Sustainability (Lead researcher, Biofuel and Bioenergy section). Support for two graduate research assistants + supplies: \$75,000).

Funding Agency: *USDOE*; Amount \$2.5 M (Sep 2010 – Aug 2013).

44. Developing High School Bioenergy Laboratory Manual (PI).

Funding Agency: *Department of Education, Hawaii*; Amount \$10,000 (May 2011 – Aug 2011).

45. Developing Hawaii Bioenergy Master Plan: Conversion Technology (PI)

Funding Agency: *State of Hawaii*; Amount \$10,000 (Apr 2009 – Dec 2009).

46. Effect of Ultrasonic Pretreatment on the Biochemical Conversion of Banagrass to Ethanol (PI)

Funding Agency: *USDOE*; Amount \$70,633 (Jul 2008 – Jun 2009).

47. Wood Utilization Research on US Biofuels, Bioproducts, Hybrid Biomaterials Production, and Traditional Forest Products (PI).

Funding Agency: *USDA-Hatch*; Amount \$40,000 (Oct 2008 – Jun 2009).

48. Bioenergy and Environment Research (PI).

Funding Agency: *Start-up Fund from MBBE and CTAHR*; Amount \$135,000 (Jan 2008 – Dec 2010).

## **(B) Completed Projects (Iowa State University)**

- Ultrasonication in Soy Processing for Enhanced Protein and Sugar Yields and Subsequent Nisin Production (PI). Handed over to Dr. J (Hans) Van Leeuwen.  
Funding Agency: *Grow Iowa Value Fund*; Amount: \$ 81,977 (Jul 2006 – May 2008).
- Nisin Production from Soy Whey using Lactic Acid Bacteria (PI). Handed over to Dr. J (Hans) Van Leeuwen.  
Funding Agency: *Iowa Biotechnology Byproducts Consortium, USDA*; Amount: \$155,711 (Sep 2005 – Aug 2008).
- Anaerobic Biotechnology: Waste Treatment and Resource Recovery (PI).  
Funding Agency: *Iowa Biotechnology Byproducts Consortium, USDA*; Amount: \$19,921 (Sep 2006 – May 2008).
- Converting Low Value Thin Stillage from Dry Corn Milling Ethanol Plants into High Value Fungal Biomass\* (Co-PI).  
Funding Agency: *Grow Iowa Value Fund*; Amount: \$ 76,806 (Aug 2006 – May 2008).
- Retooling Ethanol Industries: Integrating Ultrasonics into Dry Corn Milling to Enhance Ethanol Yield\*<sup>1</sup> (Co-PI).  
Funding Agency: *Grow Iowa Value Fund*; Amount: \$ 80,000 (Apr 2006 – Dec 2007).
- Integrated Approach for biofuel and bio-based product recovery from cassava: A collaborative research project between Office of Biorenewables Programs (OBP), Iowa State University and Asian Institute of Technology (AIT) (Thailand) (PI).  
Funding Agency: *OBP and Council on International Programs (CIP)*; Amount: \$5,000 (Nov 2006 – Jun 2007).
- A Sequential Fermentation Biorefinery to Produce Ethanol from Corn Processing Co-products (Co-PI).  
Funding Agency: *Iowa Energy Center*; Amount: \$ 114,068 (Jul 2005 – Jun 2007).

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**\*Conceiving the ideas and developing full proposal**

- Retooling Ethanol Industry: Anaerobic Digestion of Thin Stillage to Produce Methane and Class-A Biosolids\* (Co-PI).  
Funding Agency: *Iowa Biotechnology Byproducts Consortium, USDA*;  
Amount: \$47,540 (Sep 2006 – Aug 2007).
- White and Brown Rot Fungal Fermentation of Low Value Corn Milling Co-Products to Sugars for Ethanol Production (Co-PI).  
Funding Agency: *Iowa Biotechnology Byproducts Consortium, USDA*;  
Amount: \$86,159 (Sep 2004 – Aug 2007).
- Biological Hydrogen Production from Organic Wastes\* (Co-PI).  
Funding Agency: *Iowa Energy Center*; Amount: \$ 150,000 (Sep 2006).
- Biological Hydrogen Production from Agri-residues using Enriched Microbial Culture\* (Co-PI).  
Funding Agency: *Institute of Physical Research and Technology*; Amount: \$34,000 (Dec 2005).
- Anaerobic Bioconversion Coupled with Thermal/Catalytic Process for Alcohol Production from Agro-wastes\* (Co-PI).  
Funding Agency: *Iowa Biotechnology Byproducts Consortium, USDA*;  
Amount: \$ 117,000 (Aug 2005).
- Bioenergy Production from Food Wastes (Co-PI).  
Funding Agencies: *Universal Entech, Phoenix, AZ and Arizona Department of Environmental Quality*; Status: Amount: \$ 32,090 (Jun 2003).

## TEACHING

### (A) At University of Hawai'i Mānoa

- Sustainable Engineering summer course (2019, 2022), Shandong University, Qingdao, China.
- BE 491: Renewable Energy (Sustainable Engineering Series; Summer 2013), Université Catholique de Lille, Lille, France.
- BE 491: Sustainable Engineering (Undergraduate course, Fall 2011).
- BUS 350: Sustainability: Green and Global (Summer 2011), American Business School, Paris, France.

- BE 410: Biomass and Biowaste Conversion to Biofuels/Bioenergy (Undergraduate course, Fall 2009, 2010, 2013, 2014, 2016, 2018, 2020, 2022).
- BE 375: Transport Phenomena (Undergraduate course, Spring 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022).
- CEE691/BE 691: Energy and Environment (Graduate course, Fall 2016, 2017, and 2020).
- MBBE 610: Graduate Seminar (1-cr, Graduate course, Fall 2008).

### **(B) At Iowa State University**

- CE 524: Air Pollution Control Designs (Fall 2005 and 2006).
- CE326: Principles of Environmental Engineering (Fall 2004).
- CE 525: Industrial Waste Treatment and Resource Recovery (Spring 2006 and 2007).
- Delivered Special Graduate/Undergraduate Courses:
  - Anaerobic Biotechnology (Spring 2006 and 2007)
  - Biomass: A Renewable Energy Source (Spring 2007)
  - Membrane Processes for Water and Wastewater Treatment (Spring 2006)
  - Ultraviolet Disinfection; and Anaerobic Waste Treatment (Fall 2006)
  - Biological Wastewater Treatment (Fall 2005 and 2006)

## **RESEARCH SUPERVISION/MENTORING**

### **(A) Newly-Appointed Faculty, Post-Doctoral Research Associates and Visiting Scholars (Bolds are from UH Mānoa)**

1. **Dr. Surendra K.C.**, Post-doc (Jun 2017 to continue).
2. **Dr. Baihang Zhao**, Visiting scholar (Jul 2019 to Aug 2020). Beijing University of Technology, Beijing, China.
3. **Nhan Thai Hua**, Borlaug Norman Fellow (Jul to Oct 2019). College of Aquaculture and Fisheries, Can Tho University, Viet Nam.

4. **Dr. Akash Oberoi**, Post-doc, Jointly supervised with Prof. LU Hui at Sun-Yat Sen University, Guangzhou, China (May 2018 to Dec 2020).
5. **Dr. Yan Yan Jia**, Post-doc, Jointly supervised with Prof. LU Hui at Sun-Yat Sen University (May 2017 to Dec 2019). (Current address: Assistant Professor, Sun-Yat Sen University, Guangzhou, China).
6. **Dr. Guo Yiping**, Visiting scholar (Sep 2018 to Sep 2019). North China University of Water Resources and Electric Power, Zhengzhou, China.
7. **Dr. Anil K. Patel**, Post-doc (Jan to Oct 2017) Current address: Senior Researcher, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan).
8. **Edward Drielak**, Research engineer (Jan 2016 to Jun 2017) (Current address: Environmental Compliance Engineer, US Navy, Pearl Harbor, HI).
9. **Mr. Chettaphong Phuttaro**, Royal Golden Jubilee Scholar (Sep 2016 to Jul 2017), Prince of Songkla University, Songkhla, Thailand.
10. **Saruda Sittthikitpunya**, Royal Golden Jubilee Scholar (May 2016 to Oct 2016), Khon Kaen University, Khon Kaen, Thailand.
11. **Dr. Karthik Ramachandran**, Post-doc (Mar to Jun 2016). (Current address: Assistant Professor, SRM University, Andhra Pradesh, India).
12. **Dr. Balendu Sekher Giri**, Post-doc (Mar 2015 to Feb 2016). (Current address: Post-doc, Indian Institute of Technology IIT (BHU), Varanasi, India).
13. **Jarupat Kanjanarong**, Royal Golden Jubilee Scholar (Aug 2014 to May 2015), Prince of Songkla University, Songkhla, Thailand.
14. **Juan Camila Acevedo**, Visiting Scholar (Sep 2014 to Dec 2014). Santander University, Cucuta, Colombia. (Current address: Ph.D. student, Universidad Pontificia Bolivariana, Medellin Columbia).
15. **Dr. Devin Takara**, Junior Researcher (Dec 2012 to Dec. 2014). (Current address: Senior Engineer, US Navy, Pearl Harbor, HI).
16. **Dr. Saoharit Nitayavardhana**, Post-doctoral Research Associate (Jan 2013 to Oct 2014). (Current address: Assistant Professor at Chiang Mai University, Thailand).

17. **Dr. Zhen Hu**, Post-doctoral Research Associate (Apr 2011 to Aug 2013). (Current address: Professor, School of Environmental Science and Engineering, Shandong University, Qingdao, China).
18. **Dr. Pradeep Munasinghe**, Post-doctoral Research Associate (Dec 2012 to Feb 2013) (Current address: Research Engineer at WhiteDogLabs Inc., New Castle, DE).
19. **Dr. Devappa Rakshit**, Post-doctoral Research Associate (Aug 2011 to Dec Jan 2013). (Current address: Senior Scientist, Biorefining Research Institute, Lakehead University, Thunder Bay, Ontario Canada).
20. **Kerati Issarapayup**, Visiting Scholar, Chulalongkorn University, Thailand (Oct 2010 to Sep 2011). (Current address: Unknown).
21. **Kriangkrai Thitimakorn**, Visiting Scholar, Thailand (May to Aug 2008). Current address: Senior Development Officer, Swedish Embassy, Bangkok, Thailand).
22. Dr. Tian Qing, Visiting Professor, DongHua University, Shanghai, China (Jul 2007 to Aug 2008). (Current address: Dean, School of Environmental Engineering and Science, DongHua University).
23. Dr. Buddhi P. Lamsal, Assistant Professor, Food Science and Human Nutrition Dept., Iowa State University (mentored in fermentation and biorenewable research) (Jan 2007 to Dec 2007).
24. Dr. Sang Hyoun Kim, Post-doctoral Research Associate, Korea Advance Institute of Science and Technology, Daejeon, South Korea (Nov 2006 to Dec 2007). (Current address: Professor, Yonsei University, South Korea).
25. Dr. Wen-Hsing Chen, Post-doctoral Research Associate, Iowa State University (Jan 2007 to Jun 2007) (Current address: Professor, National Ilan University, Taiwan).
26. Ms. Saoharit Nitayavardhana, Visiting Scholar, Asian Institute of Technology, Bangkok, Thailand (Mar to Dec 2007) (Current address: Assistant Professor, Chiang Mai University, Thailand).
27. Mr. Hrvoje Juretic, Fulbright Scholar, University of Zagreb, Zagreb, Croatia (Jun to Dec 2006).
28. Dr. Beril Akin, Visiting Professor, Gazi University, Ankara, Turkey (Jan to May 2006).



29. Ms. Melissa Montalbo, Visiting Scholar, Asian Institute of Technology, Bangkok, Thailand (Jan to Mar 2006) (Current address: Assistant Professor, Rowan University).
30. Dr. David Grewell, Assistant Professor, Dept. of Agricultural and Biosystems Engineering, Iowa State University (mentored in biorenewable research) (Oct 2005 to May 2006). (Current address: Prof., North Dakota State University, ND).
31. Dr. Tarek Sabry, Fulbright Scholar, Aim Shams University, Cairo Egypt (Nov 2004 to Sep 2005).

### **(B) Other Researchers/Graduate Students Mentored**

1. 10 graduate students, Jointly supervised/supervising with Prof. LU Hui at Sun-Yat Sen University, Guangzhou, China (May 2015 to 2019).
2. Gopi Krishna Kafle, Ph.D. student at Kangwon National University, South Korea (Currently, Engineer, Clean Methane Systems LLC, Portland, OR) (2009 to 2017). (<http://methanesys.com/>)
3. Dr. Po-Heng (Henry) Lee, Post-doc, INHA University, South Korea (Currently, Senior Lecturer, Imperial College, London) (2012 to 2015).
4. Mathava Kumar, Ph.D. student at IIT Madras (Currently, Associate Professor, IIT Madras, India (2006 to 2013)).
5. Venkataramana Gadhamshetty, Ph.D. student, New Mexico State University (Currently, Associate Professor, Department of Civil and Environmental Engineering, South Dakota School of Mines and Technology, Rapid City, SD) (2005 to 2014).

### **(C) Current Graduate Students**

1. Shreeja Lopchan (M.S. Student). "Aquaponics integrated with biochar and nanobubble technology." (Fall 2022-continue)
2. Muzammil Khan (M.S. student). "Machine learning application in anaerobic digestion." (Fall 2022-continue)
3. Wachiranon Chuenchart (Ph.D. student). "Applying machine learning in anaerobic co-digestion with micro-aeration for enhanced digestibility." (Fall 2019-continue).

4. Kyle Rafael Marcelino (Ph.D. student). "Nanobubble technology in aquaponics." (Fall 2022-continue).
5. Ty Shitanaka (M.S. student). "Nanobubble technology for algal biomass production." (Summer 2020-continue).
6. Jung Shick Kwon (Ph.D. student). "Fungal protein production on sugarcane-to-ethanol process wastewater." (2016 to continue).

#### **(D) Past Students**

##### ***At University of Hawai'i at Mānoa***

1. Kyle Rafael Marcelino (M.S.). "Application of nanobubble technology in floating raft aquaponics." (Summer 2022). (Current address: Ph.D. student, University of Hawaii at Manoa).
2. Renisha Karki, (M.S. student). "Anaerobic co-digestion with cow manure and coffee pulp: Evaluation of process instability." (Summer 2021). (Current address: Ph.D. student, University of Michigan Ann Arbor, MI).
3. Curtis Chan (M.S.), "Nanotechnology applications in wastewater treatment process." (Spring 2020). (Current address: Engineer, Apple Inc., Honolulu, HI).
4. Fernanda R. Oliveira (Ph.D.), "High rate anaerobic digestion process for treatment of sulfate-laden industrial wastewater with simultaneous removal of hydrogen sulfide using biochar." (Fall 2019). (Current address: Research Engineer, Anheuser-Busch, St. Louis, MO).
5. Nguyen Minh Duc (Ph.D.), "Oxidation-reduction potential-based micro-aeration control system for anaerobic digestion." (Summer 2018). (Current address: Technical Officer, WWF Vietnam).
6. Elijah Crow (M.S.), "Fungal-algal symbiosis system for biofuel and biobased products generation." (Fall 2019). (Current address: started his own company).
7. Sumeth Wongkiew (Ph.D.), "Nitrogen cycle in floating-raft aquaponic systems." (Summer 2018). (Current address: Lecturer, Chulalongkorn University, Bangkok, Thailand).
8. Misheel Batsaikhan (M.S.), "Protein-rich fungal biomass cultivation on agro-industrial residues and wastes for aquaculture fish feed with simultaneous

- water reclamation." (Fall 2017). (Current address: Consulting Engineer AECOM, Honolulu, HI, USA).
9. Chayanon (Nont) Sawatdeenarunat (Ph.D.), "Anaerobic digestion of high solids feedstocks." (Summer 2017). (Current address: Assistant Professor, Asian Development College for Community Economy and Technology, Rajabhat University, Chiang Mai, Thailand).
  10. Surendra K.C. (Ph. D.), "Anaerobic digestion of energy crops for bioenergy production." (Summer 2017). (Current address: Post-Doc, University of Hawaii at Manoa).
  11. Ernest J. Williams (M.S. Plan B), "Sewage sludge generation and treatment in Hawaii." (Spring 2016). (Current address: Environmental Engineer, Washington, D.C.).
  12. Shilva Shrestha (M.S. Plan A), "Anaerobic digestion of lignocellulosic biomass using rumen contents for enhanced biogas production." (Fall 2015). (Current address: Post-doctoral research associate, University of California at Berkeley, CA).
  13. Edward Drielak (M.S. Plan A), "Investigation of factors affecting the dilute acid pretreatment of Napier grass using a full factorial statistical approach." (Fall 2015). (Current address: Environmental Compliance Engineer, US Navy, Pearl Harbor, HI).
  14. Aaron King (M.S. Plan B), "Oleaginous fungi as a source of triglycerides for biodiesel production." (Spring 2014). (Current address: R & D Engineer, Pacific Biodiesel, LLC, HI).
  15. Sumil Thapa (M.S. Plan B), "Anaerobic digestion of food waste." (Fall 2013). (Current address: Process Engineer, Oceanit Laboratories, Honolulu, HI).
  16. Mathew Wong (M.S. Plan A), "Mass transfer evaluation of fungal fermentation." (Fall 2013). (Current address: Biological Engineer Healthcare Information Technology, Taipei, Taiwan).
  17. Nora Robertson (M.S. Plan B), "Life cycle analysis of Napier grass for biofuel production." (Spring 2013). (Current address: Engineer, Tissue Genesis, Honolulu, HI).
  18. Saoharit Nitayavardhana (Ph.D.), "Protein-rich fungal biomass production on sugarcane-ethanol wastewater for animal feed applications with

concomitant water reclamation (Fall 2012). (Current address: Assistant Professor, Chiang Mai University, Thailand).

19. Devin Takara (Ph. D.), "Green processing of Napier grass for generation of biofuel and biobased product." (Fall 2012). (Current address: Senior Engineer, US Navy, Pearl Harbor, Honolulu, HI).
20. Pradeep Munasinghe (Ph.D.), "Mass transfer evaluation and analytical modeling using composite hollow fiber (CHF) membrane for syngas fermentation to biofuels." (Fall 2012). (Current address: Research Engineer at WhiteDogLabs Inc., New Castle, DE).
21. Majdouline LeRoy (M.S. Plan-A), "Ultrastructural changes associated with different pretreatments on Napier grass." (Fall 2012). (Current address: Engineer, US Navy, Pearl Harbor, Honolulu, HI).
22. Khuyen Phan (M.S. Plan-B), "Bioconversion of papaya wastes to protein-rich feed for aquaculture application." (Fall 2009). Current address: Self-employed in architectural design, Honolulu, HI).

**At Iowa State University (as Major/Co-major Professor)**

1. Mary Rasmussen (Ph.D.), "Fungal treatment of thin stillage from dry corn milling ethanol plant and recovery of protein as animal feed." (Fall 2009; Current address: Unknown).
2. Micky Vincent (Ph.D.), "Sequential saccharification and fermentation of corn stover for the production of fuel ethanol using wood-rot fungi, *Saccharomyces cerevisiae* and *Escherichia coli* K011." (Summer 2010; Current address: Lecturer, Dept of Biotechnology, University of Malaysia Sarawak (UNIMAS)).
3. Bishnu Karki (Ph.D.), "Ultrasonic application in soy processing to enhance protein yield and sugar release." (Spring 2009; Current address: Assistant Professor, South Dakota State University, Brookings, SD).
4. Melissa Montalbo (Ph.D.), "Ultrasonic pretreatment of corn to enhance ethanol yield." (Fall 2008; Current address: Assistant Professor, Rowan University).
5. Prachand Shrestha (Ph.D.), "Fungal conversion of lignocellulosic biomass into ethanol." (Fall 2008; Current address: Senior Scientist, Novozymes, Franklinton, NC).

6. Yashodhara Kambam (M.S.), "Bioenergy production from fungal treated stillage." (Summer 2008; Current address: Moved to India).
7. Nagapadma Jasti (Ph.D.), "Attached growth fungal process for protein recovery from corn processing residues." (Fall 2006; Current address: self-employed, Houston, TX).
8. Karen Bodach (M.S.) "Biological pretreatment of industrial wastewater for volatile fatty acids removal." (Spring 2006; Consulting Engineer in Chicago).
9. Sindhuja Sankaran (M.S.), "Ozone as a selective disinfectant for nonaseptic fungal cultivation on corn-processing wastewater." (Spring 2006; Current address: Assoc. Prof., Washington State University, Pullman, WA, USA).
10. Bin Xie (M.S.), "Adsorptive removal of naturally occurring trace toxins from water: Case studies of arsenic (V) and estrogens." (Summer 2006; Current address: Project Engineer, Oceaneeing, Houston, TX).
11. Mary Rasmussen (M.S.), "Sequential saccharification of corn fiber by the brown rot fungus, *Gloeophyllum trabeum*, and ethanol production by *Saccharomyces cerevisiae*." (Summer 2006; Current address: Unknown).
12. Prachand Shrestha (M.S.), "Saccharification of corn fiber by *Phanerochaete chrysosporium* in solid-state fermentation and subsequent fermentation of hydrolysate into ethanol." (Summer 2006; Current address: Senior Scientist, Novozymes, Franklinton, NC).
13. Yongie Miao (M.S.), "Selective disinfection for nonaseptic fungal treatment of food processing wastewater." (Spring 2005; Current address: Engineer at Nationwide Children's Hospital, Columbus, OH).

### **(E) Thesis Supervision Committee Member**

#### **At University of Hawai'i at Mānoa**

1. Lianger Dong (Ph.D). "Uncovering the probiotic potential of poi, a naturally fermented Hawaiian food." (Spring 2023).
2. Sydney Le Cra (M.S.), "Scalable pretreatment methods and biomethane production of select single use-biodegradable food containers - PLA and fiber." (Spring 2021).

3. Teddy Uekawa (M.S.), "Effects of waste activated sludge extracellular polymeric substances (EPS) composition on biosorption for primary carbon diversion." (Spring 2021).
4. Jon Wells (Ph.D.), "Understanding carbon in large-scale agricultural production for bioenergy production in the tropics." (Fall 2020).
5. Sean Francis Takehiro (M.S.), "Design, simulation and fabrication of a cooler and controller facilitating study of magnetic field effects on nucleation in super cooled bulk water." (Spring 2020).
6. Jacqueline Jamison (M.S.), "Assessing the effects of digestates and combinations of digestates and fertilizer on yield and nutrient use of *Brassica juncea* (Kai Choy)." (Fall 2019).
7. Taiyoung Kang (Ph.D.), "Study of electric and magnetic field applications for supercooling technology of fresh foods: An investigation of scale up and long-term preservation." (Fall 2019).
8. Joachim Schneider (M.S.), "Effects of mixing ratio, contact time, DO and EPS composition on efficiency of biosorption for primary carbon diversion." (Fall 2019).
9. Inae Lee (Ph.D.), "Rapid and sensitive detection of foodborne pathogens using bio-nanocomposites functionalized electrochemical immunosensor with dielectrophoretic attractions." (Fall 2017).
10. Raymond A. Hoptowit (M.S.), "Design, fabrication, and validation of an MCU-based supercooling control unit for use in food preservation." (Fall 2017).
11. David Harris (M.S.), "An investigation of ambient drying of eucalyptus grandis wood." (Spring 2016).
12. Lavane Kim (Ph.D.), "Low cost soil-based biological treatment for water reclamation." (Spring 2015).
13. Daniel Amato (Ph.D.), "Evaluating the coastal impact of ocean discharge of wastewater effluent in Hawaii." (Fall 2014).
14. Seung Hyun Lee (Ph.D.), "Hybrid combination of emerging food processing technologies: Microwave and pulse ohmic heating." (Summer 2014)

15. Seerwan Ahmed Abdullah (Ph.D.), "Alternative processing techniques for pasteurization of liquid foods: microwave, ohmic heating and ultraviolet light." (Fall 2012).
16. Grace Chee (M.S.), "Electrochemical impedance spectroscopy and laser photoselectivity with gold nanoparticles for food applications." (Fall 2012).
17. Juanta Mathew (Ph.D.), "Enhanced biohydrogen production from glycerol using genetically engineered *E. coli*." (Spring 2010).
18. Seung Hyun Lee (M.S.), "Ohmic heating: CFD modeling of heating pattern of multiphase food and Pretreatment for subsequent ethanol production." (Summer 2010).
19. Michael Porter (M.S.), "*In situ* crystallization of native poly(3-hydroxybutyrate) granules in varying environmental conditions." (Fall 2010).

#### **At Iowa State University**

1. Monchai Wongkamka (Ph.D.), "Treatment of food processing wastewater and recovery of single cell yeast." (Summer 2005; Current address: Engineer, Industrial Estate Authority of Thailand).
2. Yu-Ting Huang (M.S.), "Biological hydrogen production from biomass-derived sugars." (Spring 2006; Current address: Unknown).
3. Jaeho Ho (Ph.D.), "Anaerobic membrane bioreactor for treatment of low strength wastewater." (Spring 2007; Current address: Senior Research Engineer, Doosan Hydro Technology, Inc., Tampa, FL, USA).
4. Ling Li (Ph.D.), "Use of fly ash for removal of emerging pollutants from treated effluent." (Spring 2008; Current address: unknown).
5. Thanapong Duangmanee (Ph.D.), "Anaerobic treatment of swine manure with concurrent odor control." (Summer 2009; Current address: Environmental engineer, Mae Fang Foundation, Chiang Mai, Thailand).

#### **(F) Mentoring of Undergraduate and High School Students At University of Hawai'i at Mānoa**

1. Lisa Lowe and Sarah Hamada (Senior in Biological Engineering, University of Hawaii at Manoa) (Spring 2022).
2. Socheatha Tork (Junior in Biological Engineering, University of Hawaii at Manoa) (Fall 2020).
3. Alandra DeAndrea (Senior in Biological Engineering, University of Hawaii at Manoa) (Spring 2020). (Recipient of Undergraduate Research Opportunities Program (UROP) Grant, \$5,000).
4. Kacie Niimoto (Senior in Biological Engineering, University of Hawaii at Manoa) (Summer 2017 to Spring 2018). (Recipient of Undergraduate Research Opportunities Program (UROP) Grant, \$5,000).
5. Kacie Niimoto, Marissa Kuwabara, Sara Lin and Gowoon Jung (Seniors in Biological Engineering, University of Hawaii at Manoa), Mentor of Senior Design Project, "*Design of Small-Scale Water Treatment Systems for the Ala Wai Canal*" (Fall 2017 to Spring 2018). (Recipient of Undergraduate Research Opportunities Program (UROP) Grant, \$10,000).
6. Sreelakshmi Kutty (Sophomore in Civil and Environmental Engineering, University of Hawaii at Manoa) (Fall 2016 to present). (Recipient of Undergraduate Research Opportunities Program (UROP) Grant, \$5,000). (Honors student).
7. Nutnicha Jarasjanyawat and Araya Schroder (High school students), Wells International School, Bangkok, Thailand (Jun 12 to Jul 21, 2017).
8. Brent Wakuzawa (Senior in Biological Engineering, University of Hawaii at Manoa) (Spring 2016 to Spring 2017) (Recipient of Undergraduate Research Opportunities Program (UROP) Grant, \$5,000). (Honors student).
9. Charlene Leodones and Aliyah Abanes (High School student, St. Andrew's Priory, Honolulu, HI) (Sep 2016 to Fall 2017).
10. Anavat Siamwala and Thoranin Hlowjitsieng (High school students), Wells International School, Bangkok, Thailand (Jun 13 to Jul 22, 2016).
11. Noeloikeau Charlot and Zackery Morrison (Senior in Biological Engineering, University of Hawaii at Manoa), Mentor of Senior Design Project; "*Design of modular hydroponic system*" (Fall 2015 to Spring 2016).
12. Sean Reseigh (Senior in Tropical Plant and Soil Sciences (TPSS), University of Hawaii at Manoa) (Spring 2016) (Recipient of Undergraduate Research



Opportunities Program (UROP) Grant, \$5,000). Co-supervised with Prof. Jonathan Deenik of TPSS.

13. Addy Oppegaard (Middle School student, Mid Pacific Institute, Honolulu, HI (Nov 2015 to May 2016).
14. Noeloikeau Charlot (Junior in Biological Engineering, University of Hawaii at Manoa) (Spring 2015).
15. Sreelakshmi Kutty and Ariana Kim (High School student, St. Andrew's Priory, Honolulu, HI) (Nov 2011 to Jan 2012; Dec 2012 to Feb 2013 and Aug 2013 to May 2016).
16. Kimberly Tatsuyama (Junior in Biological Engineering, University of Hawaii at Manoa) (Spring 2015).
17. Sheldon Arakawa (Junior in Biological Engineering, University of Hawaii at Manoa) (Summer 2014 to Spring 2015).
18. Samira Fatemi (Senior in Biological Engineering, University of Hawaii at Manoa (Summer 2014 to summer 2015; Current address: Ph.D. student, Purdue University).
19. Laura Martinez (Junior in Biological Engineering, University of Hawaii at Manoa) (Aug to Dec 2013; Current address: Engineer with local construction Co.).
20. Raquel Auwae (Senior in Biological Engineering, University of Hawaii at Manoa) (Aug to Dec 2013; Current address: Thermocouple Engineer at Sumitomo Rubber USA).
21. Joyce Lin (Senior in Biological Engineering, University of Hawaii at Manoa) (Oct 2012 to May 2013; Current address: Unknown).
22. Victoria Lansdown (High School student, St. Andrew's Priory, Honolulu, HI) (Jan 2011 to Sep 2012; Current address: Unknown).
23. Nora Robertson (Senior in Biological Engineering, University of Hawaii at Manoa) (Jun to Aug 2011 Current address: Tissue Genesis, HI).
24. Edward Drielak (Senior in Biological Engineering, University of Hawaii at Manoa) (Jun to Aug 2011; Current address: Research assistant, University of Hawaii at Manoa).
25. Jessica Schmidt (Senior in Biological Engineering, Cornell University, Ithaca,

NY) (Jun to Aug 2010; Current address: Unknown).

26. Travis Nakagawa (Senior in Biological Engineering, University of Hawaii) (May to Aug 2009; St. Jude Medical, Inc.).
27. Christopher N. Vassallo (Senior in Dept. of Biology, University of Hawaii) (Jan to May 2009; Current address: Unknown).
28. Sarah Tamashiro and Lindsay Fujimoto (High School students, St. Andrew's Priory High School, Honolulu, HI) (2009 and 2010; Current address: Senior, Occidental College (Sarah); Senior, Grinnell College (Lindsay)).
29. Elise Minkin (High School student, Punahou School, Honolulu, HI) (May 2009 to Aug 2010: Senior, University of Pennsylvania).

### **At Iowa State University**

1. Victoria Young, Lincoln University: AGEP (Jun to Jul 2007).
2. Jeremy Riener, Iowa State University (Jan to May 2007).
3. James Fang, Iowa State University (Jan to May 2007).
4. Cindy Hanson, University of Idaho: Program for Women in Science and Engineering at Iowa State University (May to Jul 2005).

### **(G) External Advisees at Asian Institute of Technology, Bangkok, Thailand**

1. Bunrith Seng (M.S.), "Effect of chemical-ultrasound pretreatment on bioenergy production from thickened waste activated sludge (TWAS)." (May 2008; Current address: Senior Manager, CINTRI (Cambodia), Institute of Technology of Cambodia).
2. Navaratnam Navaneethan (M.S.), "Anaerobic digestion of ultrasound pretreated thickened waste activated sludge (TWAS) to enhance bioenergy production." (May 2007; Current address: Water/Wastewater Engineer and Biogas Specialist, Toronto, Ontario, Canada).
3. Monruedee Moonkhum (M.S.), "Aerobic digestion of ultrasound pretreated thickened waste activated sludge (TWAS)." (May 2007; Current address: Lecturer at Panyapiwat Institute of Technology, Thailand).

4. Saoharit Nitayavardhana (M.S.), "Ultrasound pretreatment of cassava chips to enhance bioethanol production." (May 2007; Current address: Assistant Professor, Chiang Mai University, Thailand).

#### **(H) External Reviewer/Member/Co-supervisor of Ph.D. Students/Dissertations**

1. Najiaowa Yu (Ph.D.), "Enhancing anaerobic digestion efficiency of high strength waste with different solid contents." Dept. of Civil and Environmental Engineering, University of Alberta, Canada (Nov 2022).
2. Tawanda Kunatsa (Ph.D.), "Optimization of biogas production from co-digestion of water hyacinth, municipal solid waste and cow dung." Faculty of Engineering, University of Pretoria, South Africa (Jan 2022).
3. Juan Castilla-Archilla (Ph.D.), "Brewery spent grain cascade process: protein recovery and improved downstream fermentation for simultaneous volatile fatty acid production and recovery." School of Natural Sciences, National University of Ireland, Galway, Ireland (Dec 2021).
4. Ju-Hyeong Jung (Ph.D.), "Hybrid immobilization and dynamic membrane bioreactor for high-rate biohydrogen production from food waste." Yongsei University, Seoul, South Korea (Dec 2021).
5. Shivali Sahota (Ph.D.), "Capture of H<sub>2</sub>S from raw biogas and production of high S-nutrient natural char and slurry for utilization in coil health enhancement." Indian Institute of Technology, New Delhi, India (Oct 2021).
6. Benjamin Melakail Abraham (M.S.), "Exploring "omics technologies" for characterising aquaponics bacterial ecology and phytochemistry." Rhodes University, South Africa (May 2021).
7. Aparna Kayathi (Ph.D.), "Benign engineering practices for processing of natural products." School of Engineering, RMIT, Melbourne, Australia (April 2021).
8. Aakanksha Rampuria (Ph.D.), "Wastewater treatment in constructed wetlands with special focus on nitrogen transformation." Dept. of Civil Engineering, Malviya National Institute of Technology, Jaipur, India (Feb 2021).
9. Zubayeda Zahan (Ph.D.), "Assessment of biogas production from Chicken Litter through Anaerobic Co-digestion with Food and Agro-industrial

Wastes, an Australian case study: The use of C/N for substrate mixing and semi solid versus conventional anaerobic digestion." Dept, of Environmental Engineering, RMIT, Melbourne, Australia (Oct 2019).

10. Rajwinder Kaur (Ph.D.), "Development of polyhydroxyalkanoates (PHAs) production process using different industrial or agricultural waste as raw material." Institut national de la recherche scientifique, Centre Eau Terre Environnement, Québec, Canada (Oct 2019).
11. Chettaphong Phuttaro (Ph.D.), "Anaerobic digestion of lignocellulosic biomass: effect of hydrothermal pretreatment of digestibility" Department Civil Engineering, Prince of Songkla University, Hatyai, Thailand (Apr 2019). (Co-supervisor; Invited for onsite visit).
12. Manish Kumar Kureel (Ph.D.) "Bioremediation of liquid benzene by isolated bacillus species." Department of Chemical Engineering & Technology, Indian Institute of Technology (IIT-BHU), Varanasi, India (Spring 2019).
13. Lalit Kumar (Ph.D.), "Industrial production of bioplastics using mixed microbial culture on pulp and paper industry sludge.", Institut national de la recherche scientifique, Centre Eau Terre Environnement, Québec, Canada (Spring 2018).
14. Pritam Kumar Dikshit (Ph.D.), "Bioconversion of crude glycerol to dihydroxyacetone using immobilized *gluconobacter oxydans*: process design, optimization and intensification." Department of Chemical Engineering, Indian Institute of Technology (IIT)-Guwahati, India (Summer 2017).
15. Jarupat Kanjanarong (Ph.D.), "Hydrogen sulfide removal from biogas produced during anaerobic digestion of palm oil mill wastewater" Department of Industrial Biotechnology, Prince of Songkla University, Hatyai, Thailand (Summer 2017). (Co-supervisor, Invited for onsite visit).
16. Ratul Kumar Das (Ph.D.), "Production of fumaric acid from different agro-industrial wastes through solid and submerged fermentation." Institut national de la recherche scientifique (INRS), Centre for Water, Earth and Environment, Québec, Canada (Spring 2016).
17. Julius Gbenga Akinbomi (Ph.D.), "Fermentative hydrogen and methane productions using membrane bioreactors." University of Borås, Borås, Sweden (Fall, 2015). (Served as an opponent; Invited for onsite visit).
18. Muhammad Yasin (Ph.D.), "High gas-liquid mass transfer bioreactor for

microbial syngas utilization." Gwanju Institute of Science and Technology, South Korea (2015).

19. Jayashri Kala (Ph.D.), "Environmental Management in Jaipur City, India." Malaviya National Institute of Technology, Jaipur, India (2015).
20. Abraham Mebrat Asmare (Ph.D.), "Investigation of use of microalgae consortium for wastewater treatment and algal biomass production." Addis Ababa Institute of Technology, Addis Ababa, Ethiopia (Summer 2014). (Served as a Major external examiner; Invited for onsite visit).
21. Rahul Singh Chutia (Ph.D.), "Thermochemical Conversion of Bioenergy Byproducts to Bio-oil and Biomaterials." Tezpur University, India (2014).
22. Supawat Chaikasem (Ph.D.), "Effect of PVA-gel on Performance Improvement of Two Stage Thermophilic Anaerobic Membrane Bioreactor." Asian Institute of Technology, Thailand (2014).

#### REFEREED CONFERENCE PRESENTATIONS (PODIUM) (speaker with "\*\*")

1. Chuenchart, W\*. Surendra, K.C., and **Khanal, S.K.** Application of machine learning on performance prediction of co-digestion with microaeration. 17<sup>th</sup> World Congress on Anaerobic Digestion, June 17-22, 2022, Ann Arbor, Michigan, USA (Oral).
2. Marcelino, K.R\*., and **Khanal, S.K.** Nanobubble technology in aquaponics. *2021 International Conference on Sustainable Biowaste Management* April 12-14, 2021, Hong Kong SAR, PR China (Oral).
3. Chuenchart, W\*., Karki, R., Surendra, K.C., and **Khanal, S.K.** Integration approach of anaerobic co-digestion and microaeration as an alternative solution for municipal organic waste management. *2021 International Conference on Sustainable Biowaste Management*, April 12-14, 2021, Hong Kong SAR, PR China (Oral).
4. Wongkiew, S., Park, M.R., Chandran, K., and **Khanal, S.K.\*.** Innovative aquaponic system for resource recovery. *2019 Innovation Conference on Sustainable Wastewater Treatment and Resource Recovery*, November 24-28, 2019, Shanghai, China (Oral).
5. Nguyen, D., and **Khanal, S.K.\*.** High solids anaerobic digestion of lignocellulosic biomass via oxidation-reduction potential-based micro-

eration. *16<sup>th</sup> World Congress on Anaerobic Digestion*, June 23-27, 2019, Delft, The Netherlands (Oral).

6. Oliveira, F. and **Khanal, S.K\***. Alleviating sulfide toxicity using biochar during anaerobic treatment of high-sulfate wastewater with sulfur recovery. *16<sup>th</sup> World Congress on Anaerobic Digestion*, June 23-27, 2019, Delft, The Netherlands (Oral).
7. Nguyen, D., and **Khanal, S.K\***. Intermittent micro-aeration for controlling volatile fatty acids accumulation in high loading rate anaerobic digestion. *2<sup>nd</sup> International Conference on Bioenergy, Bioproducts & Environmental Sustainability*, Sep 16-19, 2018, Sitges, Spain.
8. Sawatdeenarunat, C., and **Khanal, S.K.\*** Innovative decentralized biorefinery for lignocellulosic biomass: Integrating anaerobic digestion with thermochemical conversion. *15<sup>th</sup> World Congress on Anaerobic Digestion*, Oct 18-20, 2017, Beijing, China.
9. Wongkiew, S\*, Popp, B.N., Park, M.R., Chandran, K., and **Khanal, S.K.** Aquaponic system - An emerging technology for resource recovery. *2<sup>nd</sup> International Resource Recovery Conference*, Aug 5-9, 2017, Columbia University, New York, NY, USA.
10. Shrestha, S\*, Fonoll, X., Dosta, J., Mata-Alvarez, J., **Khanal, S.K.**, and Lutgarde R. Natural strategies for enhanced biogas production from lignocellulosic biomass revealed through the synergistic application of microbial and engineering techniques. *1<sup>st</sup> Symposium on Microbiological Methods for Waste and Water Resource Recovery*, May 18-19, 2017, Delft, The Netherlands.
11. Surendra, K.C., and **Khanal, S.K\***. High yielding tropical energy crops for bioenergy production: effects of plant components, harvest years, and locations on biomass composition and subsequent biogas production. *International Conference on Progress in Biogas IV*, University of Hohenheim, Mar 8-11, 2017, Stuttgart, Germany.
12. Nguyen, D., and **Khanal, S.K\***. Redox potential-based micro-aeration process control for anaerobic digestion. *1<sup>st</sup> International Conference on Bioenergy, Bioproducts & Environmental Sustainability*, Oct 23-26, 2016, Sitges, Spain.
13. Sawatdeenarunat, C, and **Khanal, S.K\***. Enhanced volatile fatty acids production with micro-oxygenation during anaerobic digestion of

lignocellulosic biomass. *1<sup>st</sup> International Conference on Bioenergy, Bioproducts & Environmental Sustainability*, Oct 23-26, 2016, Sitges, Spain.

14. Shrestha, S., Fonoll, X\*, Mata-Alvarez, J., Raskin, L., **Khanal, S.K.** Anaerobic co-digestion of lignocellulosic biomass and cow manure using rumen content as inoculum. *14<sup>th</sup> World Congress on Anaerobic Digestion*, Nov 15-18, 2015, Viña del Mar, Chile.
15. Surendra, K.C., Fonoll, X\*, and **Khanal, S.K.** Does maturity and size reduction matter on digestibility and methane yield of energy crop? *14<sup>th</sup> World Congress on Anaerobic Digestion*, Nov 15-18, 2015, Viña del Mar, Chile.
16. Surendra, K.C\*, Olivier, R., Tomberlin, J.K., and **Khanal, S.K.** Insect farming on organic wastes: A novel strategy to produce biodiesel and animal feed with concurrent waste remediation. *8<sup>th</sup> International Conference on Challenges in Environmental Science and Engineering, CESE-2015*, Sep 28-Oct 2, 2015, Sydney, Australia.
17. Surendra, K.C.\*, and **Khanal, S.K.** Effect of crop maturity stage and size reduction on digestibility of energy crop for biomethane production by anaerobic digestion. *American Society of Agricultural and Biological Engineers (ASABE) 2014 Annual International Meeting*, Jul 13-16, 2014, Montreal, QC, Canada.
18. Driolak, E\*, and **Khanal, S.K.** Investigation of acid concentration, retention time and temperature on dilute acid pretreatment of banagrass. *American Society of Agricultural and Biological Engineers (ASABE) 2014 Annual International Meeting*, Jul 13-16, 2014, Montreal, QC, Canada.
19. Takara, D\*, and **Khanal, S.K.** Biorefining potential of a high-yielding tropical feedstock for biofuel and biobased products. *American Society of Agricultural and Biological Engineers (ASABE) 2014 Annual International Meeting*, Jul 13-16, 2014, Montreal, QC, Canada.
20. Nitayavardhana, S\*, and **Khanal, S.K.** Bioconversion of sugarcane-to-ethanol wastewater into fungal protein for animal feed applications. *American Society of Agricultural and Biological Engineers (ASABE) 2014 Annual International Meeting*, Jul 13-16, 2014, Montreal, QC, Canada.
21. **Khanal, S.K\*** and Nitayavardhana, S. Sugarcane-to ethanol biorefinery: Protein-rich fungal biomass production on vinasse for animal feed and organic food production. *10<sup>th</sup> International Conference on Renewable Resources and Biorefineries*, Jun 4-6, 2014, Valladolid, Spain.

22. **Khanal, S.K\***. and Takara D. Biorefining tropical feedstocks for biofuel and biobased products. *1<sup>st</sup> International Congress on Bioenergy*, May 23-25, 2013, Portalegre, Portugal.
23. Surendra, K.C., and **Khanal, S.K\***. Ensilage strategy to pretreat green grass for enhanced biomethane production *27<sup>th</sup> Annual Biocycle West Coast Conference 2013*, Apr 9-11, 2013, San Diego, CA, USA.
24. Takara, D., Hashimoto, A.G., and **Khanal, S.K\***. Green processing: a biorefinery perspective. *Sun Grant National Conference: Science for Biomass Feedstock Production and Utilization*, Oct 2-5, 2012, New Orleans, LA, USA.
25. Hashimoto, A.G\*, Arnold, J., Ayars, J., Crow, S., Eggeman, T., Jakeway, L., Karkee, M., **Khanal, S.K.**, Kiniry, J., Matsunaga, J., Meki, N., Murthy, G., Nakahata, M., Ogoshi, R., Turano, B., Turn, S., Yanangida, J., and Zhang, Q. High-Yield Tropical Biomass for Advanced Biofuels. *Sun Grant National Conference: Science for Biomass Feedstock Production and Utilization*, Oct 2-5, 2012, New Orleans, LA, USA.
26. Takara, D\*, Hashimoto, A.G. and **Khanal, S.K.** Green processing of dedicated energy crops for biofuel and biobased products. *International Conference on Challenges in Environmental Science and Engineering (CESE) 2012*, Sep 9-13, 2012, Melbourne, Australia.
27. Munasinghe, P.C.\*, and **Khanal, S.K.** Evaluation and analytical modeling of carbon monoxide mass transfer using a composite hollow fiber (CHF) membrane bioreactor in syngas fermentation. *International Conference on Challenges in Environmental Science and Engineering (CESE) 2012*, Sep 9-13, 2012, Melbourne, Australia.
28. Nitayavardhana, S\*, Kerati, I, Pavasant, P., and **Khanal, S.K.** Biofuel residues conversion into aquatic feed via fungal fermentation. *International Conference on Challenges in Environmental Science and Engineering (CESE) 2012*, Sep 9-13, 2012, Melbourne, Australia.
29. Takara, D.\*, and **Khanal, S.K.** Wet processing of banagrass: A biorefinery perspective. *American Society of Agricultural and Biological Engineers (ASABE) 2011 Annual International Meeting*, Aug 7-10, 2011, Louisville, KY, USA.
30. Munasinghe, P.C.\*, and **Khanal, S.K.** Evaluation of hydrogen and carbon monoxide mass transfer and a correlation between myoglobin-protein



bio-assay and gas chromatography method for carbon monoxide determination. *American Society of Agricultural and Biological Engineers (ASABE) 2011 Annual International Meeting*, Aug 7-10, 2011, Louisville, KY, USA.

31. Nitayavardhana, S.\* and **Khanal, S.K.** Biodiesel-derived crude glycerol bioconversion to animal feed: A sustainable option for a biodiesel refinery. *American Society of Agricultural and Biological Engineers (ASABE) 2011 Annual International Meeting*, Aug 7-10, 2011, Louisville, KY, USA.
32. Takara, D.\*, and **Khanal, S.K.** Enhanced sugar release and co-product generation of green banagrass. *Asian Congress on Biotechnology (ACB)*, May 11-15, 2011, Shanghai, China.
33. Takara, D\*., and **Khanal, S.K.** Green processing of banagrass (*Pennisetum purpureum*) for enhanced sugar release. *Pacific Rim Summit on Industrial Biotechnology and Bioenergy*, Dec 11-14, 2010, Honolulu, HI, USA.
34. Takara, D\*., and **Khanal, S.K.** Optimization of chemical pretreatment of banagrass (a variety of *Pennisetum purpureum*) for enhanced sugar release. *Pacific Rim Summit on Industrial Biotechnology and Bioenergy*, Nov 8-11, 2009, Honolulu, HI, USA.
35. Munasinghe, P.C\*., and **Khanal, S.K.** Syngas fermentation to biofuel: evaluation of carbon monoxide mass transfer in different reactors configurations. *Pacific Rim Summit on Industrial Biotechnology and Bioenergy*, Nov 8-11, 2009, Honolulu, HI, USA.
36. Montalbo-Lomboy, M.\*, **Khanal, S.K.**, Van Leeuwen, J., Raman, D.R., Dunn Jr., L., and Grewell, D. Simultaneous saccharification and fermentation of ultrasonically treated corn slurry. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Jun 21-24, 2009, Reno, NV, USA.
37. Montalbo-Lomboy, M., **Khanal, S.K.**, Van Leeuwen, J., Raman, D.R., Dunn Jr., L., and Grewell, D.\* Ultrasonic pretreatment of corn slurry in batch and continuous systems. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Jun 21-24, 2009, Reno, NV, USA.
38. **Khanal, S.K.**, Montalbo, M\*., Van Leeuwen, J., Srinivasan, G., and Grewell, D. Ultrasonic enhanced liquefaction and saccharification of corn for biofuel production. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Jun 17-20, 2007, Minneapolis, MN, USA.

39. Karki, B\*., Lamsal, B.P., Grewell, D., Van Leeuwen, J., and **Khanal, S.K.** Ultrasonication in soy processing for enhanced protein and sugar yields and subsequent bacterial nisin production. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Jun 17-20, 2007, Minneapolis, MN, USA.
40. Rasmussen, M\*., **Khanal, S.K.**, Pometto, A.L., and Van Leeuwen, J. Thin stillage treatment from dry grind ethanol plants with fungi. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Jun 17-20, 2007, Minneapolis, MN, USA.
41. Shrestha, P\*., Vincent, M., **Khanal, S.K.**, Pometto, A.L., and Van Leeuwen, J. Fungal fermentation of corn fiber to enhance ethanol production. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Jun 17-20, 2007, Minneapolis, MN, USA.
42. Akin, B\*., **Khanal, S.K.**, Sung, S., Grewell, D., and Van Leeuwen, J. Effect of total solids concentration on ultrasonic disintegration of waste activated sludge. *IWA Specialized Conference – Facing Sludge Diversities: Challenges, Risks, and Opportunities*, Mar 28-30, 2007, Antalya, Turkey.
43. **Khanal, S.K.\*.**, Isik, H., Sung, S., and Van Leeuwen, J. Ultrasound pretreatment of waste activated sludge: evaluation of sludge disintegration and aerobic digestibility. *IWA World Water Congress and Exhibition*, Sep 10-14, 2006, Beijing, China.
44. **Khanal, S.K.\*.**, Isik, H., Sung, S., and Van Leeuwen, J. Ultrasonic conditioning of waste activated sludge for enhanced aerobic digestion. *IWA Specialized Conference - Sustainable Sludge Management: State of the Art, Challenges and Perspectives*, May 29-31, 2006, Moscow, Russia.
45. **Khanal, S.K.\*.**, Isik, H., and Sung, S. Effects of ultrasound pretreatment on aerobic digestibility of thickened waste activated sludge. *7<sup>th</sup> Specialized Conference on Small Water and Wastewater Systems*, Mar 7-10, 2006, Mexico City, Mexico.
46. Ho, J., **Khanal, S.K.\*.**, and Sung, S. Anaerobic membrane bioreactor for treatment of synthetic municipal wastewater at ambient temperature. *7<sup>th</sup> Specialized Conference on Small Water and Wastewater Systems*, Mar 7 - 10, 2006, Mexico City, Mexico.

47. Huang, J.-C\*., and **Khanal, S.K.** Biological odor control technology for high sulfate wastes. *4<sup>th</sup> Symposium on Anaerobic Digestion of Solid Waste*, Aug 31-Sept 2, 2005, Copenhagen, Denmark.
48. Jasti, N\*., **Khanal, S.K.**, Pometto, A.L., and Van Leeuwen, J. Attached growth fungal system for food processing wastewater treatment and high value protein recovery. *78<sup>th</sup> Annual Conference & Exposition (WEFTEC)*, Oct 29-Nov 2, 2005, Washington, D.C., USA.
49. Jasti, N\*., **Khanal, S.K.**, Pometto, A.L., and Van Leeuwen, J. Treatment of food processing wastewater using attached growth fungal system. *1<sup>st</sup> IWA-ASPIRE (Asia Pacific Regional Group) Conference & Exhibition*, Jul 10-15, 2005, Singapore.
50. Huang, Y.-T., Chen, S.-Y., **Khanal, S.K.\*.**, and Sung, S. Biological hydrogen production potential of cellulose-derived sugars. *1<sup>st</sup> IWA-ASPIRE (Asia Pacific Regional Group) Conference & Exhibition*, Jul 10-15, 2005, Singapore.
51. Wongkarnka, M., **Khanal, S.K.\*.**, Eliosov, B., Leeuwen, J., and Ellis, T.G. Production of aerobic yeast from industrial process stream. *1<sup>st</sup> IWA-ASPIRE (Asia Pacific Regional Group) Conference & Exhibition*, Jul 10-15, 2005, Singapore.
52. **Khanal, S. K\*.**, and Huang, J.-C. Treatment of high sulfate wastewater in upflow anaerobic filter. *Asian WaterQual 2003*, Oct 19-23, 2003, Bangkok, Thailand.
53. Li, C., Ho, J.H., **Khanal, S.K.**, and Sung, S\*. Temperature-phased anaerobic digestion (TPAD) of food waste together with wax-coated cardboard. *Asian WaterQual 2003*, Oct 19-23, 2003, Bangkok, Thailand.
54. Sung, S., **Khanal, S.K.**, Chen, W.-H\*., and Cao, Q. Bioconversion of sulfide to elemental sulfur in trickling filter. *Asian WaterQual 2003*, Oct 19-23, 2003, Bangkok, Thailand.
55. **Khanal, S.K.**, Shang, C\*., and Huang, J.-C. Use of ORP to control oxygen dosing for online sulfide oxidation in anaerobic treatment of high sulfate wastewater. *IWA 3<sup>rd</sup> World Water Congress*, Apr 7-12, 2002, Melbourne, Australia.
56. **Khanal, S.K\*.**, and Huang, J.-C. Anaerobic biotechnology for the treatment of sulfate-laden wastewater. *IWA-WISA sponsored conference*

*on Managing Water and Waste in the New Millennium, May 23-26, 2000, Midrand, Johannesburg, South Africa.*

## TECHNICAL PRESENTATIONS/POSTERS, MEETINGS AND WORKSHOPS

1. Shitanaka T\*, Marcelino K.R., Surendra K.C., Du Z.-Y., and **Khanal S.K.** Carbon dioxide nanobubbles as a delivery system to enhance microalgal productivity. Poster Presentation. S-1075: Science and Engineering for a Biobased Industry and Economy, Research Meeting, July 15-16, 2022, Houston, TX, USA.
2. Chuenchart, W\*, Surendra K.C., and **Khanal S.K.** Application of machine learning on performance prediction of co-digestion with microaeration. Poster Presentation. S-1075: Science and Engineering for a Biobased Industry and Economy, Research Meeting, July 15-16, 2022, Houston, TX, USA.
3. Marcelino K.R\*., Shitanaka T., Surendra K.C., and **Khanal S.K.** Application of air nanobubbles in floating-raft aquaponics. Poster Presentation. S-1075: Science and Engineering for a Biobased Industry and Economy, Research Meeting, July 15-16, 2022, Houston, TX, USA.
4. **Khanal, S.K\***. Chuenchart, W., and Khan, M. Data-driven approaches for modeling anaerobic digestion. 17th World Congress on Anaerobic Digestion (Workshop), June 17-22, 2022, Ann Arbor, Michigan, USA.
5. **Khanal, S.K\***. Micro-aeration enhances methanogenesis and process stability. 17th World Congress on Anaerobic Digestion (workshop), June 17-22, 2022, Ann Arbor, Michigan, USA.
6. Karki, R\*, Chuenchart, W., Surendra, K.C., and **Khanal, S.K.** Anaerobic co-digestion of coffee pulp and cattle manure for enhanced biomethane production. 2021 International Conference on Sustainable Biowaste Management, April 12-14, 2021, Hong Kong SAR, PR China.
7. Wongkiew, S\*, and **Khanal, S.K.** Nitrogen transformations in floating-raft aquaponic systems. Poster presentation. *30<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium*, Apr 6-7, 2018, University of Hawai'i at Mānoa, Honolulu, HI, USA.
8. Nguyen D\*, and **Khanal. S.K.** Oxidation reduction potential (ORP)-based micro-aeration system for anaerobic digestion. Oral presentation. *30<sup>th</sup>*

*Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium, Apr 6-7, 2018, University of Hawai'i at Mānoa, Honolulu, HI, USA.*

9. Oliveira, F\*, and **Khanal, S.K.** Anaerobic treatment of sulfate-laden wastewater with simultaneous removal of sulfide using biochar. Oral presentation. *30<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium, Apr 6-7, 2018, University of Hawai'i at Mānoa, Honolulu, HI, USA.*
10. Nyugen, D., and **Khanal, S.K.** Automated micro-aeration system for enhancing the process stability of anaerobic digestion at high organic loading rates. *15<sup>th</sup> World Congress on Anaerobic Digestion, Oct 18-20, 2017, Beijing, China. (Awarded Outstanding Poster Award).*
11. Dong, N., Bu, F., **Khanal, S.K.**, Xie, L., and Zhou, Q. Effects of hyperthermophilic temperature on biomethanation efficiency and microbial community during hydrogenotrophic methanogenesis. *15<sup>th</sup> World Congress on Anaerobic Digestion, Oct 18-20, 2017, Beijing, China. (Awarded Outstanding Poster Award).*
12. Shrestha, S., Fonoll, X., Dosta, J., Mata-Alvarez, J., **Khanal, S.K.**, and Lutgarde R. Natural strategies for enhanced biogas production from anaerobic digestion of lignocellulosic biomass. *3<sup>rd</sup> International Conference on Biogas Microbiology (ICBM-3), May 1-3, 2017, Wageningen, The Netherlands.*
13. Shrestha, S., Fonoll, X., Mata-Alvarez, J., Dosta Parras, J., **Khanal, S.K.** and Raskin, L. Synergistic application of microbial and engineering techniques to simulate natural rumen ecosystem in anaerobic digestion. *1<sup>st</sup> Symposium on Microbiological Methods for Waste & Water Resource Recovery, May 2017, Delft, Netherlands.*
14. Batsaikhan, M., and **Khanal, S.K.** Recovery of high-value fungal protein from agri--processing wastewater with simultaneous water reclamation. Poster Presentation. *29<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium, Apr 7-8, 2017, University of Hawai'i at Mānoa, Honolulu, HI, USA.*
15. Phuttaro, C., Chaiprapat, S., and **Khanal, S.K.** Effects of high-pressure pretreatment on anaerobic digestion of Napier grass. Poster Presentation. *29<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium, Apr 7-8, 2017, University of Hawai'i at Mānoa, Honolulu, HI, USA.*

16. Wakizawa, B, and **Khanal, S.K.** Reduction of inhibitory compounds generated from high pressure treatment of *Gracilaria Salicornia*. Oral Presentation. *29<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium*, Apr 7-8, 2017, University of Hawai'i at Mānoa, Honolulu, HI, USA.
17. Fonoll, X., Shrestha, S., Mata-Alvarez, J., **Khanal, S. K.**, Raskin, L. Natural strategies for enhanced biogas production from anaerobic digestion of lignocellulosic biomass. Borchardt Conference, Feb 2017. Ann Arbor, Michigan.
18. Hawaii Aquaculture and Aquaponics Conference, Feb 24, 2017, Kapiolani Community College, Honolulu, HI, USA.
19. S-1041: The Science and Engineering for a Biobased Industry and Economy Meeting, Aug 8 -9, 2106, USDA Western Regional Research Center, Albany, CA, USA.
20. Sawatdeenarunat, C., and **Khanal, S.K.** Enhanced volatile fatty acids production with micro-oxygenation during anaerobic digestion of lignocellulosic biomass. Poster Presentation. *28<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium*, Apr 8-9, 2016, University of Hawai'i at Mānoa, Honolulu, HI, USA.
21. Wongkiew, S., and **Khanal, S.K.** Nitrogen transformations in floating-raft aquaponic systems. Poster presentation. *28<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium*, Apr 8-9, 2016, University of Hawai'i at Mānoa, Honolulu, HI, USA.
22. Nguyen D., and **Khanal, S.K.** Oxidation reduction potential (ORP)-based micro-aeration system for anaerobic digestion. Poster presentation. *28<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium*, Apr 8-9, 2016, University of Hawai'i at Mānoa, Honolulu, HI, USA.
23. Shrestha, S., Fonoll, X., Mata-Alvarez, J., Raskin, L., and **Khanal, S.K.** Anaerobic digestion of lignocellulosic biomass using rumen content as inoculum for enhanced biogas production. Poster presentation. *S-1041: Science and Engineering for a Biobased Industry and Economy, Research Meeting*, Aug 10-11, 2015, Wooster, OH, USA.

24. Nguyen, D. and **Khanal, S.K.** Oxidation reduction potential (ORP)-based micro-aeration system for anaerobic digestion". Poster presentation. S-1041: Science and Engineering for a Biobased Industry and Economy, Research Meeting, Aug 10-11, 2015, Wooster, OH, USA.
25. Drielak, E., and **Khanal, S.K.** Dilute acid pretreatment: investigation of acid concentration, time, temperature and solid to liquid ratio on total sugar release from Napier grass. Poster presentation. *S-1041: Science and Engineering for a Biobased Industry and Economy, Research Meeting*, Aug 10-11, 2015, Wooster, OH, USA.
26. Sawatdeenarunat, C., and **Khanal, S.K.** Enhanced volatile fatty acids production with oxygenation during anaerobic digestion of lignocellulosic biomass. Poster presentation. *S-1041: Science and Engineering for a Biobased Industry and Economy, Research Meeting*, Aug 10-11, 2015, Wooster, OH, USA.
27. Sawatdeenarunat, C., and **Khanal, S.K.** Enhanced volatile fatty acids production with micro-oxygenation during anaerobic digestion of lignocellulosic biomass. Poster Presentation. 27<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium, Apr 10-11, 2015, University of Hawai'i at Mānoa, Honolulu, HI, USA.
28. Wongkiew, S., and **Khanal, S.K.** Nitrogen transformations in floating-raft aquaponic systems. Oral presentation. 27<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium, Apr 10-11, 2015, University of Hawai'i at Mānoa, Honolulu, HI, USA.
29. Surendra, K.C., Olivier, R., Tomberlin, J. K., and **Khanal, S.K.** Bioconversion of food wastes to biodiesel and animal feed through insect farming. Poster presentation. 27<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium, Apr 10-11, 2015, University of Hawai'i at Mānoa, Honolulu, HI, USA.
30. Nguyen D., and **Khanal, S.K.** Oxidation reduction potential (ORP)-based micro-aeration system for anaerobic digestion. Poster presentation. 27<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium, Apr 10-11, 2015, University of Hawai'i at Mānoa, Honolulu, HI, USA.

31. Shrestha, S., Fonoll, X., Mata-Alvarez, J., Raskin, L., and **Khanal, S.K.** Anaerobic digestion of lignocellulosic biomass using rumen content as inoculum for enhanced biogas production. Oral presentation. *27<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium*, Apr 10-11, 2015, University of Hawai'i at Mānoa, Honolulu, HI, USA.
32. Kanjanarong, J., Boonsawang, P., and **Khanal, S.K.** Hydrogen sulfide (H<sub>2</sub>S) removal by using biochar. Poster presentation. *27<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium*, Apr 10-11, 2015, University of Hawai'i at Mānoa, Honolulu, HI, USA.
33. Hashimoto, A, Ogoshi, R., Takara, D., **Khanal, S.K.**, and Crow, S. High-yield tropical feedstocks for bioenergy production. *Poster Presentation. European Biomass Energy Conference*, Jun 23-26, 2014, Hamburg, Germany.
34. Drielak, E., and **Khanal, S.K.** Examination of factors affecting sugar release from Napier grass during dilute acid pretreatment. *Oral Presentation. 26<sup>th</sup> Annual College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium*, Apr 13-14, 2014, University of Hawai'i at Mānoa, Honolulu, HI, USA.
35. Martinez, L., Drielak, E., and **Khanal, S.K.** Co-product potential of biofuel residue streams generated from green processing of Napier grass. *Oral presentation. 26<sup>th</sup> College of Tropical Agriculture and Human Resources (CTAHR) and College of Engineering (COE) Student Research Symposium*, Apr 13-14, 2014, University of Hawai'i at Mānoa, Honolulu, HI, USA.
36. *13<sup>th</sup> World Congress on Anaerobic Digestion*, Jun 25-28, 2013, Santiago de Compostela, Spain.
37. *S-1041: The Science and Engineering for a Biobased Industry and Economy meeting*, Jun 17-18, 2013, Maui, HI, USA.
38. *Water Environment Federation Mini Symposium on Activated Sludge on its 100<sup>th</sup> Birthday: Challenges and Opportunities*. Jun 9-11, 2013, Easton, MA, USA.
39. Takara, D., Hashimoto, A.G., and **Khanal, S.K.** Green processing of high yield tropical grass for biofuel and biobased products. *S-1041-The Science and Engineering for a Biobased Industry and Economy Annual Meeting*



*and Symposium, Aug 6-7, 2012, Waterfront Center (USDA), Washington, DC, USA.*

40. Takara, D. and **Khanal, S.K.** Green processing of tropical feedstocks for biofuel and biobased products. *College of Tropical Agriculture and Human Resources Research (CTAHR) Symposium, Apr 13-14, 2012, University of Hawai'i at Mānoa, Honolulu, HI, USA.*
41. Nitayavardhana, S. and **Khanal, S.K.** Green processing of tropical feedstocks for biofuel and biobased products. *College of Tropical Agriculture and Human Resources Research (CTAHR) Symposium Apr 13-14, 2012, University of Hawai'i at Mānoa, Honolulu, HI, USA.*
42. Munasinghe, P.C. and **Khanal, S.K.** Green processing of tropical feedstocks for biofuel and biobased products. *College of Tropical Agriculture and Human Resources Research (CTAHR) Symposium, Apr 13-14, 2012, University of Hawai'i at Mānoa, Honolulu, HI, USA.*
43. *21<sup>st</sup> Biogas Annual Conference and Biogas Trade, Jan 10-12, 2012, Bremen, Germany.*
44. *S-1041: The Science and Engineering for a Biobased Industry and Economy meeting, Aug 1-2, 2011, Stillwater, OK, USA.*
45. *20<sup>th</sup> Biogas Annual Conference and Biogas Trade, Jan 11-13, 2011, Nuremberg, Germany.*
46. *Pacific Rim Summit on Industrial Biotechnology and Bioenergy, Dec 11-14, 2010, Honolulu, HI, USA.*
47. *S-1041: The Science and Engineering for a Biobased Industry and Economy meeting, Aug 1-2, 2010, Eastern Regional Research Center, USDA, Wyndmoor, PA, USA.*
48. *Pacific Rim Summit on Biotechnology and Bioenergy, Nov 8-11, 2009, Honolulu, HI, USA.*
49. *S-1041: The Science and Engineering for a Biobased Industry and Economy meeting, Sep 21-22, 2009, Pacific Northwest National Laboratory, Richland, WA, USA.*
50. *Sixth Industrial Biotechnology and Bioprocessing, Jul 19-22, 2009, Montreal, Qubec, Canada.*

51. *Sustainable Bioenergy: Focus on the Future of Biofuels and Chemicals*, Apr 13-14, 2006, University of Illinois, Urbana-Champaign, Urbana, IL, USA.
52. *BIO Conference on Biobased Industry Outlook*, Aug 29-30, 2005, Iowa State University Ames, IA, USA.
53. *Biotechnology Byproducts Consortium Symposium*, Oct 27-28, 2004, University of Iowa, Iowa City, IA, USA.
54. *US Department of Energy Workshop on Hydrogen Production via Direct Fermentation*, Jun 9, 2004, Baltimore, MD, USA.
55. *BIO Conference on Biobased Industry Outlook*, Mar 7-8, 2004, Iowa State University, Ames, IA, USA.
56. *Water Environment Federation: Charting the Future Direction of Bioenergy Technologies*, Aug 14-15, 200, Tulane University, New Orleans, LA, USA.
57. *US Department of Energy Hydrogen and Fuel Cells, 2003 Annual Merit Review*, May 19- 22, 2003, Berkeley, CA, USA.
58. *Iowa Academy of Science, 115<sup>th</sup> Annual Meeting*, Apr 25 - 26, 2003, Des Moines, IA, USA.
59. *Water Environment Federation: WEFTEC 75<sup>th</sup> Annual Technical Exhibition and Conference*, Sep 28 - Oct 2, 2002, Chicago IL, USA.

#### **PLENARY/KEYNOTE/INVITED SPEAKER**

1. Invited speaker, Faculty of Science and Technology, University of Macau, Macau, China (Dec 15, 2022). "Nano-bubble technology: An emerging frontier in environment and agriculture."

2. Invited speaker, International Conference on Biotechnology for Sustainable Bioresources and Bioeconomy (BSBB-2022), IIT-Guwahati, India (Dec 7-10, 2022). "Machine learning application in anaerobic co-digestion of food waste and sewage sludge."
3. Invited speaker, International Conference on Emerging Trends in Biosciences and Chemical Technology- 2022 (ETBCT 2022), Katra, Jammu and Kashmir, India (Dec 3-5, 2022). "Nanobubble technology: An emerging frontier in environmental and agricultural applications."
4. Invited speaker, School of Environmental Sciences and Engineering, Fudan University, Shanghai, China (Nov 21, 2022). "Anaerobic digestion with ORP-controlled microaeration."
5. Invited speaker, Advanced Technology for Wastewater Management with Focus on Advanced Oxidation, Membrane and Algal Methodologies (ATWM-2022), Indian Institute of Technology-Madras (IIT-M), Chennai, India (Nov 10-15 2022). "Anaerobic digestion biorefinery: Some perspectives."
6. Plenary speaker, 10<sup>th</sup> International Forum on Industrial Bioprocess (IBA-IFIBiop), National Kaohsiung University of Science and Technology Nanzih Campus, Kaohsiung, Taiwan (Oct 27-30, 2022). "Nanobubble technology applications in algal production and aquaponics."
7. Invited speaker, Global Lecture Series, The Biotech Research Society, India (Oct 19, 2022). "Nanobubble technology in environmental remediation and food production."
8. Invited speaker, School of Environmental Sciences and Engineering, Huazhong University of Science and Technology (HUST), Wuhan, China (Oct 11, 2022). "Microaeration-based anaerobic digestion enhances methanogenesis and process stability."
9. Invited speaker, The 1<sup>st</sup> International Conference on Food Waste to Food Sustainability 2022, Hong Kong Polytechnic University, Hong Kong (Aug 24-25, 2022). "Anaerobic co-digestion of food waste and sewage sludge: Application of micro-aeration and machine learning."
10. Invited speaker, Consortium for Waste-to-Hydrogen utilization and betterment (C-WtHub), University of Glasgow, Glasgow, Scotland (Aug 9, 2022). "Anaerobic digestion for biogas and hydrogen production."
11. Invited speaker, Prince of Songkla University, Songkhla, Thailand (Aug 18, 2022). "Preparing a high-quality journal paper."

12. Plenary speaker, International Symposium on Emerging Trends in Role and Production of Bioenergy for Sustainable Development (ETBSD-2022), Seoul, Republic of Korea (Jul 4- 5, 2022). "Machine learning application in anaerobic digestion process: Some perspectives."
13. Invited speaker, Biotechnological Advances Towards Sustainable Development (BIOSPECTRUM-2022), MACFAST, Tiruvalla; Kerala, India (Jun 28, 2022). "Anaerobic digestion for bioenergy production."
14. Invited speaker, Can Tho University, Can Tho, Vietnam (May 20, 2022). "Anaerobic digestion for waste treatment and bioenergy production."
15. Invited speaker, Can Tho University, Can Tho, Vietnam (May 17, 2022). "Nanobubble Technology in Environmental and Aquaculture/Aquaponics Applications."
16. Invited speaker, The International Chemical Engineering Symposium (IChES2022), and 87<sup>th</sup> Society of Chemical Engineers, Tokyo, Japan (Mar 16-18, 2022). "Micro-aeration in Anaerobic Digestion and Machine Learning – A New Paradigm."
17. Special Virtual Seminar, Center of Excellence in Innovative Biotechnology for Sustainable Utilization of Bioresources, Faculty of Agro-Industry, Prince of Songkla University, Thailand (Feb 4, 2022). "Bioenergy and Biorefinery for Sustainable Bio-Circular-Green (BCG) Economy."
18. Plenary speaker, International Conference on Biotechnology for Resource Efficiency, Energy, Environment, Chemicals and Health (BREEECH 2021) CSIR-Indian Institute of Petroleum, Dehradun, India (Dec 1-4, 2021, Hybrid, Dec 3, 2021). "Anaerobic co-digestion of food waste and sewage sludge with micro-aeration."

19. Plenary speaker, International Workshop on Agricultural Waste Reclamation and Utilization (AWRU2021), University of Tsukuba (Virtual, Sep 25-26, 2021). "Nanobubbles: An emerging frontier in environmental and agricultural applications."
20. Plenary speaker, Progress in Biogas V, Hohenheim University, Stuttgart, Germany, (Virtual, Sep 24, 2021). "*Anaerobic biorefinery: Some perspectives.*"
21. Plenary speaker, 9<sup>th</sup> International Conference on Bioprocessing (IBA-IFIBiop 2021), Universidad Autónoma de Coahuila in Saltillo, Coahuila, México (Virtual, Sep 13-15, 2021). "Nanobubble technology applications in aquaculture and aquaponics."
22. Invited speaker, Dept. of Civil and Environmental Engineering, Hong Kong University of Science and Technology, Hong Kong (Aug 27, 2021). "Nanobubbles: An emerging frontier in environmental and agricultural applications."
23. Invited speaker, 2<sup>nd</sup> International Conference on Sustainable Solid Waste Treatment and Management (SWTM), Yangling, Shaanxi, China (Virtual, Jul 18, 2021). "*Anaerobic co-digestion of food waste and sewage sludge with microaeration.*"
24. Invited speaker, 3<sup>rd</sup> International Conference for Bioresource Technology for Bioenergy, Bioproducts & Environmental Sustainability (BIORESTEC) (Virtual, May 17, 2021). "*Nanobubble technology applications in environment and agriculture.*"

25. Invited speaker 5<sup>th</sup> Asia Pacific Biochar Conference 2021 (Virtual, May 11, 2021). *"Biochar application for sulfide toxicity control during anaerobic treatment of high sulfate wastewater with sulfur recovery."*
26. Invited speaker, International Conference on Sustainable Biowaste Management (SBM 2021), Hong Kong (Virtual, Apr 12, 2021). *"Bioconversion of wastes-to-resources: opportunity and challenges."*
27. Plenary speaker, International conference on Biotechnology for Sustainable Agriculture, Environment and Health (BASEH-2021), Jaipur, India (Hybrid, Apr 4, 2021). *"Nanobubble technology applications in agriculture and environment."*
28. Guest speaker, Dept. of Chemical and Biological Engineering, University of Idaho, Moscow, ID (Virtual, Mar 31, 2021). *"Nanobubble technology applications in agriculture and environment."*
29. Invited speaker, Institute of Bioresource and Agriculture, Hong Kong Baptist University - Lecture Series 2020 - Advances in Bioconversion Technology (Via Zoom) (Nov 11, 2020). *"Anaerobic digestion for waste treatment and resource recovery."*
30. Invited speaker, 2020 International Exchange Conference on Value-added Utilization of Agricultural and Animal Husbandry Wastes (via Zoom) (Oct 31, 2020). *"Anaerobic digestion for waste treatment and resource recovery."*
31. Distinguished Lecture Series, School of Chemical and Energy Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Johor, Malaysia (Oct 13, 2020). *"Waste-to-resources: Some perspectives."*
32. Invited speaker, International Webinar on Sustainable Engineering, Department of Civil Engineering, Andhra University, India (Sep 16, 2020). *"Waste-to-resources in the context of circular economy."*
33. Invited speaker, International Conference on New Horizons in Biotechnology, Trivendrum, India (Nov 20-23, 2019). *"Nanobubble technology applications in environment and agriculture."*
34. Invited speaker, Sun Grant Center Western Regional Center, Oregon State University, Corvallis, OR (Aug 21, 2019). *"Bioenergy and biobased products from biowastes/agri-residues."*
35. Invited speaker, Special seminar at Shandong University, Qingdao (July 9, 2019). *"Recovery of resources from wastes (water)."*

36. Invited speaker, The 3<sup>rd</sup> International Conference on Bioresources, Energy, Environment and Materials Technology (BEEM 2019), Hong Kong, SAR (Jun 13-15, 2019). *"Can micro-aeration improve anaerobic digestion process?"*
37. Invited speaker, Special seminar at Hong Kong University of Science and Technology (Jun 12, 2019). *"Recovery of resources from wastes (water): some perspectives."*
38. Invited speaker, International Conference on Sustainable Solid Waste Treatments and Managements, Yangling, China (May 6-9, 2019). *"Organic wastes bioconversion via insect farming: opportunities and challenges."*
39. Invited speaker, Special seminar at Prince of Songkla University, Songkhla, Thailand (Apr 19, 2019). *"Waste-to-resources: Some perspectives."*
40. Invited speaker, International Conference on Biotechnological Research and Innovation for Sustainable Development (BioSD-2018), Hyderabad, India (Nov 22-25, 2018). *"Aquaponic system for resource recovery: understanding the role of microbial communities in nitrogen transformations."*
41. Invited speaker, International Conference on Advanced Technologies in Energy, Environmental and Electrical Engineering (AT3E 2018). Shandong University, Qingdao, China (Oct 26-28, 2018). *"Anaerobic digestion with micro-aeration for enhanced methane yield at high organic loading rates."*
42. Invited speaker, 6<sup>th</sup> S<sup>2</sup>NU-K<sup>2</sup>U Symposium on Waste-to-Energy, Seoul National University, Seoul Korea (Sep 28, 2018). *"Micro-aeration-based anaerobic digestion process for enhanced biomethane yield."*
43. Invited speaker, Global Perspectives in Bioresource Technology for Water–Food–Energy Sustainability, Gadjah Mada University, Yogyakarta, Indonesia (Aug 7-16, 2018). *"Biogas and biorefinery."*
44. Invited speaker, Global Perspectives in Bioresource Technology for Water–Food–Energy Sustainability, Gadjah Mada University, Yogyakarta, Indonesia (Aug 7-16, 2018). *"Bioresources and their utilization."*
45. Invited speaker, Global Perspectives in Bioresource Technology for Water–Food–Energy Sustainability, Gadjah Mada University, Yogyakarta, Indonesia (Aug 7-16, 2018). *"Hypothesis driven research and student mentoring."*

46. Invited speaker, Northwest A & F University, Yangling, China (Jun 29, 2018). *"Anaerobic digestion biorefinery: Integrating biochemical conversion and thermochemical conversion."*
47. Invited speaker, In celebration of 150 years of establishment of Oregon State University (Western Regional Sun Grant Center), Corvallis, OR (Apr 16-17, 2018). *"Bioenergy and bio-based products from bioresources: Energy and environmental sustainability."*
48. Keynote speaker, International Conference on Alternative Fuels and Energy – ICAFE-2017, Daegu, South Korea (Oct 23-25, 2017). *"Anaerobic digestion biorefinery for bioenergy and biobased products."*
49. Invited speaker, International Conference on Emerging Trends in Biotechnology for Waste Conversion (ETBWC-2017) and XIV Convention of the Biotech Research Society, CSIR-National Environmental Engineering Research Institute, Nagpur, India (Oct 8-10, 2017). *"Anaerobic digestion process control via oxidation-reduction potential (ORP)-based micro-aeration."*
50. Invited speaker, Faculty of Engineering, Prince of Songkla University, Hat Yai, Thailand (Jul 31, 2017). *"Oxidation-reduction potential (ORP)-based micro-aeration for anaerobic digestion process stability at high organic loading rate."*
51. Keynote speaker, The 7<sup>th</sup> International Conference on Fermentation Technology for Value-added Agricultural Products and the 12<sup>th</sup> Asian Biohydrogen & Biorefinery Symposium, Khon Kaen, Thailand (Jul 26-28, 2017). *"Anaerobic biorefinery of lignocellulosic feedstock to produce bioenergy and biobased products."*
52. Keynote speaker, Water Environment Association of the Philippines Convention 2017, Manila, Philippines (Jul 19-21, 2017). *"Waste to energy: Current status and perspectives."*
53. Invited speaker, School of Environmental Engineering and Science, Tongji University, Tongji, China (Jun 27, 2017). *"Anaerobic digestion process control using oxidation-reduction potential (ORP)."*
54. Keynote speaker, the 2nd International Conference on Biological Waste as Resource (BWR2017), Hong Kong (May 25–28, 2017). *"Biochar application in hydrogen sulfide removal from biogas."*



55. Invited speaker, 7<sup>th</sup> International Industrial Bioprocessing, Wuxi, China (May 21-24, 2017). "*Anaerobic digestion of lignocellulosic biomass using horizontal bioreactor with focus on decentralized biorefinery.*"
56. Invited speaker, Montana Tech of the University of Montana, Butte, MT (Apr 28, 2017). "*Oxidation-reduction potential (ORP)-based micro-aeration for anaerobic digestion process stability at high organic loading rate.*"
57. Keynote speaker, Joint Workshop - University of Hawaii and Tokyo University of Agriculture and Technology, Honolulu (Feb 21, 2017). "*Renewable energy and climate change.*"
58. Invited speaker, International conference on Bioprocessing India 2016, Center of Innovative and Applied Bioprocessing, Mohali, India (Dec 15-17, 2016). "*Anaerobic digestion of lignocellulosic biomass using horizontal bioreactor: Evaluation of long-term digester performance.*"
59. Invited speaker, International Conference on Strategies for Environmental Protection and Management and 29<sup>th</sup> Annual meeting of National Environmental Science Academy, Jawaharlal Nehru University, New Delhi, India (Dec 11-13, 2016). "*Waste-to-resources: Opportunities and challenges.*"
60. Invited speaker, International Conference on Current Trends in Biotechnology, Vellore, India (Dec 8-10, 2016). "*Anaerobic digestion of high yield energy crops for bioenergy production.*"
61. Invited speaker, Dept. of Environmental Engineering and Science, National University of Singapore, Singapore (Dec 5, 2016). "*Anaerobic digestion of high yield energy crops.*"
62. Invited speaker, 1<sup>st</sup> International Conference on Bioenergy, Bioproducts & Environmental Sustainability, Sitges, Spain (Oct 23-26, 2016). "*Converting biofuel process residues/wastes into protein-rich aquatic feed with simultaneous reclamation of treated effluent.*"
63. Invited speaker, School of Environmental Science and Engineering, Sun Yat-Sen University, Guangzhou, China (Aug 2, 2016). "*Tips on writing research paper.*"
64. Invited speaker, 4<sup>th</sup> S<sup>2</sup>NU-K<sup>2</sup>U Symposium on Waste-to-Energy, Seoul National University, Seoul Korea (July 1, 2016). "*Bioconversion of organic wastes into biofuel via insect farming.*"

65. Invited speaker, College of Environmental Science and Engineering, Tongji University, Shanghai, China (June 9, 2016). "*Research and development in anaerobic biotechnology.*"
66. Invited speaker, College of Environmental Science and Engineering, Shandong University, Jinan, China (June 17, 2016). "*Resource recovery from wastes/residues.*"
67. Invited speaker, Shiv Nadar University, Gautam Nagar, India (April 21, 2016). "*Research and development: Interfacing energy and environment*".
68. Invited speaker, Dept. of Environmental Engineering, National Ilan University, Ilan, Taiwan (April 19, 2016). "*Resource recovery from wastes/residues.*"
69. Invited speaker, Dept. of Environmental Engineering, National Ilan University, Ilan, Taiwan (April 19, 2016). "*Anaerobic waste treatment and bioenergy production.*"
70. Invited speaker, Dept. of International Environmental and Agricultural Science, Tokyo University of Agriculture and Technology, Tokyo, Japan (Dec 15, 2015). "*Bioenergy and resource recovery.*"
71. Invited speaker, International Conference on New Horizons in Biotechnology, Trivendrum, India (Nov 23-25, 2015). "*Anaerobic biorefinery for biofuel and biobased products.*"
72. Invited speaker, Swedish Centre for Resource Recovery, University of Borås, Borås, Sweden (Oct 27, 2015). "*Bioconversion of waste/residues into resources.*"
73. Invited speaker, The Sixteenth Royal Golden Jubilee - Ph. D. Congress (RGJ-Ph.D. Congress XVI), Pattaya, Thailand (Jun 11-13, 2015). "*My 12 years of research journey with Thai students and visiting scholars on energy and environment.*"
74. Invited speaker, Faculty of Agro-Industry, Prince of Songkla University, Hat Yai, Thailand (Jun 8, 2015). "*Environmental biotechnology and anaerobic digestion.*"
75. Invited speaker, Dept. of Environmental Science, Royal University of Phnom Penh (Jun 5, 2015). "*Anaerobic process for waste treatment.*"

76. Invited speaker, Ministry of Agriculture, Forestry and Fisheries, Kingdom of Cambodia (Jun 5, 2015). Delivered 3-hr workshop to engineers, scientists and field workers from the ministry on *"Bioenergy-anaerobic digestion."*
77. Invited speaker, School of Energy and Environment, City University of Hong Kong, Hong Kong (Jun 1, 2015). *"Resource recovery from wastes."*
78. Invited speaker, Leading Edge Technology 2015 (LET-2015), International Water Association, Food Waste Workshop, Hong Kong (May 31<sup>st</sup>, 2015). *"Co-treatment of organic solid wastes in the sewage treatment facilities for waste reduction and energy recovery."*
79. Invited speaker, Dept. of Environmental Engineering, Chulalongkorn University, Bangkok, Thailand (May 29, 2015). *"Research interfacing energy and environment."*
80. Invited speaker, Local Feed Workshop, Aquatic Feeds and Nutrition Department Oceanic Institute of Hawaii Pacific University, Waimanalo, HI (Nov 21, 2014). *"Utilization of local agri-processing by-products to produce fungal protein for aquatic feed production."*
81. Invited speaker, Dept. of Civil Engineering, Malaviya National Institute of Technology, Jaipur, India (Nov 11, 2014). *"Bioenergy and environment research."* (For graduate students)
82. Invited speaker, Dept. of Civil Engineering, Malaviya National Institute of Technology, Jaipur, India (Nov 10, 2014). *"How can we build a circular society?"* (For undergraduate students)
83. Invited speaker, International Conference on Emerging Trends in Biotechnology (ICETB-2014), New Delhi, India (Nov 6-9, 2014). *"Fractionation of tropical feedstocks for bioenergy and biobased products."*
84. Invited speaker, Department of Biotechnology, BOKU University of Natural Resources and Life Sciences, Vienna, Austria (Aug 29, 2014). *"Resource recovery from wastes/residues."*
85. Invited speaker, Dept. of Civil and Environmental Engineering, Technion University – Israel Institute of Technology, Haifa, Israel (Jul 17, 2014). *"Bioconversion of water (water) into resources."*
86. Invited speaker, School of Biochemical Engineering, Addis Ababa Institute of Technology, Addis Ababa, Ethiopia (Jun 27, 2014). *"Biotechnology for resource recovery from waste (water)."*

87. Invited speaker, Dept. of Civil and Environmental Engineering, Hong Kong University of Science and Technology, Hong Kong (May 16, 2014). *"Converting waste (water) into value-added products."*
88. Invited speaker, Dept. of Civil and Environmental Engineering, Hong Kong University of Science and Technology, Hong Kong (May 15, 2014). *"Emerging trends in environmental biotechnology for waste valorization."*
89. Invited speaker, Dept. of Environmental Engineering, Fudan University, Shanghai, China (May 13, 2014). *"Resource recovery from waste (water)."*
90. Invited speaker, College of Environmental Science and Engineering, Tongji University, Shanghai, China (May 12, 2014). *"Resource recovery from waste (water)."*
91. Invited speaker, International Conference on Progress on Biogas III (Sep 10-11, 2014), Stuttgart, Germany. *"Examine the effects of crop maturity and size reduction on digestibility of energy crop for biomethane production."*
92. Invited speaker, 10<sup>th</sup> European Symposium on Biochemical Engineering Sciences, Lille, France (Sep 8 to 10, 2014). *"Green processing of tropical feedstocks for biofuels and high value co-products."*
93. Invited speaker, State Institute of Agricultural Engineering and Bioenergy, Hohenheim University, Stuttgart, Germany (Jul 10, 2014). *"Biogas production from tropical crops."*
94. Invited speaker, Universidad de Santander, Cucuta, Colombia (Apr 4, 2014). *"Sustainable bioenergy production: Opportunities and challenges."*
95. Invited speaker, Chonnam National University, Gwanju, South Korea (Feb 27, 2014). *"Fractionation of tropical feedstocks for bioenergy and biobased products."*
96. Invited speaker, Sustainability Center, University of Wisconsin (Dec 11, 2013). *"Sustainability: interfacing energy and environment."*
97. Invited speaker, International Conference on Advances in Biotechnology & Bioinformatics. 10<sup>th</sup> Convention of the Biotech Research Society, Pune, India (Nov 25-27, 2013). *"Biorefinery concept for sugarcane-to-ethanol industries: production of protein-rich fungal biomass on vinasse as a protein ingredient for animal feed and organic food production."*

98. Invited speaker, Centre for Environmental Science and Engineering (CESE) Indian Institute of Technology Bombay (IIT-B) (Nov 21, 2013). "*Technological alternatives for conversion of biomass to energy.*"
99. Keynote Speaker, Research Internships in Science and Engineering Scholar (RISE) Meeting (Jul 4, 2013). "*International education and research experience.*" Organized by DAAD Germany at Heidelberg University, Heidelberg, Germany.
100. Invited speaker, West Virginia State University, Charleston, WV, USA (Jun 6, 2013). "*Bioenergy/biobased product and environmental biotechnology research.*"
101. Invited speaker, State Institute of Agricultural Engineering and Bioenergy, Hohenheim University, Stuttgart, Germany (Jun 4, 2013). "*High-rate anaerobic digestion of energy crops.*"
102. Invited speaker, Center for Energy and Environment Policy, Imperial College London (Oct 26, 2012). "*Current status of bioenergy research in the United States.*"
103. Invited speaker, New Horizons in Biotechnology, Mini Symposia in Biofuels - Current perspectives and challenges for commercialization at conference, Trivendrum, India (Nov 21-24, 2011). "*Green processing of a tropical grass for advanced biofuel and biobased products.*"
104. Invited speaker, Malaviya National Institute of Technology (MNIT), Jaipur, India (Nov 25-26, 2011). "*Biotechnology for energy, environment and food security.*"
105. Invited speaker, NC 1023: Engineering for Food Safety and Quality, USDA Multi-state Committee Meeting, Honolulu, HI (Oct 3, 2011). "*Biorefinery for Hawaii.*"
106. Invited speaker, Bioengineering Workshop for Middle Schools, Honolulu, HI (Apr 23, 2011). "*Biofuel/bioenergy from renewable bioresources.*"
107. Invited speaker, Korea University, Sejong, South Korea (Oct. 30, 2010). "*Green growth: energy, environment and food.*"
108. Invited speaker, 2010 Asian Pacific Clean Energy Summit and Workshop, Honolulu, HI (Aug 31, 2010). "*Integrated education and research in renewable energy: biofuel*".

109. Invited speaker, Bangor University, Gwynedd, United Kingdom (Jul 12, 2010). "*Ultrasound applications in biofuel and biobased products.*"
110. Invited speaker, Chonnam National University, Gwanju, South Korea (May 4, 2010). "*Biomass conversion to biofuels.*"
111. Invited speaker, National Academy of Agriculture, Suwon, South Korea (Apr 30, 2010). "*Anaerobic biotechnology for bioenergy production: challenges and opportunities.*"
112. Invited speaker, Renewable Energy and Island Sustainability (REIS), University of Hawaii at Manoa, Honolulu, HI (Oct 22, 2009). "*Biomass conversion to biofuels and biobased products.*"
113. Invited speaker, Hawaii Institute of Food Technologists (HIFT), Honolulu, HI (Feb 17, 2009). "*Conversion of biomass into biofuels and biobased products.*"
114. Invited speaker, Hawaii Natural Energy Institute, University of Hawaii at Manoa, Honolulu, HI (Sep 30, 2008). "*Conversion of agri-residues to biofuels and biobased products.*"
115. Invited speaker, The Hong Kong University of Science and Technology, Hong Kong (June 23-27, 2008). "*Ultrasound application in biorenewables for enhanced biofuel/bioenergy production.*"
116. Invited speaker, University of Hawai'i at Mānoa (Civil and Environmental Engineering Dept.), Honolulu, HI (Feb 8, 2008). "*Fungal process for biobased product recovery and water reclamation.*"
117. Invited speaker, University of Hawai'i at Mānoa (Bioenergy Research Group), Honolulu, HI (Feb 28, 2008). "*Biofuels from solid, liquid and gaseous feedstocks.*"
118. Invited speaker, Oklahoma State University (Biosystems and Agricultural Engineering Dept.), Stillwater, OK (Oct 4, 2007). "*Fermentation of solid, liquid and gaseous feedstocks for biofuel, and biochemical recovery.*"
119. Invited speaker, University of Hawai'i at Manoa (Molecular Biosciences and Bioengineering Dept.), Honolulu, HI (Oct 18, 2007). "*Microbial systems for bioenergy production and energy balance.*"
120. Invited speaker, University of Hawai'i at Manoa (Molecular Biosciences and Bioengineering Dept.), Honolulu, HI (Oct 19, 2007). "*Bioprocessing for*

*bioenergy and value-added product recovery from solid, liquid and gaseous feedstocks."*

121. Invited speaker, Asian Institute of Technology (Environmental Engineering Program), Bangkok, Thailand (Sep 14, 2007). *"Changing paradigm in environmental engineering research: from waste treatment to bioenergy and value-added product recovery."*
122. Invited speaker, The Fifth International Starch Technology Conference, University of Illinois, Urbana-Champaign, IL (Jun 3-6, 2007). *"Energy issue."*
123. Invited speaker, Cornell University, Ithaca, NY (May 10, 2007). *"Renewable energy from agro-based feedstocks: A key to sustainability."*
124. Invited speaker, Cornell University, Ithaca, NY (May 11, 2007). *"Biomass: A renewable energy source."*
125. Invited speaker, Ohio State University, Columbus, OH (Feb 5, 2007). *"Microbial bioconversion of agro-based feedstocks to bioenergy and biobased products."*
126. Invited speaker, University of New Mexico, Albuquerque, NM (Mar 6, 2007). *"Anaerobic membrane bioreactor (AMBR) for treatment of low strength wastewater."*
127. Invited speaker, Joint Graduate School of Energy and Environment, King Mongkut's University of Technology, Bangkok, Thailand (Jan 17, 2007). *"Bioenergy and value-added bioproducts from agro-based feedstock: An emerging research frontier."*
128. Invited speaker, Iowa State University, Biorenewables Meeting (Dec 19, 2006). *"Bioenergy production from cellulose-to-ethanol plants-derived stillage."*
129. Invited speaker, Hong Kong University of Science and Technology, Hong Kong (Sep 19, 2006). *"Use of poly-tetrafluoroethylene (PTFE) laminated non-woven filter for municipal wastewater treatment."*
130. Invited speaker, Advanced Science Institute, Hong Kong University of Science and Technology, Hong Kong (Sep 20, 2006). *"Ultrasonic pretreatment of waste activated sludge."*
131. Invited speaker, Beijing Normal University, Beijing (Sep 14, 2006). *"Recovery of high-value fungal bio-products from wet corn milling liquid stream."*

132. Invited speaker, The Society for Engineering in Agricultural, Food, and Biological Systems, Society of Manufacturing Engineering, Society of Mechanical Engineering, Society of Automotive Engineering, Waterloo, IA (Nov 10, 2005), "*Alternative energy: Energy engineering*"
133. Invited speaker, Department of Agricultural and Biosystems Engineering, North Dakota State University, Fargo, ND (Aug 31, 2005). "*Converting agri-residues to biofuels and bio-products.*"
134. Invited speaker, Biobased Industry Outlook Conference, Ames, IA (Aug 29, 2005). "*Anaerobic digestion of thin stillage to produce methane and Class-A biosolids.*"
135. Invited speaker, Hacettepe University, Ankara, Turkey (Aug 17, 2005). "*Anaerobic membrane bioreactor for municipal sewage treatment.*"
136. Invited speaker, Asian Institute of Technology, Bangkok, Thailand (Aug 11, 2005). "*Integrated waste biomass-based biorefinery.*"
137. Invited speaker, Malaysia University of Science and Technology, Malaysia (Jul 15, 2005). "*Emerging research frontiers: coupling waste treatment with bio-products and bioenergy recovery.*"
138. Invited speaker, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, MA (Apr 26, 2005).
139. Invited speaker, Department of Agricultural and Biosystems Engineering, Iowa State University, Ames, IA (Mar 24, 2005). "*Bioconversion for sustainability.*"
140. Invited speaker, Department of Civil, Construction and Environmental Engineering, Iowa State University, Ames, IA (Feb 3, 2004). "*New directions in anaerobic biotechnology.*"
141. Invited speaker, Dept. of Civil Engineering, University of Canterbury, Christchurch, New Zealand (Dec 6, 2003). "*Anaerobic biotechnology for waste treatment and resource recovery.*"
142. Invited speaker, Department of Civil and Environmental Engineering, University of Missouri-Columbia, MO, (Oct 31, 2002). "*Oxygenated anaerobic treatment of high sulfate wastewater.*"



**NATIONAL/INTERNATIONAL RESEARCH COLLABORATIONS**

- **Prof. Karthik Chandran**, Columbia University: Nitrogen Transformations in Aquaponic (Funding Agency: USDA-NIFA) (2010 to present).
- **Prof. Lutgarde M. Raskin\***, University of Michigan: Microbial Community Analysis in AD System Digesting Cellulosic Biomass (Funding Agency: USDA-HATCH) (2008 to present) (**\*National Academic of Engineering (NAE) member**)
- **Prof. Ganti S. Murthy**, Oregon State University: Techno-economic Analysis of Bioenergy System (Funding Agency: Western Regional Sun Grant) (2013 to present)
- **Dr. Po-Heng (Henry) Lee**, Imperial College, London: Microbial Kinetics, Bioenergetics and Thermodynamics of Biological Systems (Funding Agency: USDA-HATCH) (2015 to present).
- **Dr. Deb Jaisi**, Delaware University: Chemical Characterization of Biochars for Sulfide Removal from Biogas (Funding Agency: USDA-HATCH) (2015 to present).
- **Prof. Jaewoo Lee**, Korea University, South Korea: Nitrogen Transformations in Aquaponic (Funding Agency: National Research Foundation of Korea) (2010 to present).
- **Dr. Hans Oeschner**, Hohenheim University, Germany: Anaerobic Biorefinery for Biofuel and Biobased Products (Funding Agency: DOE and Western Regional Sun Grant) (2010 to present).
- **Prof. Hyeun-jong Bae**, Chonnam National University: Biomass Pretreatment for Biofuel Production (Funding Agency: Bioenergy Center, Chonnam National University) (2010 to present).
- **Prof. Xie (Sally) Li**, Tongji University, China: Fungal Fermentation and Hydrogenotrophic Methanogenesis for Biogas Upgrading (Funding Agency: National Science Foundation of China) (2014 to present).
- **Prof. Hui Lu**, Sun Yat-Sen University, China: Sulfur-mediated Biological Process for Wastewater Treatment (Funding Agency: National Science Foundation of China) (2015 to present).
- **Prof. Zhen Hu**, Shandong University, China: Aquaponics and Resource Recovery (Funding Agency: National Science Foundation of China) (2014 to present).

- **Prof. Alissara Reungsang**, Khon Kaen University, Thailand: Optimization of Co-digestion of Food Waste, Sewage Sludge and Energy Crop by Using Simplex Lattice Design (Funding Agency: Royal Golden Jubilee Program, Thailand) (May 2016 to present).
- **Prof. Sumate Chaiprapat**, Prince of Songkla University, Thailand: Mono-digestion of Napier Grass (Funding Agency: Royal Golden Jubilee Program, Thailand) (Sep 2016 to present).
- **Prof. Sushil Adhikari**, Auburn University: Integrated Anaerobic Biorefinery and Thermochemical Conversion (Funding Agency: USDA supplemental Grant) (Sep 2016 to present).
- **Dr. Ana Júlia**, Centre of Biological Engineering, University of Minho: Microaeration-based AD Process (Funding Agency: Portugal Science Foundation) (Mar 2020 to present).

## INDUSTRIAL/CONSULTING EXPERIENCES

- Geopower Energy, Salt Lake City, UT.
  - Napier grass pelletization for biopower
  - Techno analysis for Napier grass use for biopower
- ICM, Inc., Colwich, KS.
  - Sulfide removal and digester failure evaluation
- ProtaCulture, Inc., Sanoma County, CA.
  - Food waste conversion to biodiesel and animal feed
  - Process control and bioreactor design and optimization
- Technical Consultant, Gerente Técnico Algae, Sao polo, Brazil.
  - Aquatic feed production from biofuel residues
  - Commercialization of fungal protein production process
- Technical Consultant, OmniGreen Renewables, Honolulu, HI.
  - Anaerobic digestibility of green grass
  - Digester start-up and monitoring
- Provided technical help to California State Department of Water Resources, Fresno, CA to treat high sulfate water from agricultural run-off from San Joaquin Valley.
- Technical Consultant, Universal Entech, Phoenix, AZ.

- Treatability study of food waste together with wax-coated cardboard and rendering waste using temperature-phased anaerobic digestion (TPAD)
- Consulting Services to Town of Carbondale, CO.
  - Ameliorate the aerobic digestibility of waste activated sludge
- Researcher for the following externally funded project at Hong Kong University of Science and Technology (Jan 2001 to Sep 2001).
  - Bio-kinetic study of existing municipal activated sludge process at Taipo, Hong Kong
  - Determination of specific nitrification rate of Taipo wastewater treatment facility, Hong Kong
  - Biodegradability study of dyeing wastewater from China Dyeing, Hong Kong

## RESEARCH INTERESTS AND AREA OF SPECIALIZATIONS

- Anaerobic digestion of organic wastes for bioenergy production
- Anaerobic wastewater treatment
- Waste/agri-residues to biofuel and biobased products and biorefinery
- Resource recovery via insect farming on organic wastes
- Aquaponics-biaponics for nitrogen recovery.
- Nanobubble technology applications in water and wastewater remediation, and agriculture
- Biochar applications in agriculture and waste (water) treatment
- Micro-aeration anaerobic digestion, AD process control
- Fate, transport and degradation of pharmaceutical compounds in biological systems

## TEACHING INTERESTS

Sustainable Engineering; Anaerobic Biotechnology; Water and Wastewater Engineering; Environmental Biotechnology; Biomass Conversion to Biofuel and Biobased production; Renewable Energy Systems; Transport Phenomena; Biological Waste Treatment; Organic Waste Recycling; Principles of Environmental Engineering; Solid Waste Management; Industrial Wastewater Treatment and Resource Recovery.

## TRAININGS

- 2-full day training on SimaPro Software for Life Cycle Assessment- SimaPro User Certificate, EarthShift, Seattle, WA, Nov 30 to Dec 1, 2011.

- 2-full day NSF-sponsored workshop on “Teaching Sustainable Engineering Course to Undergraduate Engineering Students in the United States”, Syracuse University, Syracuse, NY, May 23 to 24, 2011.
- USDA-CSREES Grantsmanship Workshops, Dallas, TX, Oct 16 to 17, 2006.
- 2-full day course on “Writing Competitive Proposals and Grants”, Iowa State University and Persuade and Publish International, LLC, Ames, IA, May 17 to 18, 2004.
- US Classroom for International Faculty, Iowa State University, Ames, IA, Jan 19, 2004.
- Preparing Future Faculty (PFF), Iowa State University, Ames, IA, Dec 2002 to Dec 2003.
- Laboratory Safety Training, Iowa State University, Ames, IA, May 30, 2002.
- Teaching Assistant Training, The Hong Kong University of Science and Technology, Hong Kong, Jan 22 to Feb 3, 1998.

## **HONORS**

- Outstanding Teaching Assistant Award, Dept. of Civil Engineering, The Hong Kong University of Science and Technology, Hong Kong (Mar 2001).
- Graduate Student Research Grant, University Grant Commission, The Hong Kong University of Science and Technology, Hong Kong (May 2000 and Sep 2001).
- Excellent Grade Award for M.S. research work, Asian Institute of Technology, Bangkok (Aug 1997).
- Letter of Appreciation for excellent poster presentation of master research work in Research Bazaar, Asian Institute of Technology, Bangkok (Aug 1997).
- Tribhuvan University Teachers Association Award for excellent academic performance, Butwal Multiple Campus, Butwal, Nepal (Jul 1987).

## **SCHOLARSHIPS (Recipient of academic excellence scholarship throughout the study period)**

- Research/Teaching Assistantship, Dept. of Civil Engineering, The Hong Kong University of Science and Technology, Hong Kong (Feb 1998 to Feb 2002).

- German Academic Exchange Services (DAAD) Scholarship, Asian Institute of Technology, Bangkok (Jan 1996 to Aug 1997).
- Higher Educational Scholarship, Malaviya National Institute of Technology, Jaipur, India (Sep 1988 to Jan 1993).
- Tribhuvan University Merit Scholarship in Proficiency Certificate Level (PCL) in Science for academic excellence (Jun 1986 to Aug 1987).
- District Merit Scholarship, Ministry of Education and Welfare, His Majesty Government of Nepal for academic excellence (Jun 1983 to Jun 1984).

### NEWSPAPER ARTICLES

- CFCs and ozone layer destruction, *The Rising Nepal* (May 31, 1993)
- Environmental pollution: threat to mankind, *The Rising Nepal* (Jun 13, 1993)
- The problem of acid rain, *The Rising Nepal* (August 20, 1993)
- Changing face of our environment, *The Rising Nepal* (Dec 24, 1993)

### PROFESSIONAL SOCIETIES AND SERVICES

#### (A) Professional Affiliations

- International Bioprocessing Association (IBA) (Life member)
- Member, Association of Environmental Engineering and Science Professors (AEESP)
- Member, International Water Association (IWA)

#### (B) Referee of Journal Articles

- Chemical Reviews, Current Opinion in Biotechnology, Biotechnology Advances; Trends in Microbiology; Metabolic Engineering; Aquacultural Engineering, Applied Energy; PLOS ONE; Energies; Water Research; Environmental Engineering (ASCE); Biotechnology and Bioengineering; Journal of Applied Aquaculture; ACS EST Engg; Bioscience and Bioengineering; Biofuels, Bioproducts and Biorefining; Industrial & Engineering Chemistry Research; Global Biogeochemical Cycles; Water Environment Research; International Journal of Hydrogen Energy; Water

Science and Technology; Environmental, Science and Technology; Biotechnology Progress; Applied Biochemistry and Biotechnology; Journal of Biotechnology; Applied Microbiology and Biotechnology; International Biodeterioration and Biodegradation; Journal of Environmental Management; Environmental Pollution; Process Biochemistry; Biochemical Engineering; Waste Management; Journal of Environmental Engineering and Science; Environmental Technology; Bioresource Technology; Bioresource Technology Reports; Separation and Purification Technology; GCB Bioenergy; BMC Biotechnology; Marine Environment; Journal of Chemical Engineering and Processing; Journal of Renewable and Sustainable Energy; Fuels and Energy; Chemosphere; Environmental Science: Processes & Impacts; American Society of Agricultural and Biological Engineers; Critical Reviews in Environmental Science and Technology; Ultrasonics Sonochemistry; Chemical Engineering Journal; Bioresource Engineering; Water, Air and Soil; Rhizosphere, Italian Journal of Agronomy; Environment International, Hazardous Materials; Science of Total Environment; Current Microbiology

### **(C) Referee of Grant Proposals**

- UDDOE – BETO Review panel (2022)
- Science Foundation Ireland (2022)
- National Research Foundation, Singapore (2021)
- National Science Foundation (NSF) -SBIR, USA (2021).
- Research Council of Norway (RCN), Norway (2020).
- Nebraska Corn Board (2020, 2021, 2022).
- Office of Research, King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia (2019, 2020, 2022)
- National Defense Science and Engineering Graduate Fellowship (US) (2018, 2021, 2022).
- Qatar National Research Fund (QNRF) via Qatar Foundation, Qatar (2018, 2019, 2020, 2021, 2022).
- Review Panel, US Department of Agriculture (USDA), National Institute of Food and Agriculture - Foundation Program, Higher Education Challenge Grant, Washington, D.C. (2017, 2022).

- Seed Proposal, Ohio State University, Columbus, OH (2017).
- Environment and Conservation Fund (ECF), Hong Kong (2017).
- Faculty HATCH Proposal, University of Idaho, Moscow (2017, 2021).
- North Dakota Department of Commerce (Mar 2016, Jan 2017).
- Research Grant Council (RGC) of Hong Kong, Hong Kong SAR (Mar 2013, 2017, 2018, 2019, 2020, 2021, 2022).
- Fondazione Cariplo, Milan Italy (Jun to Aug 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021).
- US Department of Agriculture, Agricultural and Food Research Institute (AFRI); Reviewer of the First Distributed Peer Review System (Sep 2016).
- Life Science Program, Israeli Ministry of Science, Technology and Space (Aug 2016).
- NSF Review Panel: Environmental Engineering, Washington, D.C. (Mar 2016).
- US Department of Agriculture, Small Business Innovation Research Program (SBIR) Phase I (2015, 2016, 2019, 2021).
- Danish Council for Strategic Research on Sustainable Energy and Environment (Oct 2014).
- Research Council for Culture and Society, Academy of Finland (Aug 2013).
- Review Panel, US Department of Agriculture (USDA), 1890 Capacity Building Grant (CBG), Bioenergy, Environment and Food, Washington, D.C. (2012).
- Review Panel, US Department of Agriculture (USDA), Bioenergy and Biobased Products, Small Business Innovation Research, Washington, D.C (2012).
- US Department of Agriculture (USDA), Small Business Innovation Research, Washington, D.C (2010).
- Netherlands Organization for Scientific Research (NWO): Innovational Research Incentives Scheme (2010).

- University of Leuven: New Initiatives and High-quality Research Grant, Belgium (2010).
- California Energy Commission, Energy Innovation Small Grant (EISG) Program (2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2014, 2016).
- NSF Review Panel: Bioresources/Biotechnology/Bioenergy, Washington, D.C. (2006, Mar 2008, Jul 2008).
- US Department of Agriculture (USDA), Cooperative State Research, Education and Extension Service (CSREES), Washington, D.C. (2008).
- US Department of Energy Small Business Innovation Research (Pacific Northwest National Lab, Sequim, WA (2005, 2006, 2008).
- College of Engineering, Utah State University, Logan UT (2008).
- US Department of State (International Science and Technology Center (ISTC) (2005 to present).
- Missouri Life Science Research Board (2007).
- Florida Research for the Commercialization of Public Research (2010).
- Nevada Institute for Renewable Energy Commercialization (2010).

#### **(D) Others**

- Editor, *Bioresource Technology* (I.F.: 11.889) (Jan 2022 to present).
- Associate Editor, *Bioresource Technology* (I.F.: 11.889) (Jan 2018 to Dec 2021).
- Editorial Board Member, *Industrial Biotechnology* (May 2020-present); *Bioresource Technology* (2014 to 2017), *Bioengineered* (2021-present); *Korean Journal of Environmental Engineering* (2011 to present).
- External Examiner, Senior Design Project, Biological and Ecological Engineering Dept., Oregon State University, Mar 21, 2017, Corvallis, OR.
- Session Chair, 3<sup>rd</sup> International Conference for Bioresource Technology for Bioenergy, Bioproducts & Environmental Sustainability, Virtual (May 17–19, 2021); International Conference on Sustainable Biowaste Management (SBM 2021), Virtual, Hong Kong (Apr 12-14, 2021); International Conference on Emerging Trends in Biotechnology for Waste Conversion (ETBWC-2017) and



XIV Convention of the Biotech Research Society, CSIR-National Environmental Engineering Research Institute, Nagpur, India (Oct 8-10, 2017); 2<sup>nd</sup> International Conference on *Biological Waste as Resource (BWR2017)*, May 25-28, 2017, Hong Kong; 7<sup>th</sup> International Forum on *Industrial Bioprocesses*, May 21-24, 2017, Wuxi, China; Progress in Biogas IV, Mar 8-11, 2017, Stuttgart, Germany; Current Trends in Biotechnology, Dec 8-10, 2016, Vellore, India; BIORESTEC, Oct 23-26, 2016, Sitges, Spain; International Conference on Advances in Biotechnology & Bioinformatics, Nov 25-27, 2013, Pune India; IWA Specialized Conference, Asian Institute of Technology, Sep 2006, Bangkok; IWA Asia-Pacific Regional Conference: *ASIAN WATERQUAL 2003*, Oct 19-23, Bangkok, Thailand.

- Scientific Committee, IWA 17<sup>th</sup> World Congress on Anaerobic Digestion, University of Michigan, Ann Arbor, June 17-22, 2022; 4<sup>th</sup> International Conference for Bioresource Technology for Bioenergy, Bioproducts & Environmental Sustainability, Lake Garda, Italy (May 14–17, 2023); 3<sup>rd</sup> International Conference for Bioresource Technology for Bioenergy, Bioproducts & Environmental Sustainability, Virtual (May 17–19, 2021); International Conference on Sustainable Biowaste Management (SBM 2021), Virtual, Hong Kong (Apr 12-14, 2021); International Conference on Biotechnology for Sustainable Agriculture, Environment, and Health (BASEH-2021), Hybrid, Jaipur, India (Apr 4-8, 2021); International Conference on *Emerging Trends in Biotechnology for Waste Conversion (ETBWC-2017)* and XIV Convention of the Biotech Research Society, CSIR-National Environmental Engineering Research Institute, Nagpur, India (Oct 8-10, 2017); The 7<sup>th</sup> International Conference on *Fermentation Technology for Value-added Agricultural Products and the 12<sup>th</sup> Asian Biohydrogen & Biorefinery Symposium*, Khon Kaen, Thailand (Jul 26-28, 2017); The 2<sup>nd</sup> International Conference on *Biological Waste as Resource (BWR2017)*, Hong Kong (May 25-28, 2017); International Conferences on *Progress in Biogas IV: Biogas Production from Agricultural Biomass and Organic Residues*, Stuttgart, Germany (Mar 8-10, 2017); 7<sup>th</sup> International Forum on *Industrial Bioprocesses*, Wuxi, China (May 21-24, 2017); *Biotechnologies for Controlling Non-point source Pollution and Protecting Natural Waters (BNPW-2017)*, Nanjing, China (Mar 26-29, 2017).
- International Chair, International Conference on Biotechnology for Sustainable Agriculture, Environment and Health (BSAEH-2021), Jaipur, India (Apr 04-08, 2021); Scientific/Advisory Committee of international conferences on *New Horizons in Biotechnology*, Trivendrum, India (Nov 20-23, 2019); The 3<sup>rd</sup> International Conference on Bioresources, Energy, Environment and Materials Technology (BEEM 2019), Hong Kong, SAR (Jun 13-15, 2019); International Conference on Sustainable Solid Waste Treatments and Managements, Yangling, China (May 6-9, 2019); Biotechnological Research

and Innovation for Sustainable Development (BioSD-2018) and the XV Convention of the Biotech Research Society of India, CSIR-Indian Institute of Chemical Technology, Hyderabad, India (Nov 22-25, 2018); 2<sup>nd</sup> International Conference on *Bioenergy, Bioproducts & Environmental Sustainability (BIORESTEC)*, Sitges, Spain (Sep 16-19, 2018); *Emerging Trends in Biotechnology for Waste Conversion (ETBWC-2017)* and XIV Convention of the Biotech Research Society, CSIR-National Environmental Engineering Research Institute, Nagpur, India (Oct 8-10, 2017); *Current Trends in Biotechnology*, Vellore, India (Dec 8-10, 2016); *Strategies for Environmental Protection and Management and 29<sup>th</sup> Annual meeting of National Environmental Science Academy*, Jawaharlal Nehru University, New Delhi, India (Dec 11-13, 2016); *Bioprocessing India 2016*, Mohali, India (Dec 15-17, 2016).

- International Advisor, Environmental Engineering Program, Korea University, Seoul, South Korea (2016 - present).
- Guest Co-editor, Special issues of *Bioresource Technology* on Machine Learning for Smart Bioprocesses (2022); Anaerobic Digestion for Circular Economy and Climate Resilience (2022); Anaerobic Digestion Beyond Biogas (2021); Bioconversion of Waste to Resources (2021); Renewable Hydrogen Production (2020); Recent Advances in Anaerobic Digestion (2019); Waste-to-Resources: Opportunities and Challenges (2019); *Fate, Transport and Removal of Antibiotics in Engineered and Natural Systems: Current Status and Perspectives* (2018); *Lignin Valorization* (2018); *Advances in Anaerobic Digestion* (2017); *Alternative Fuels and Energy (ICAFE2017)*; *Bioenergy, Bioproducts & Environmental Sustainability (BIORESTEC)* (2017); *Waste Biorefinery-Advocating Circular Economy* (2016) and *Advances in Biogas Research and Applications* (2015), Special issue of *Environmental Science and Pollution Research* (2020); Special issue of *Renewable Energy* (2016), and *Indian Journal of Experimental Biology* on *Advances in Biotechnology and Bioinformatics* (2014).
- International Advisory Committee, *First International Conference on Recent Advances in Bio-energy Research (ICRABR-2015)*, Mar 14-17, 2015 and *Second International Conference on Recent Advances in Bio-energy Research (ICRABR-2016)*, Feb 25-27, 2016, Kapurthala, India
- External Evaluator, Tenure and Promotion Application of faculty members: Sultan Qaboos University, Muscat, Oman (2015); University of Alberta, Edmonton Canada (2017); Agricultural Research Organization (ARO), Volcani Institute, Israel (2021); Centre for Environmental Science, Addis Ababa University, Addis Ababa, Ethiopia (2021).

- International Advisory Committee, *International Conferences on New Horizons in Biotechnology (NHBT-2015)*, Nov 22-25, 2015, Trivandrum, India; *Energy, Environment and Climate (ICEECC-2015)*, Jul 8-9, 2015, Mauritius.
- Instructor, FIST, Nov 11, 2021, Fudan University, Shanghai, China
  - Anaerobic digestion with oxidation-reduction potential (ORP)-controlled micro-aeration
  - Nanobubble technology in environmental and agricultural applications
- Visiting Professor, Jan 6-18, 2022, Tokyo University of Agriculture and Technology, Tokyo Japan.
  - Jan 6: Biorefineries
  - Jan 7: Anaerobic digestion for bioenergy production
  - Jan 11: NB technology for environmental and agriculture application
  - Jan 13: Aquaponics and bioponics for food production
  - Jan 18: Waste-to-resources
- Guest Lecturer, Biorefineries, Oct 26, 2021, Dept of Civil and Environmental Engineering, National University of Singapore.
- Instructor, IBASC Mini-class on Anaerobic Digestion, Aug 03, 2021, Gajdah Mada University, Yogyakarta, Indonesia.
- Instructor, Training Workshop on Anaerobic Digestion Technology for Waste treatment and Resource Recovery, Jul 25, 2017, Dept. of Biotechnology, Khon Kaen University, Khon Kaen, Thailand.
- Instructor, International Training Workshop on Biogas Technology for Bioenergy, Oct 20-24, 2014, Kunming China. Delivered the following modules:
  - Introduction to AD process/biology, brief history of application and development (Day-1).
  - Waste treatment with anaerobic digestion (Day-1).
  - Detailed biological process and kinetics (including calculations) (Day-2).
  - Biogas management (Day-2).
  - Anaerobic digestion residue management (digestate) (Day-3).
- International Advisory/Scientific Committee, *International Conferences on Emerging Trends in Biotechnology (ICETB 2014)*. Nov 6-9, 2014, New Delhi, India; *Progress in Biogas III: Biogas Production from Agricultural Biomass and Organic Residues*. Sep 8-9, 2014, Stuttgart, Germany; *Advances in Biotechnology and Bioinformatics (ICABB 2013)*, Nov 25-27, 2013, Pune, India

- Provided Hands-on Training to 25 grade 8 students in Central Middle School on Building Microbial Fuel Cell (Dec 4, 2012).
- Organized USDA NIFA Multi State Research S1041: "The Science and Engineering for a Biobased Industry and Economy" meeting in Washington, D.C. (Aug 6-7, 2012).
- USDA NIFA Multi State Project S1041: The Science and Engineering for a Biobased Industry and Economy, Secretary (2009-2010); Vice-Chair (2010-2011) and Chair (2011-2012).
- Search committee member of Biological Engineering faculty position (2011-2012); Junior specialist (2017).
- Provided Hands-on Training to Middle School Teachers on Bioenergy Production (Nov 5, 2011, Jan 28, 2012).
- Book Proposal Reviewer: Bioenergy: Modelling, Simulation, Optimization of Biomass Conversion Processes (Elsevier 2022); Advances in Phytoremediation Technology (Elsevier, 2021); Photobioreactors: Design and Applications (Elsevier, 2021); Biochar Applications in Wastewater Treatment, John-Wiley & Sons (2020); Biomethane Engineering, Cambridge University Press (2017); Biogas Technology (2016), Environmental Biotechnology (2014), Thermochemical Conversion of Biomass (2013) [ Elsevier Publishing; Textbook of Bioenergy, CRC Press (2011); Biofuel and Biochemicals from Agri-residues, Blackwell Publishing (2007).