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RESEARCH INTERESTS

- Environmental microbiology, microbial N- cycling, sustainable sanitation and wastewater treatment, global climate impacts of engineered wastewater treatment practice, environmental biotechnology, microbial ecology of engineered biological waste and water treatment reactors, novel molecular based biokinetic estimation tools, elucidation of microbial biochemical degradation pathways , bioprocess modeling and parameter identification for complex biotransformations

PROFESSIONAL AND RESEARCH POSITIONS

Columbia University in the City of New York

(January 2016 – to date	Professor	Henry Krumb School of Mines,
(January 2011 – December 2015)	Associate Professor	Department of Earth and
(September 2005 – December 2010)	Assistant Professor	Environmental Engineering

Virginia Polytechnic Institute and State University

(June 2004 – August 2005)	Research Associate	Via Department of Civil and Environmental Engineering

Metcalf and Eddy of New York, Inc.

(September 2001 – May 2004)	Senior Technical Specialist	Chief Engineer's Research Group

The University of Connecticut

(March 1999 – August 2001)	Post-Doctoral Research Fellow	Department of Civil and Environmental Engineering

The University of Connecticut

(August 1995 – February 1999)	Graduate Research Assistant	Department of Civil and Environmental Engineering

EDUCATION

Ph. D. University of Connecticut, Environmental Engineering, 1999
Advisor: Dr. Barth F. Smets
Dissertation Title: Biokinetic Characterization of Ammonium and Nitrite Oxidation by a Mixed Nitrifying Culture using Extant Respirometry

B. S. (Honors) Indian Institute of Technology (formerly University of Roorkee), Roorkee, Chemical Engineering, 1995

HONORS AND AWARDS

- National Academies of Science, Engineering and Medicine, Committee on Grand Challenges and Opportunities in Environmental Engineering for the 21st Century (**2017**)
- National Academies of Science, Engineering and Medicine, 5th Arab-American Frontiers Symposium, Co-Chair, Water Sanitation and Hygiene Symposium (**2017)**

- Camp Applied Research Award **(2016)**
- MacArthur Foundation Fellow (**2015)**
- Invited participant, National Academy of Engineering 2015 China America Frontiers of Engineering **(2015)**
- Visiting Professor, Royal Dutch Academy of Arts and Sciences (**2014)**
- Fellow, Water Environment Federation (**2013**)
- Appointed to the inaugural scientific advisory council, Imagine H_2O (**2013**)
- Appointed to the Nomination Committee, Stockholm Water Prize **(2012**)
- Speaker, World Economic Forum, Davos, Switzerland (**2012**)
- Water Environment Research Foundation Paul L. Busch Award (**2010**)
- AEESP accompanying keynote lecture at WEFTEC, New Orleans, LA **(2010)**
- Nominated to the Board of Trustees, Water Environment Federation (**2010**)
- Nominated to the ICLEI Local Governments for Sustainability Wastewater Technical Advisory Committee (**2010**)
- National Science Foundation Early Faculty Career Development Award, CAREER **(2009)**
- Visiting Professor, Delft University of Technology, hosted by Prof. Mark van Loosdrecht, Department of Biochemical Engineering **(2008)**
- National Research Council, National Academies of Science Summer Faculty Fellowship award, hosted by the United States Environmental Protection Agency Headquarters, Cincinnati, OH, (**Summer 2007)**.
- Appointed to the External Advisory Committee, Undergraduate Environmental Engineering Program, Stevens Institute of Technology, Hoboken, NJ **(2008)**
- Invited contributor to IPCC in Cities Assessment Report with a focus on the water-energy nexus **(2008)**
- Invited member, Urban Climate Change Research Network (UCCRN) **(2008)**
- Nominated to Board of Directors, New York Water Environment Association NYC Chapter **(2007-2009)**
- Travel award to attend AEESP Research and Education Conference, Virginia Tech, Blacksburg, VA
- 1st ranked research paper in research symposium of the Annual Water Environment Federation Technical Exhibition and Conference WEFTEC, **(2010, 2006, 2004)**.
- Harry L. Kinsel Award for excellence in technical publications – Metcalf and Eddy. Awarded for authorship of the top technical publication in Metcalf and Eddy worldwide **(2002, 2003)**
- Platinum Award for Engineering Excellence - Implementation of SHARON in New York City– American Council of Engineering Companies, representing Metcalf and Eddy **(2004)**
- Diamond Award for Engineering Excellence - Application of biotechnology tools for froth control– American Council of Engineering Companies, representing Metcalf and Eddy **(2004)**
- National Environmental Achievement Award – Association of Metropolitan Sewerage Agencies, representing Metcalf and Eddy **(2003)**
- Diamond Award for Engineering Excellence - Dual phase digestion for froth control and sCOD production – American Council of Engineering Companies, representing Metcalf and Eddy **(2003)**
- University of Connecticut Research Foundation Doctoral Dissertation Fellowship **(1999)**
- DC Rastogi Junior Year Topper Trust Scholarship **(1994 - 1995)**. One annual award conferred upon the top junior year student.
- Best Paper Award at INFLUX' 94, - Annual IEEE All India Symposium **(1994)**
- Indian Institute of Technology, Roorkee Merit Scholarship **(1991 - 1995**). Awarded to the top 8 students per discipline every semester.

PUBLICATIONS: PEER REVIEWED JOURNAL ARTICLES
(Student, Post-Doctoral and advisee contributors are underlined), *: corresponding author

1. Annavajhala, M.K., Kapoor, V., Santo-Domingo, J. and **K. Chandran***. (2018) Structural and Functional Interrogation of Selected Biological Nitrogen Removal Systems in the United States, Denmark, and Singapore Using Shotgun Metagenomics. Frontiers in Microbiology 9(2544).
2. Brotto, A.C., Annavajhala, M.K. and **K. Chandran***. (2018) Metatranscriptomic Investigation of Adaptation in NO and N2O Production From a Lab-Scale Nitrification Process Upon Repeated Exposure to Anoxic–Aerobic Cycling. Frontiers in Microbiology 9(3012).
3. Friedman, L., Mamane, H., Avisar, D. and **K. Chandran**. (2018) The role of influent organic carbon-to-nitrogen (COD/N) ratio in removal rates and shaping microbial ecology in soil aquifer treatment (SAT). Water Research 146(1), 197-205.
4. Mannina, G., **Chandran, K.**, Capodici, M., Cosenza, A., Di Trapani, D. and van Loosdrecht, M.C.M. (2018) Greenhouse gas emissions from membrane bioreactors: analysis of a two-year survey on different MBR configurations. Water Science and Technology 78(4), 896-903.
5. Medriano, C.A.D., Yoon, H., **Chandran**, K., Khanal, S.K., Lee, J., Cho, Y. and Kim, S. (2018) Influence of oxytetracycline on the fate of Nitrogen species in a recirculating aquaculture system. Membrane Water Treatment 9(2), 123-128.
6. Sathyamoorthy, S., Hoar, C. and **K. Chandran***. (2018) Identification of Bisphenol A-Assimilating Microorganisms in Mixed Microbial Communities Using 13C-DNA Stable Isotope Probing. Environmental Science & Technology 52(16), 9128-9135.
7. Wongkiew, S., Park, M.-R., Chandran, K. and Khanal, S.K. (2018) Aquaponic Systems for Sustainable Resource Recovery: Linking Nitrogen Transformations to Microbial Communities. Environmental Science & Technology 52(21), 12728-12739.
8. Zhang, Q., Vlaeminck, S.E., DeBarbadillo, C., Su, C., Al-Omari, A., Wett, B., Pümpel, T., Shaw, A., **Chandran, K.**, Murthy, S. and De Clippeleir, H. (2018) Supernatant organics from anaerobic digestion after thermal hydrolysis cause direct and/or diffusional activity loss for nitritation and anammox. Water Research 143, 270-281.
9. Annavajhala, M. K.; Kapoor, V.; Santo-Domingo, J.; **K. Chandran***. **2018.** Comammox Functionality Identified in Diverse Engineered Biological Wastewater Treatment Systems. *Environmental Science & Technology Letters DOI: 10.1021/acs.estlett.7b00577*.
10. Yu, R., Perez-Garcia, O., Lu, H., **K. Chandran. 2018** *Nitrosomonas europaea* adaptation to anoxic-oxic cycling: Insights from transcription analysis, proteomics and metabolic network modeling. *Science of The Total Environment* 615, 1566-1573
11. Lebrero, R., **K Chandran. 2018** Biological conversion and revalorization of waste methane streams. *Critical Reviews in Environmental Science and Technology*, 1-25
12. Soler-Jofra, A., Picioreanu, C., Yu, R., **Chandran, K.**, van Loosdrecht, M. C. M., J. Perez. **2018.** Importance of hydroxylamine in abiotic N_2O production during transient anoxia in planktonic axenic *Nitrosomonas* cultures. *Chemical Engineering Journal* 335, 756-762
13. Shih, J., Fanyin-Martin, A., Taher, E., **K. Chandran*. 2017.** Implementation and process analysis of pilot scale multi-phase anaerobic fermentation and digestion of faecal sludge in Ghana. *Gates Open Research* 1
14. Fanyin-Martin, A., Tamakloe, W., Antwi, E., Ami, J., Awarikabey, E., Apatti, J., Mensah, M., **K. Chandran* 2017**. Chemical characterization of faecal sludge in the Kumasi metropolis, Ghana, *Gates Open Research* 1
15. Perez-Garcia, O., Mankelow, C., **Chandran, K.**, Villas-Boas, S. G., N Singhal. **2017**. Modulation of nitrous oxide (N_2O) accumulation by primary metabolites in denitrifying cultures adapting to changes in environmental C and N *Environmental Science & Technology* 51 (23), 13678-13688
16. Park, M-R., Park, H., **K. Chandran*. 2017**. Molecular and kinetic characterization of planktonic *Nitrospira* spp. selectively enriched from activated sludge. *Environmental Science and Technology* 51(5): 2720-2728.

17. Park, H., Brotto, A. C., van Loosdrecht, M. C. M., **K. Chandran*. 2017**. Discovery and metagenomic analysis of an anammox bacterial enrichment related to *Candidatus* "Brocadia caroliniensis" in a full-scale glycerol-fed nitritation-denitritation separate centrate treatment process. *Water Research* 11: 265-273.
18. Kinyua, M. N., Elliott, M., Wett, B., Murthy, S., **Chandran**, **K.,** C. B Bott. **2017**. The role of extracellular polymeric substances on carbon capture in a high rate activated sludge A-stage system. *Chemical Engineering Journal* 322, 428-434
19. Kinyua, M. N., Miller, M. W., Wett, B., Murthy, S., **Chandran, K.**, C. B. Bott.**2017**. Polyhydroxyalkanoates, triacylglycerides and glycogen in a high rate activated sludge A-stage system. *Chemical Engineering Journal* 316: 350-360
20. Klaus, S., Sadowski, M., Jimenez, J., Wett, B., Chandran, K., Murthy, S., C. B. Bott. **2017**. Nitric oxide production interferes with aqueous dissolved oxygen sensors. *Environmental Engineering Science* 34 (9), 687-691
21. Wongkiew, S., Hu, Z., **Chandran, K.**, Lee, J. W., S. K. Khanal. **2017.** Nitrogen transformations in aquaponic systems: A review. *Aquaculutral Engineering* 76:9-19
22. Vajpeyi, S., **K Chandran*. 2016.** Draft genome sequence of the oleaginous yeast *Cryptococcus albidus var. albidus*. *Genome announcements* 4 (3), e00390-16.
23. Pak, G., D. E. Salcedo, H. Lee, J. Oh, S. K. Maeng, K. G. Song, S. W. Hong, H.-C. Kim, **K. Chandran**, and S. Kim. **2016**. Comparison of antibiotic resistance removal efficiencies using ozone disinfection under different pH, suspended solids and humic substance concentrations. *Environmental Science & Technology* 50:7590-7600.
24. Kapoor, V., X. Li, **K. Chandran**, C. A. Impellitteri, and J. W. S. Domingo. **2016**. "Use of functional gene expression and respirometry to study wastewater nitrification activity after exposure to low doses of copper", *Environmental Science and Pollution Research* 23:6443-6450.
25. Kim, Y. M., H. Park, and **K. Chandran***. **2016**. Nitrification inhibition by hexavalent chromium Cr(VI) – Microbial ecology, gene expression and off-gas emissions. Water Research 92:254-261.
26. Li, X., V. Kapoor, C. Impelliteri, **K. Chandran**, and J. W. S. Domingo. **2016**. Measuring nitrification inhibition by metals in wastewater treatment systems: Current state of science and fundamental research needs. *Critical Reviews in Environmental Science and Technology* 46:249-289.
27. Perez-Garcia, O., **K. Chandran**, S. G. Villas-Boas, and N. Singhal. **2016**. Assessment of nitric oxide (NO) redox reactions contribution to nitrous oxide (N_2O) formation during nitrification using a multispecies metabolic network model. *Biotechnology and Bioengineering* 113:1124-1136.
28. Regmi, P., B. Holgate, M. W. Miller, H. Park, **K. Chandran**, B. Wett, S. Murthy, and C. B. Bott. **2016**. Nitrogen polishing in a fully anoxic anammox MBBR treating mainstream nitritation–denitritation effluent. *Biotechnology and Bioengineering* 113:635-642.
29. Regmi, P., R. Bunce, M. W. Miller, H. Park, **K. Chandran**, B. Wett, S. Murthy, and C. B. Bott. **2015**. Ammonia-based intermittent aeration control optimized for efficient nitrogen removal. *Biotechnology and Bioengineering* 112:2060-2067.
30. Ergas, S. J., Kinyua, M. N., van der Steen P., Butler, C. S., Lens, P. N. L., **Chandran, K.**, and J. R. Mihelcic **2016**. Innovative Global Solutions for Bioenergy Production. *Environmental Engineering and Science* 33(11): 841-842
31. Vajpeyi, S., **K Chandran*, 2015**, "Microbial conversion of synthetic and food waste-derived volatile fatty acids to lipids", *Bioresource technology* 188, 49-55
32. Yu, R. X Fang, P Somasundaran, **K Chandran*, 2015**, "Short-term effects of TiO 2, CeO 2, and ZnO nanoparticles on metabolic activities and gene expression of *Nitrosomonas europaea*", *Chemosphere* 128, 207-215
33. Khunjar, W.*, D. Jiang, B. Wett, S. Murthy and **K. Chandran*, 2015** "Characterizing the metabolic tradeoff in *Nitrosomonas europaea* in response to changes in inorganic carbon supply", *Environmental Science and Technology,* 2015, 49 (4), pp 2523–2531
34. Kapoor, V., X. Li, M. Elk, **K. Chandran**, C. A. Impellitteri, and J. W. Santo Domingo. **2015**. Impact of Heavy Metals on Transcriptional and Physiological Activity of Nitrifying Bacteria. *Environmental Science & Technology* 49:13454-13462.

35. Paudel, S. R., O. Choi, S. K. Khanal, **K. Chandran**, S. Kim, J. W. Lee, **2015**, "Effects of temperature on nitrous oxide (N_2O) emission from intensive aquaculture system", *Science of the Total Environment* 518, pp 16-23
36. Brotto, A. C., H. Li, M. Dumit, J. Gabarro, J. Colprim, S. Murthy and **K Chandran*, 2015**, Characterization and mitigation of nitrous oxide (N_2O) emissions from partial and full-nitrification BNR processes based on post-anoxic aeration control, Biotechnology and bioengineering, 112(11), pp 2241-2247, *DOI:* 10.1002/bit.25635
37. Ma, Y., S. Sundar, H. Park, and **K. Chandran*, 2015,** "The effect of inorganic carbon on microbial interactions in a biofilm nitritation-anammox process", *Water Research,* 70, pp 246-254
38. Behera, C. R., B. Srinivasan, **K. Chandran**, V. Venkatasubramanian, **2015**, "Model Based Predictive Control for Energy Efficient Biological Nitrification Process with Minimal Nitrous Oxide Production" *Chemical Engineering Journal*, 268, pp 300–310
39. Hu, Z., J. W. Lee, **K. Chandran**, S. Kim, A. C. Brotto, S. K. Khanal, **2015**, "Effect of plant species on nitrogen recovery in aquaponics", *Bioresource Technology*, 188, pp 92–98
40. Courtens, E. N. P., H. D. Clippeleir, S. E. Vlaeminck, R. Jordaens, H. Park, **K. Chandran** and N. Boon, **2015,** "Nitric oxide preferentially inhibits nitrite oxidizing communities with high affinity for nitrite", *Journal of Biotechnology, 193,* 120-122
41. Brotto, A.C., D. C Kligerman, S. A. Andrade, R. P. Ribeiro, J. L. M. Oliveira, **K. Chandran** and W. Z. de Mello, "Factors controlling nitrous oxide emissions from a full-scale activated sludge system in the tropics", **2015** *Environmental Science and Pollution Research*, 1-10
42. Su, L., D. Aga, **K. Chandran**, and W. O. Khunjar, **2015**, "Factors impacting biotransformation kinetics of trace organic compounds in lab-scale activated sludge systems performing nitrification and denitrification", *Journal of Hazardous Materials, 282,* 116-124
43. Park, H., S. Sundar, Y. Ma and **K. Chandran***, **2015** "Differentiation in the microbial ecology and activity of suspended and attached bacteria in a nitritation anammox process", *Biotechnology and Bioengineering,* 112(2), 272-279
44. Pan, Y, B-J. Ni, H. Lu, **K. Chandran**, D. Walker and Z. Yuan, **2015** "Evaluating two concepts for the modelling of intermediates accumulation during biological denitrification in wastewater treatment", *Water Research,* 71, pp 21-31, *doi:10.1016/j.watres.2014.12.029*
45. Lu, H., **K. Chandran***, H. D. Stensel, **2014** "Microbial ecology of denitrification in biological wastewater treatment", *Water Research,* 64, 237-254
46. Regmi, P., M. W. Miller, B. Holgate, R. Bunce, H. Park, **K. Chandran**, B. Wett, S. Murthy, C. Bott, **2014** "Control of aeration, aerobic SRT and COD input for mainstream nitritation/denitritation", *Water Research,* 57, 162-171
47. Perez-Garcia, O., S. Villas-Boas, S. Swift, **K. Chandran**, N. Singhal, **2014** "Clarifying the regulation of NO/N_2O production in *Nitrosomonas europaea* during anoxic-oxic transition via flux balance analysis of reconstructed metabolic network model", *Water Research,* 60, 267-277
48. Hu, Z., J. W. Lee, **K. Chandran**, S. Kim, K. Sharma, S. K. Khanal, **2014** "Influence of carbohydrate addition on nitrogen transformations and greenhouse gas emissions of intensive aquaculture system", *Science of the Total Environment*, 470, 193-200
49. Kim, S*, Z. Yun, U-H. Ha, S. Lee, H. Park, H., E. E. Kwon, Y. Cho, Y., S. Choung, J. Oh, C. Medriano, and **K. Chandran**, **2014** "Transfer of antibiotic resistance plasmids in pure and activated sludge cultures in the presence of environmentally representative micro-contaminant concentrations", *Science of the Total Environment*, 468-469, 813-820
50. Mehrdad, M., H. Park, K. Ramalingam, J. Fillos, K. Beckmann, A. Deur, **K. Chandran 2014** "Anammox moving bed biofilm reactor pilot at the 26th Ward wastewater treatment plants in Brooklyn, New York: start-up, biofilm population diversity and performance optimization", *Water Science and Technology,* 70 (9), 1448-1455
51. Sathyamoorthy, S., **K. Chandran** and A. Ramsburgh, **2013** "Biodegradation and cometabolic modeling of selected beta blockers during ammonia oxidation", *Environmental Science and Technology*, 47(22), 12835-12843

52. Taher, E. and **K. Chandran***, **2013** "High-rate, high-yield production of methanol by ammonia oxidizing bacteria", *Environmental Science and Technology*, 47(7), 3167-3173.
53. Hu, Z., J. Lee, **K. Chandran**, S. Kim, and S. K. Khanal, **2013** "Nitrogen transformations in intensive aquaculture system and its implication to climate change through nitrous oxide emission", *Bioresource Technology,* 130, 314-320.
54. Sahin, A., W.-T. Lin, W. Khunjar, **K. Chandran**, S. Banta, A. C. West, **2013** "Electrochemical reduction of nitrite to ammonia for use in a bioreactor", *Journal of the Electrochemical Society*, 160(1), G19-G26.
55. Ni, B.-J., Z. Yuan, **K. Chandran**, P. Vanrolleghem and S. Murthy, **2013** "Evaluating four mathematical models for nitrous oxide production by autotrophic ammonia-oxidizing bacteria", *Biotechnology and Bioengineering*, 110(1), 153-163.
56. Winkler, M. K., R. Kleerebezem, M. Strous, **K. Chandran** and M. C. M. van Loosdrecht*, **2013** "Factors affecting the density of aerobic granular activated sludge", *Applied Microbiology and Biotechnology,* 97 (16), 7459-7468
57. Lu, H. M. Kalyuzhnaya and **K. Chandran*, 2012** "Comparative proteomic and transcriptional analysis reveal insights into facultative methylotrophy of *Methyloversatilis universalis* FAM5*", *Environmental Microbiology,* 14(11), 2935-2945.
58. Khunjar, W., A. Sahin, A. C. West*, **K. Chandran*,** S. Banta*, **2012** "Biomass Production from Electricity Using Ammonia as an Electron Carrier in a Reverse Microbial Fuel Cell", *PLoS One*, 7(9), e44846.
59. Hu, Z., J. Lee, **K. Chandran**, S. Kim and S. K. Khanal*, **2012** "Nitrous Oxide (N_2O) Emission from Aquaculture: A Review", *Environmental Science and Technology,* 46(12), 6470-6480.
60. **Chandran, K.***, L. Stein, M. G. Klotz and M. C. M. van Loosdrecht, **2011** "Nitrous oxide production by lithotrophic ammonia oxidizing bacteria and implications for engineered nitrogen removal systems", *Biochemical Society Transactions* 39(6), 1832-1837.
61. Lu, H. and **K. Chandran*, 2011** "Alcohol dehydrogenase expression as a biomarker of denitrification activity using methanol and glycerol as electron donors in activated sludge", *Environmental Microbiology,* 13(11), 2930–2938.
62. Yu, R., B. Lai, S. Vogt and **K. Chandran* 2011** "Elemental profiling of single bacterial cells as a function of copper exposure and growth phase", *PLoS One,* 6(6): e21255.
63. Wang, J. S.*, S. P. Hamburg, D. E. Pryor, **K. Chandran**, G. T. Daigger**, 2011** "Emissions credits: Opportunity to promote integrated nitrogen management in the wastewater sector", *Environmental Science and Technology,* 45(15), 6239–6246, **DOI:** 10.1021/es200419h.
64. Ahn, J.-H., T. Kwan and **K. Chandran*, 2011** "A comparison of partial and full nitrification processes applied for treating high-strength nitrogen wastewaters: Microbial ecology through nitrous oxide production", *Environmental Science and Technology*, 45(17), 2734-2740*,* **DOI**: 10.1021/es103534g.
65. Rassammee, V., C. Sattayatewa, K. Pagilla and **K. Chandran, 2011**, "Effect of oxic and anoxic conditions on nitrous oxide emissions from nitrification and denitrification processes", *Biotechnology and Bioengineering,* 108(9), 2036-2045*, doi: 10.1002/bit.23147*
66. **K. Chandran*, 2011** "Protocol for the measurement of nitrous oxide fluxes from biological wastewater treatment plants", *Methods in Enzymology*, 486, 369-385.
67. Lu, H. and **K. Chandran*, 2010** "Diagnosis and quantification of glycerol assimilating denitrifying bacteria in integrated fixed-film activated sludge reactors via ^{13}C DNA stable isotope probing"*, Environmental Science and Technology,* 44(23), 8943-8949*,* **DOI:** 10.1021/es102124f
68. Park, H., A. Rosenthal, R. Jezek, K. Ramalingam, J. Fillos and **K. Chandran*, 2010** "Impact of inocula and growth mode on the molecular microbial ecology of anaerobic ammonia oxidation (Anammox) bioreactor communities", *Water Research,* 44(17), 5005-5013.
69. Park, H., A. Rosenthal, K. Ramalingam, J. Fillos and **K. Chandran*, 2010** "Linking community profiles, gene expression and N-removal in anammox bioreactors treating municipal anaerobic digestion reject water" *Environmental Science and Technology,* 44(16), 6110-6116.

70. Ahn, J.-H., S. Kim, H. Park, K. Pagilla and **K. Chandran*, 2010** "N_2O emissions from activated sludge 2008-2009: Results of a nationwide monitoring survey in the United States" *Environmental Science and Technology,* 44(12), 4505-4511.
71. Lu, H. and **K. Chandran*, 2010** "Factors promoting emissions of nitrous oxide and nitric oxide from denitrifying sequencing batch reactors operated with methanol and ethanol as electron donors" *Biotechnology and Bioengineering,* 106(3), 390-398.
72. Fang, X., R. Yu, B.Li, P. Somasundaran and **K. Chandran, 2010** "Stresses exerted by ZnO, CeO2 and anatase TiO2 nanoparticles on *Nitrosomonas europaea, Journal of Colloid and Interface Science,* 348(2), 329-334.
73. Ahn, J.-H., S. Kim, H. Park, D. Katehis, K. Pagilla and **K. Chandran*, 2010** "Spatial and temporal variability in N_2O generation and emission from full-scale BNR and non-BNR processes" *Water Environment Research,* 82(12), 2362-2372.
74. Yu, R., and **K. Chandran* 2010** "Strategies of *Nitrosomonas europaea* 19718 to counter low dissolved oxygen and high nitrite concentrations". *BMC Microbiology, 10(70), 1-11.*
75. Yu, R., M. Kampschreur, M. C. M. van Loosdrecht and **K. Chandran***, **2010** "Mechanisms and specific directionality in autotrophic nitrous oxide and nitric oxide generation during transient anoxia" *Environmental Science and Technology,* 44(4), 1313-1319.
76. Kim, S., H. Park and **K. Chandran* 2010** "Propensity of activated sludge to amplify or attenuate tetracycline resistance genes and tetracycline resistant bacteria: A mathematical modeling approach" *Chemosphere,* 78(2010), 1071-1077.
77. V. Baytshtok, H. Lu., H. Park, S. Kim, R. Yu, and **K. Chandran* 2009** "Impact of varying electron donors on the molecular microbial ecology and biokinetics of methylotrophic denitrifying bacteria". *Biotechnology and Bioengineering,* 102(6), 1527-1536.
78. V. Baytshtok, S. Kim, R. Yu, H. Park and **K. Chandran* 2008** "Molecular and biokinetic characterization of methylotrophic denitrification using nitrate and nitrite as terminal electron acceptors". *Water Science and Technology*, 58(2), 359-365
79. Ahn, J-H., R. Yu and **K. Chandran* 2008** "Distinctive microbial ecology and biokinetics of autotrophic ammonia and nitrite oxidation in a partial nitrification bioreactor". *Biotechnology and Bioengineering,* 100(6), 1078-1087.
80. **Chandran, K.** and N. Love **2008** "Physiological state, growth mode and oxidative stress play a role in Cd(II)-mediated inhibition of *Nitrosomonas europaea* 19718". *Applied and Environmental Microbiology.* 74(8), 2447-2453.
81. **Chandran, K.***, Z. Hu and B. F. Smets **2008** "A critical comparison of extant batch respirometric and substrate depletion assays for estimation of nitrification biokinetics". *Biotechnology and Bioengineering,* 101(1), 62-72.
82. **Chandran, K.*** and B. F. Smets **2008** "Biokinetic characterization of the acceleration phase in autotrophic ammonia oxidation". *Water Environment Research,* 80(8), 732-739 doi: 10.2175/106143008X296442
83. Carrico, B., F. DiGiano, N. Love, P. Vikesland, **K. Chandran,** E. M. Fiss, A. Zaklikowski **2008** "Impact of disinfection switching on water quality in distribution systems" *Journal of the American Water Works Association,* 100(10), 104-116.
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85. **Chandran, K.*** and B. F. Smets. **2005** "Optimizing experimental design to estimate ammonia and nitrite oxidation biokinetic parameters from batch respirograms". *Water Research.* 39(20) 4969-4078.
86. **Chandran, K.*,** Z. Hu and B. F. Smets **2005** "Applicability of an extant batch respirometric assay in describing dynamics of ammonia and nitrite oxidation in a nitrifying bioreactor". *Water Science and Technology.* 52 (10-11) 503-508.
87. Hu, Z., **K. Chandran**, D. Grasso and B. F. Smets. **2004.** "Comparison of nitrification inhibition in batch and continuous flow reactors." *Water Research.* 38:3949-3959

88. Hu, Z., **K. Chandran**, D. Grasso and B. F. Smets. **2003.** "Nitrification inhibition by ethylenediamine-based chelating agents." *Environmental Engineering Science*, 20: 219-227.
89. Hu, Z., **K. Chandran**, D. Grasso and B. F. Smets. **2003.** "Impact of metal sorption and internalization on nitrification inhibition." *Environmental Science and Technology.* 37:728-734.
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91. Hu, Z. **K. Chandran**, B. F. Smets and D. Grasso. **2002** "Evaluation of a rapid physico-chemical method for the determination of extant soluble COD". *Water Research*. 36(3) : 617-624
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96. **Chandran, K.***, **2003.** "Froth control and prevention strategies at for BNR at NYC WPCPs", *35th Mid-Atlantic Industrial and Hazardous Waste Conference 2003. Brooklyn Polytechnic University, Brooklyn, NY. Invited presentation.*
97. Ezenekwe, I., **K. Chandran***, L. Carrio, K. Gopalakrishnan, J. Anderson and B. Stinson **2002.** "A novel application of acid-phase digestion for concurrent sCOD recovery and filament destruction in froth". *75th Annual Water Environment Federation Conference, 2002. Chicago, IL.*
98. Hu, Z., **K. Chandran**, D. Grasso and B. F. Smets. **2002.** "A comparative study of nitrification inhibition by heavy metals: the influence of metal exposure time on biological effect." *8th Annual Industrial Waste Technical and Regulatory Conference, Atlantic City, NJ.*
99. **Chandran, K.***, Hu, Z, Krach, W. and B. F. Smets **2002.** "Dynamics of genotypics, biokinetics and performance in a continuously operated nitrifying bioreactor". *3rd IWA World Congress. Melbourne, Australia.*
100. **Chandran, K.***, Hu, Z, and B. F. Smets **2001.** "Optimal experimental design for estimating ammonia and nitrite oxidation biokinetics from batch respirograms". *74th Annual Water Environment Federation Conference, 2001. Atlanta, GA.*
101. Hu, Z, **Chandran, K.**, B. F. Smets and Grasso, D **2001**. "Evaluation of nitrification inhibition by heavy metals nickel and zinc". *74th Annual Water Environment Federation Conference, 2001. Atlanta, GA.*
102. **Chandran, K.***, Hu, Z, and B. F. Smets **2001.** "Optimal experimental design of batch respirometric assays for biokinetic estimation of ammonia and nitrite oxidation". *2nd IWA World Congress. Berlin, Germany.*
103. Smets, B. F. and **K. Chandran 2001.** "Measuring activity of individual microbial guilds in the mixed substrate/mixed culture environment of wastewater treatment reactors". *US-Egypt Workshop in Microbial Ecology. Cairo, Egypt.*
104. Hu, Z, **Chandran, K.**, B. F. Smets and Grasso, D **2001**. "Effect of nickel on nitrifying enrichment cultures". *32nd Mid-Atlantic Industrial and Hazardous Waste Conference, 2001. Manhattan College, Riverdale, NY.*
105. **Chandran, K.***, and B. F. Smets. **2000**. "Dynamics of biokinetics and performance in a nitrifying sequencing batch reactor". *2nd International Water Association International Symposium on Sequencing Batch Reactor Technology. Narbonne, France.*
106. Hu, Z, **K. Chandran,**, Grasso, D and B. F. Smets **2000**. "Evaluation of a rapid physical-chemical method for the determination of extant soluble COD in wastewater". *32nd Mid-Atlantic Industrial and Hazardous Waste Conference, 2000. Rensselaer Polytechnic Institute, Troy, NY.*
107. **Chandran, K.** and B. F. Smets. **1999**. "Simultaneous estimation of the biokinetics of ammonium oxidation and nitrite oxidation from a single respirometric profile using a comprehensive two-step nitrification model". *72nd Annual Water Environment Federation Conference, 1999. New Orleans, LA.*
108. **Chandran, K.** and B. F. Smets **1999**. "Nitrification inhibition measurement using a rapid extant respirometric assay". *31st Mid-Atlantic Industrial and Hazardous Waste Conference, 1999. University of Connecticut, Storrs, CT.*

INVITED PRESENTATIONS AND COLLOQUIA

- **Chandran, K.** "Resource-efficient models for wastewater treatment", Durban University of Technology, November 21st, 2017, Durban, SA

- **Chandran, K.** "Resource recovery from waste streams", Factor(e), November 7th, 2017, Fort Collins, CO
- **Chandran, K.** "Water Sanitation and Hygiene", 5th Arab-American Frontiers, November 2nd, 2017, Rabat, MR
- **Chandran, K.** "Making the most of wastewater", Academy of Teachers, October 30th, 2017, Columbia University, New York, NY
- **Chandran, K.** "Carbon based interactions in autotrophic N-cycle communities", Stony Brook University, October 27th, 2017, Stony Brook, NY
- **Chandran, K.** "Fundamental and Applied Research Perspectives: N-GHG production in BNR Systems & Anaerobic Fermentation Platforms for Resource Recovery", PNCWA Annual Meeting, October 22nd, 2017, Vancouver, WA
- **Chandran, K.** "Flexible biochemical platforms for resource recovery from 'waste'", Clemson University, October 20th, 2017, Clemson, SC
- **Chandran, K.** "Re-engineering Carbon Cycling for Resource Recovery from Waste Streams", DOE BioEconomy Conference, July 12th, 2017, Washington, DC
- **Chandran, K.** "(An)aerobic microbial platforms for resource recovery", Quebec's Resource Recovery Potential Workshop, June 28th, 2017, McGill University, Quebec, CA
- **Chandran, K.,** "Novel Paradigms of Wastewater Treatment and Sanitation", SANEPAR, May 17th, 2017, Curitiba, Parana
- **Chandran, K.,** "Water-Energy-Food-Cities", Museum of Tomorrow", Rio de Janeiro, March 8th, 2017
- **Chandran, K.,** "Structure, function and metabolism of (an)aerobic carbon cycling in engineered resource recovery processes", Tel Aviv University, December 12th, 2016, Tel Aviv, IL
- **Chandran, K.** "Great Water Cities", November 2nd, 2016, Aarhus, DK
- **Chandran, K.** "Resource and Energy Efficient Clean Water" South African Sanitation Technology Demonstration Program, September 16th, 2106, Pretoria, SA
- **Chandran, K.** "Structure, function and metabolism of (an)aerobic carbon cycling in engineered resource recovery processes" International Water Association Microbial Ecology and Water Engineering closing keynote lecture, September 7th, 2016, Copenhagen, DK
- **Chandran, K.**, "Managing the opportunities of a changing landscape - Urban Water Management in Transition", September 1st, 2016, World Water Week, Stockholm, Sweden
- **Chandran, K.**, "Re-engineering Carbon Cycling for Resource Recovery from Waste Streams", June 26th, 2016, Gordon Research Conference Environmental Science: Water, Opening Keynote, Holderness School, NH
- **Chandran, K.**, "Managing the Engineered Nitrogen Cycle", June 18th, 2016, ASM Microbe, Boston, MA
- **Chandran, K.**, "Biological Platforms for Engineered Resource Recovery – Water-Energy- Food-Cities", June 2nd, 2016 (Unifor) an June 3rd, 2016 (FGV, Sao Paulo), Brazil
- **Chandran, K.**, "Flexible Platform Technologies for Resource Recovery from Organic 'Waste' Streams", May 13th, 2016, Nanjing University and Southeast University, Nanjing, China
- **Chandran, K.**, "Developments in Biological Nitrogen Removal", May 11th, 2016, University of Science and Technology, Beijing, China
- **Chandran, K.**, "Engineering Grand Challenges", April 29th, 2016, University of Connecticut Centennial Lecture, Storrs, CT
- **Chandran, K.**, "Decentralized wastewater treatment and water reuse", April 5th, 2016, Center for Science and Environment, New Delhi, India
- **Chandran, K.**, "Resource recovery from fecal sludge - Pilot and lab-scale studies and bioprocess modeling", April 4th, 2016, Center for Science and Environment, New Delhi, India

- **Chandran, K.**, "Engineered Resource Recovery from Used Streams", April 15th, 2016, Tufts University, Medford, MA
- **Chandran, K.**, "Microbial ecology and metabolic pathways of the (re-)engineered microbial N-cycle", February 19th, 2016, Clarkson University, Potsdam, NY
- **Chandran, K.**, "Global environmental grand challenges", December 10th, 2015, Marmara University, Istanbul, Turkey
- WRC South Africa
- **Chandran, K.**, "N-removal processes", November 26th, 2015, Durban University of Technology, Durban, SA
- **Chandran, K.**, "Perspectives on Microbial Interactions in (Re-)engineered Biological Nitrogen Removal Processes", November 13th, 2015, University of Colorado, Boulder, CO
- **Chandran, K.**, "Carbon based interactions in autotrophic N-cycle communities", October 30th, 2015, Northwestern University, Evanston, IL
- **Chandran, K.**, "Environmental Microbiology and Biotechnology (and some applications)", October 16th, 2015, UNESCO-IHE, Delft, NL
- **Chandran, K.**, "Re-engineering carbon cycling for resource recovery", August 31st, 2015, 1st IWA Resource Recovery Conference, Keynote Lecture, Ghent, BE
- **Chandran, K.** "The Water-Energy-Food Nexus", June 1st, 2015, NAE China America Frontiers of Engineering Symposium, Irvine, CA
- **Chandran, K.** "Achieving resource positive water", April 27th, 2015, DOE-NSF-EPA Workshop, National Science Foundation, Arlington, VA
- **Chandran, K.** "Production of Bio-based Fuels and Chemicals Using Novel Process Platforms", February 16th, 2015, Princeton University Andlinger Center Highlight Seminar Series, Princeton, NJ
- **Chandran, K.** "N greenhouse gases from engineered nitrogen removal processes: Clean air or clean water?" February 13th, 2015, University of South Florida, Tampa, FL
- **Chandran, K.** "Microbial N- and C- cycling in Engineered Systems", December 15th, 2014, Environmental Protection Agency, National Risk Management Research Laboratories, Cincinnati, OH
- **Chandran, K.** 'Metabolic pathways and inventories of nitrous oxide production and emission from biological wastewater treatment plants', Universidad Autónoma Metropolitana, December 5th, 2014, Mexico City, Mexico
- **Chandran, K.** 'Environmental Biotechnology – at the nexus of solutions to global challenges', Universidad Autónoma Metropolitana, December 4th, 2014, Mexico City, Mexico
- **Chandran, K.** 'Perspectives on anaerobic ammonia oxidation in engineered biological nitrogen removal systems', Princeton University, December 1st, 2014, Princeton, NJ
- **Chandran, K.** 'Perspectives on anaerobic ammonia oxidation in engineered biological nitrogen removal systems', Arizona State University, November 17th, 2014, Tempe, AZ
- **Chandran, K.** 'Microbial production of lipids and biomethanol from anaerobic process platforms', International Conference on Emerging Trends in Biotechnology, November 7th, 2014, New Delhi, India
- **Chandran, K.** 'Water-Energy-Food-Cities', 2014, Keynote Lecture, International Water Association Conference on Global Challenges: Sustainable Wastewater Treatment and Resource Recovery, Kathmandu, Nepal
- **Chandran, K.** 'Carbon recovery and production technologies and strategies', in W17 WEF/WERF Resource Recovery: Making a Case for the Recovery of Nutrients, Energy, Water, and Other Resources, WEFTEC 2014, September 27th, 2014, New Orleans, LA
- **Chandran, K.** 'Carbon recovery and production technologies and strategies', in W02 Knowledge Development Forum: Carbon Removal and Recovery Technologies for Sustainable, Energy-

Efficient Water Resource Recovery Facilities, WEFTEC 2014, September 27th, 2014, New Orleans, LA

- **Chandran, K.** 'Microbial Nitrogen Transformations', Advanced Course Environmental Biotechnology, Technical University Delft, July 8th, 2014
- **Chandran, K.** 'Macronutrient (Nitrogen) Cycling', International Water Association Celebration on Activated Sludge-100 Years and Counting, June 9th, 2014
- **Chandran, K.** 'Environmental Microbiology and Biotechnology', Columbia-PUC Joint Symposium, June 9th, 2014
- **Chandran, K.** 'Fundamental research on deammonification', Singapore International Water Week, June 1st, 2014
- **Chandran, K.** 'Nitrous oxide production by lithotrophic ammonia oxidizing bacteria in engineered nitrogen removal systems', National University of Singapore, May 29th, 2014
- **Chandran, K.** 'Microbial Ecology of Activated Sludge', AAEES 100 Years of Activated Sludge Workshop, New Jersey Water Environment Association Annual Meeting, Atlantic City, NJ, May 12th, 2014
- **Chandran, K.** 'Summary of selected Anammox, GHG and Resource Recovery Research', VCS Denmark, Odense, April 28th, 2014
- **Chandran, K.** 'The (re-)engineered microbial nitrogen cycle in wastewater treatment systems', King Abdullah University of Science and Technology', April 20th, 2014
- **Chandran, K.** 'Engineered Resource Recovery', 64th Annual Environmental Engineering Colloquium, University of Kansas, Lawrence, April 16th, 2014
- **Chandran, K.** 'Water-Energy-Food-Cities', Columbia University Masterclass, April 12th, 2014
- **Chandran, K.** 'Carbon Cycling in Sanitation Systems', University of Illinois, Urbana-Champaign, April 10th, 2014
- **Chandran, K.** **"**The Water-Energy-Food-Cities nexus", Studio X, Rio de Janeiro, Brazil, March 20th, 2014
- **Chandran, K.** 'Structure and function of chemolithoheterotrophic denitrification on different electron donors', Arizona State University, February 4th, 2014
- **Chandran, K.** 'Engineered Resource Recovery from 'Waste', Water Innovation Showcase Series, Organized by Bluetech Forum and Imagine H_2O February 19th, 2014
- **Chandran, K.** 'Biological transformation and mineralization of pesticide containing wastes', Delhi University, India, January 15th, 2014
- **Chandran, K.,** 'Structure and function of nitritation-anammox processes', Duke University, Durham, NC, October 27th, 2013
- **Chandran, K.** 'Structure and function of nitritation-anammox processes', FioCruz, Rio de Janeiro, Brazil, October 24th, 2013
- **Chandran, K.** 'Structure and function of nitritation-anammox processes', Tokyo University of Agriculture and Technology, Tokyo, Japan, October 17th, 2013
- **Chandran, K.** **"**Water-Energy-Food-Cities", Rice University, Houston, TX, September 27th, 2013
- **Chandran, K.** 'Structure and function of nitritation-anammox processes", EAWAG, Dubendorf, Switzerland, August 20th, 2013
- **Chandran, K.** "Engineered resource recovery from wastewater", WEF-IWA Nutrient Removal and Recovery conference- Trends in Resource Recovery and Reuse, Vancouver, Canada, July 23rd, 2013
- **Chandran, K.** "Selecting and Tracking Functional Organisms", Activated Sludge Forum – Celebrating activated sludge on its 100th birthday", Stonehill College, Stonehill, MA, June 9th, 2013
- **Chandran, K.** "The (re-)engineered microbial nitrogen cycle in wastewater treatment systems", The University of Washington, June 6th, 2013

- **Chandran, K.** "Nitrous oxide production by lithotrophic ammonia oxidizing bacteria and implications for engineered nitrogen removal systems", Johns Hopkins University, May 15th, 2013
- **Chandran, K.** 'Re-engineering elemental cycling for recovering energy and resources from used streams' Rice University, March 11th, 2013
- **Chandran, K.** "Technologies and models for resource recovery from waste" Indo-US Joint Workshop on Water Quality and Sustainability, Indian Institute of Technology, Madras, India, January 10th, 2013
- **Chandran, K.** "Re-thinking water quality, policy and health – An elemental approach" Carnegie Mellon Distinguished Lecture Series, Pittsburgh, PA, October 8th, 2012
- **Chandran, K.** "Re-engineering elemental cycling in sewage treatment plants for energy and resource recovery", American Chemical Society Annual Meeting, Special Session in Honor of Paul Bishop, Philadelphia, PA, August 21st, 2012
- **Chandran, K.** "Water quality and urban sustainability", tGELF LIFE 2012 Summit, Jaipur, India, August 4th, 2012
- **Chandran, K.** "Impact of nanoparticles on *Nitrosomonas europaea* 19718", American Chemical Society Mid-Atlantic Regional Meeting, Baltimore, MD, May 31st, 2012.
- **Chandran, K.** "De-centralized resource recovery in cities" Annual CUSP- CEAA Forum, Columbia University, New York, NY, March 19th, 2012
- **Chandran, K.** "Global full-scale wastewater treatment plant nitrous oxide measurements", WWTMod 2012, Quebec City, Canada, February 26th, 2012.
- **Chandran, K.** "Pathways of nitrous oxide production by lithoautotrophic ammonia oxidizing bacteria", WWTMod 2012, Quebec City, Canada, February 26th, 2012.
- **Chandran, K.** "Application of anammox for engineered biological nitrogen removal- Microbial ecology and biokinetics", Princeton University, Princeton, NJ, February 9th, 2012.
- **Chandran, K.** "Technologies and models for recovery of resources from waste", Illinois Institute of Technology, Chicago, IL, February, 1st, 2012
- **Chandran, K.** "Recovering Resources to Fuel Urban Sustainability", World Economic Forum, Davos, Switzerland, January 28th, 2012
- **Chandran, K.** "Sewage fed biorefineries- A foundation for urban sustainability", TEDx Columbia Engineering, New York, NY, November 29th, 2011.
- **Chandran, K.** "CLEAN AIR OR CLEAN WATER? Nitrous oxide generation during engineering biological nitrogen removal", Tufts University, Medford, MA, November 1st, 2011
- **Chandran, K.** "From greenhouse gas to green fuel - a novel technology to turn methane in biogas into methanol", Water Services Association of Australia Tech Transfer Conference, Sydney, Australia, October 24th, 2011
- **Chandran, K.** "Characterisation of Nitrous Oxide Emissions from Biological Nutrient Removal Processes", Water Services Association of Australia Tech Transfer Conference, Sydney, Australia, October 24th, 2011
- **Chandran, K.** "Full plant deammonification for energy positive nitrogen removal", Water Services Association of Australia Tech Transfer Conference, Sydney, Australia, October 24th, 2011

- **Chandran, K.** "Changing Paradigms: Process Technologies for Resource Recovery", **WERF Workshop WEFTEC 2011**, Los Angeles, CA, October 15th, 2011
- **Chandran, K.** "Inventories and Triggers of Biogenic Nitrous Oxide from Biological Wastewater Treatment Plants", **ASME 2011 Conference on Smart Materials, Adaptive Structures and Intelligent Systems,** Scottsdale, AZ, September 20th, 2011
- **Chandran, K. "**Nitrous oxide production by chemolithoautotrophic ammonia oxidizing bacteria and implcations for engineered nitrogen removal systems", **Rice University,** Houston, September 9th, 2011
- **Chandran, K.** Plenary Lecture, **International Conference on Nitrification 2 (ICoN2)**, Nijmegen, Netherlands, July, 2011.
- **Chandran, K.** "Changing paradigms for nutrient removal – Process technologies for resource recovery", **Virginia Water Environment Association EdCom Seminar**, May 12th, 2011, Richmond, VA.
- **Chandran, K.** "Nitrogen transformations in water and wastewater and climate change", **University of Hawaii,** May 4th, 2011
- **Chandran, K.** "Lectures on Environmental Biotechnology", **Universidade da La Courna,** La Coruna, Spain, April 4th- 8th, 2011
- **Chandran, K.** "Active Fraction of Denitrification on Different External Carbon Sources", **Hazen and Sawyer**, New York, NY, December 2nd, 2010
- **Chandran, K.** "Impact of External Carbon Sources on the Microbial Ecology and N_2O Production in Activated Sludge", **Podwal Lecture Symposium, City College of New York**, NY, November 23rd, 2010
- **Chandran, K.** "Mechanisms and inventories of nitrous oxide from biological nitrogen removal processes", **University of South Carolina**, November 12th, 2010.
- **Chandran, K.** "Wastewater treatment and climate change – Inventories and mechanisms of biogenic nitrous oxide", **Korea University** at Sejong, 30th Anniversary Conference, October 29th-30th, Seoul, Korea, 2010.
- **Chandran, K.** "Greenhouse gas emissions from American wastewater treatment plants", Symposium Broeikasgasemissies RWZI's, **Delft University of Technology**, September 27th, 2010
- **Chandran, K.** "Molecular microbial ecology of denitrifying bacteria assimilating C1-C3 compounds", Gordon Research Conference, Molecular Basis of Microbial One Carbon Metabolism, Bates College, Lewiston, ME, August 3rd, 2010.
- **Chandran, K.** and L. Sohl, "Impact of wastewater treatment processes on global climate change-Results of field-scale monitoring and global climate modeling", **6th International Conference on Sustainable Water Environment,** University of Delaware, DE, July 29th, 2010.
- **Chandran, K.** "Inventories and Triggers of Biogenic Nitrous Oxide in BNR Processes", **University of Delaware,** Wilmington, DE, April 23rd, 2010
- **Chandran, K.** "Azotomics - Interrogation of microbial structure and function of the global nitrogen cycle", **Water Research Conference Keynote Lecture,** Lisbon, Portugal, April 14th, 2010
- **Chandran, K.** "Molecular Mechanisms and Inventories of Nitrous Oxide from Biological Nitrogen Removal Processes", **Ohio State University,** Columbus, OH, March 30th, 2010.

- **Chandran, K.** "State of the art in N_2O modeling", **WWT Mod 2010**, Quebec City, Canada, March 28th, 2010
- **Chandran, K.** "Use of molecular approaches to estimate biokinetic parameters", **WWT Mod 2010**, Quebec City, Canada, March 28th, 2010
- **Chandran, K.** "Azotomics-An Exploration of the structural and Functional Interrogation of the Global N-Cycle", **University of Michigan,** Ann Arbor, MI, March 26th, 2010, MACEPID Symposium: Diseases, Microbes and Geography II: Ecological determinants of microbes over space and time
- **Chandran, K.** "Mechanisms and inventories of nitrous oxide from biological nitrogen removal processes", **University of Michigan,** Ann Arbor, MI, March 24th, 2010
- **Chandran, K.** "Molecular Mechanisms and Global Inventories of Nitrous Oxide emission from Activated Sludge", **Northwestern University,** Evanston, IL, March 19th, 2010
- **Chandran, K.** "Inventories and Triggers of Biogenic Nitrous Oxide from Biological Wastewater Treatment Processes", **University of Notre Dame,** South Bend, IN, March 18th, 2010
- **Chandran, K.** "Water for a Healthy World: The Challenges of Producing Clean Water", **United Nations Headquarters**, New York, NY, March 11th, 2010
- **Chandran, K.** "Wastewater Treatment and Climate Change - Inventories and Triggers of Biogenic Nitrous Oxide", **Yale University,** New Haven, CT, March 3rd, 2010
- **Chandran, K.** "Sampling of Wastewater Emissions from Wastewater", **Water Environment Federation A&WMA Odors and Pollutants Conference Workshop, "Protocols for Preparing Greenhouse Gas (GHG) Emission Inventories at Wastewater Treatment Plants"**, March 21st, 2010, Charlotte, NC
- **Chandran, K.** "Nitrous oxide emissions from wastewater treatment processes", **Hydroqual Inc.**, November 11th, 2009, Mahwah, NJ
- **Chandran, K.** "Measuring nitrogen greenhouse gas emissions from wastewater treatment operations", **Edmonton Waste Management Center of Excellence Training Course**, September 18th, 2009, Edmonton, Alberta, Canada.
- **Chandran, K.** "Taking stock of nitrogen greenhouse gases from wastewater treatment facilities", Oregon Association of Clean Water Agencies Annual Conference, Bend, Oregon, July 23rd, 2009
- **Chandran, K.** "Characterization of N-GHG emissions from wastewater treatment operations", Water Environment Research Foundation Stakeholder Meeting, Washington D.C., July 2nd, 2009
- **Chandran, K.** "Active fraction of methylotrophic denitrification", Water Environment Research Foundation Stakeholder Meeting, Washington D.C., July 2nd, 2009
- **Chandran, K.** "Wastewater treatment and Climate Change", Malcolm Pirnie, New York, April 24th, 2009
- **Chandran, K.** "Characterization of greenhouse nitrogen discharges from wastewater treatment plants", **Virginia Water Environment Association EdCom Seminar**, April 16th, 2009, Richmond, VA.
- **Chandran, K.** "Overview of climate change impacts associated with wastewater treatment strategies", **Chesapeake Bay Ecosystem Based Management Seminar,** March 25th, 2009, Baltimore, MD

- **Chandran, K.** "Characterization of nitrogen greenhouse gas emissions from wastewater treatment operations", **Greenhouse Gas Regulations and Quantification: Emerging Solid Waste and Wastewater Perspectives**, January 15th, 2009, Edmonton, Alberta, Canada.
- **Chandran, K.** "Wastewater treatment and Climate Change", **WERF Research Forum**, December 3, 2008, Clearwater Beach, FL.
- **Chandran, K.** "Molecular based evaluation of the active fraction and biokinetics of methylotrophic denitrification", **WERF Research Forum**, December 3, 2008, Clearwater Beach, FL.
- **Chandran, K.** "The influence of structural and functional microbial ecology on the performance of engineered BNR reactors", **Danish Technical University**, November 11, 2008, Lyngby, Denmark.
- **Chandran, K.** "Molecular based evaluation of the active fraction and biokinetics of methylotrophic denitrification", **WEFTEC Workshop W201:** WEF/WERF Nutrient Removal: What the U.S. EPA, WERF, and Others are Doing to Help Address this Challenge, October 19th, 2008, Chicago, IL
- **Chandran, K.** "Use of genomics to study nitrification processes" **Delft University of Technology, Advanced Course in Environmental Biotechnology, Delft, Netherlands,** June 19th, 2008
- **Chandran, K.** "Gaseous N emissions from wastewater treatment operations" **Illinois Institute of Technology, Chicago, IL,** April16th, 2008
- **Chandran, K.** "Characterization and optimization of microbial fuel cells for sustainable wastewater treatment" **RUTGERS, The State University of New Jersey, New Brunswick, NJ**, March 11th, 2008**Chandran, K.** "Insights into the novel microbial ecology and biokinetics of key nitrogen biotransformations", **Civil and Environmental Engineering, University of Connecticut, Storrs, CT**, January 25th, 2008
- **Chandran, K. "**Nano-Bio-Info Technologies for Process Monitoring and Control of Bioreactors" **Battelle Ventures, Princeton, NJ**, December 17th, 2007
- **Chandran, K.** "Active fraction and biokinetics of methylotrophic denitrification", **Water Environment Research Foundation External Carbon Sources Workshop, District of Columbia Water and Sewer Authority, Washington DC**, December 12th, 2007
- **Chandran, K.** "The leading edge of BNR, Old questions, new answers?" **CDM World Headquarters, Cambridge, MA**, May 23rd, 2007
- **Chandran, K.** "Contemporary topics related to genomics, physiology and ecology of nitrification" **Department of Biotechnology, Indian Institute of Technology, Madras, India**, May 17th, 2007
- **Chandran, K.** "Contemporary topics related to genomics, physiology and ecology of nitrification in engineered systems" **United States Environmental Protection Agency National Risk Management Research Laboratories**, Cincinnati, OH, March 28th, 2007
- **Chandran, K.** "State-of-the-art Approaches for Achieving Cost Effective Biological Nutrient Removal" **New York Academy of Sciences** Green Science and Environmental Systems Group sponsored symposium on "Global, Regional and Local Water Quality: Evaluating the Science and the Hype" (co-chaired by Prof. Patricia Culligan, CEEM, Columbia University)
- **Chandran, K.** "Microbiology of Biological Nutrient Removal" **Nutrient Removal 2007 Specialty Conference** jointly hosted by the Water Environment Federation (WEF) and International Water Association (IWA) in Baltimore, MD.
- **Chandran, K. "**Biological Waste Treatment Processes Applicable to Developing Communities" September 30, 2006. Engineers Without Borders Regional Conference, Columbia University.

- **Chandran, K.** "Biological wastewater treatment: New questions, same answers?" June 16, 2006. Metropolitan Water Reclamation District of Greater Chicago, Chicago, IL.
- **Chandran, K.** "Mechanisms and determination of nitrification inhibition- what, when and where to measure", March 9, **2006**. Water Environment Research Foundation, Washington, D.C.
- **Chandran, K. 2006** "Cd(II) mediated inhibition of *Nitrosomonas europaea* is linked to oxidative stress and is impacted by physiological state and growth mode", April 7, 2006. RUTGERS, The State University of New Jersey, New Brunswick, NJ.
- **Chandran, K. 2003** "Overview of Applied Research Studies on Biological Nitrogen Removal at New York City" Department of Civil and Environmental Engineering, *Worcester Polytechnic Institute, Worcester, MA*

INVENTIONS AND PATENTS

1. **Chandran, K.** Methods and systems for biologically producing methanol, (**2012**) WO Patent 2,012,078,845
2. Banta, S., **K. Chandran**, A. West Methods and systems for producing products using engineered ammonia oxidizing bacteria(**2011**), WO Patent WO/2011/130,407
3. **Chandran, K.,** R. Yu, Systems and methods for evaluating operating conditions in a bioreactor using gene expression and abundance tracking **(2010**), EP Patent 2,195,414
4. **Chandran, K.,** JH Ahn, R. Yu Systems and methods for achieving partial nitrification in a biological nitrogen removal reactor (**2009**), WO Patent WO/2009/046,415
5. Castaldi, M., **K. Chandran** Methods and systems for generating hydrogen from biomass (**2007**) WO Patent 2,007,140,441
6. Developed a Windows™ based parameter identification freeware, EXTPAR, for data acquisition, interpretation, parameter identifiability and optimal experimental design of aerobic biodegradation extant respirometric profiles **1999**, University of Connecticut.
    a. Software algorithms have been employed by research groups at the University of Connecticut, Danish Technical University, McMaster University, University of Cincinnati, Manhattan College and the City of Stamford, CT.

INVENTIONS AND PATENTS

1. **Chandran, K.,** JH Ahn, R. Yu Systems and methods for achieving partial nitrification in a biological nitrogen removal reactor (**2016**), WO Patent WO/2009/046,415
2. **Chandran, K.** Methods and Systems for Converting Volatile Fatty Acids To Lipids, (**2014**) US Patent App. 14/567,271
3. **Chandran, K.** Methods and systems for biologically producing methanol, (**2012**) WO Patent 2,012,078,845
4. Banta, S., **K. Chandran**, A. West Methods and systems for producing products using engineered ammonia oxidizing bacteria(**2011**), WO Patent WO/2011/130,407
5. **Chandran, K.,** R. Yu, Systems and methods for evaluating operating conditions in a bioreactor using gene expression and abundance tracking **(2010**), EP Patent 2,195,414
6. Castaldi, M., **K. Chandran** Methods and systems for generating hydrogen from biomass (**2007**) WO Patent 2,007,140,441
7. Developed a Windows™ based parameter identification freeware, EXTPAR, for data acquisition, interpretation, parameter identifiability and optimal experimental design of aerobic biodegradation extant respirometric profiles **1999**, University of Connecticut.
    a. Software algorithms have been employed by research groups at the University of Connecticut, Danish Technical University, McMaster University, University of Cincinnati, Manhattan College and the City of Stamford, CT.

PROPOSALS AWARDED

Total project funding received amounts to $12.27 Million, Kartik Chandran share amounts to $10.17 Million

- **GOALI: Omics- and metabolically-informed out-selection of Nitrospira spp. and Comammox bacteria from energy efficient engineered nitrogen removal processes.** Kartik Chandran (PI), National Science Foundation, July 1st, 2017 – June 30th, 2020
- **Global Meta-Omics Survey of Microbiomes in Fecal Sludge and Toilet-System Streams.** Kartik Chandran (PI), Bill and Melinda Gates Foundation, January 1st, 2018 – December 31st, 2018
- **Understanding the Impacts of Low-Energy and Low-Carbon Nitrogen Removal Technologies on Bio-P and Nutrient Recovery Processes.** Kartik Chandran (co-PI), Water Environment and Reuse Foundation, Hampton Roads Sanitation District, Denver Metropolitan Water District, October 1st, 2016 – September 30th, 2018
- **Nationwide meta-omics survey of anaerobic digestion and fermentation processes for resource recovery from biosolids and other organics.** Kartik Chandran (PI), Water Environment Research Foundation, NYSERDA, Hampton Roads Sanitation District, June 1st, 2016 – May 30th, 2018.
- **Development of a Framework for Evaluating the Application of Biological Processes and Technologies for Treating Produced Water from Oil and Gas Operation.** Kartik Chandran (PI), Environmental Defense Fund, **09/01/2015 – 08/31/2017**
- **Probing active fraction and metabolic function to elucidate mechanisms of pharmaceutical biotransformations during nitrification-denitrification.** Kartik Chandran (PI), National Science Foundation, **09/01/2014-08/31/2017**
- **Travel Grant Proposal to Support Participation of US Researchers at the International Water Association Workshop, Global Challenges: Sustainable Wastewater Treatment and Resource Recovery, October 26th – 30th 2014 | Kathmandu, Nepal.** Kartik Chandran (PI), National Science Foundation, **05/31/2014-12/31/2014**
- **Advanced Microbial Diagnostics for Energy and Resource Efficient Wastewater Treatment.** Kartik Chandran (PI), NYSERDA through the PowerBridge NY program, **06/01/2014-05/31/2014**
- **A Multi-Platform Approach to Recovering High Value Carbon Products from Wastestreams.** Kartik Chandran (co-PI), Water Environment Research Foundation (subcontract through Greeley and Hansen), **08/01/2014 – 07/31/2016**
- **Centers for Water Research on National Priorities Related to a Systems View of Nutrient Management.** Kartik Chandran (co-PI), Environmental Protection Agency (subcontract through WERF), **01/01/2014-12/31/2016**
- **Coastal SEES (Track 2), Collaborative: Developing high performance green infrastructure systems to sustain coastal cities.** Kartik Chandran (Collaborator), National Science Foundation, **09/15/2013-08/31/2018**
- **Assessment of Nitrification Inhibition in Ammonia Oxidizing Bacteria.** Kartik Chandran (PI), Water Environment Research Foundation, subcontract through HDR Inc. **07/01/2013-10/31/2015**
- **Nitrogen Transformations in Aquaponic System.** Kartik Chandran (Co-PI), USDA, **09/01/2013-08/31/2017**
- **Fecal sludge to biodiesel – production of chemicals, pathogen reduction and feedstock variability.** Kartik Chandran (PI), The Bill and Melinda Gates Foundation, **07/01/2013-08/31/2014.**
- **Identification of the 'active' fraction and metabolic pathways in trace organic contaminants removal using stable-isotope probing.** Kartik Chandran (PI), Daqian Jiang (co-PI), Water Environment Research Foundation, **10/01/2013-01/01/2015.**
- **Nationwide Meta-omics Survey of Denitrifying Microbial Communities in Wastewater Treatment Systems.** Kartik Chandran (PI), Huijie Lu (co-PI), Water Environment Research Foundation, **06/01/2013-08/01/2014.**

- **Stabilization of mainstream nitritation-nitritation performance.** Kartik Chandran (co-PI), Dimitri Katehis (PI), Water Environment Research Foundation and the Hampton Roads Sanitation District, **03/01/2013-06/30/2014**
- **Towards a 'Brown' Revolution.** Kartik Chandran (PI), Sloan Foundation, **05/01/2012 – 08/31/2013**
- **I-Corps: Development of the Next Generation Wastewater Treatment Technologies and Infrastructure.** Kartik Chandran (PI), National Science Foundation, **10/31/2012-03/31/2013**
- **Biological conversion of methane to methanol using monooxygenic pathways in autotrophic ammonia oxidizing bacteria.** Kartik Chandran (PI), National Science Foundation, **09/01/2012-08/31/2014**
- **Repression of nitrite oxidizing bacteria in mainstream deammonification reactors.** Kartik Chandran (PI), DC Water, **11/01/2012-09/30/2013**
- **Improving the efficacy of anaerobic digestion using electrokinetic disintegration of biosolids.** Kartik Chandran (PI), New York State Energy Research and Development Authority and matching support, **01/01/2012-12/31/2013**
- **Fecal sludge fed biodiesel plants: The next generation urban sanitation facility.** Kartik Chandran (PI), with Ashley Murray (PI, Waste Enterprisers), Bill and Melinda Gates Foundation, **07/01/2011-12/31/2013**
- **NSF GOALI: Strategies for design, startup and control of field-scale anammox reactors.** Kartik Chandran (PI), **04/01/2011-/03/31/2014**
- **Full-plant deammonification for energy-positive nitrogen removal.** Kartik Chandran (sub-contractor), Maureen O'Shaugnessy (PI), Environmental Protection Agency, Water Environment Research Foundation, DC Water, Hampton Roads Sanitation District, **03/01/2011-03/31/2014**
- **Global Mapping of N2O Emission from Aquaculture and Its Implications to Climate Change: Fate of N2O in Water Recirculating Aquaponic Systems.** Kartik Chandran (Co-PI), Korea National Research Foundation, **09/01/2011-08/31/2014**
- **Developing a standardized protocol for assessing the biodegradability of trace organic contaminants in water and wastewater matrices.** Kartik Chandran (co-PI), Wendell Khunjar (PI), Water Environment Research Foundation, **03/01/2011-02/28/2013**
- **Quantifying fugitive greenhouse gas emissions from biofilm systems.** Kartik Chandran (co-PI), Robert Nerenberg (PI), Water Environment Research Foundation, **03/01/2011-02/29/2012**
- **WERF Paul Busch Award, Biofuel Production using Monooxygenic Pathways in Autotrophic Bacteria.** Kartik Chandran (PI), Water Environment Research Foundation, and Matching Support, HRSD **10/5/2010-10/4/2013**
- **NSF MRI RAPID Acquisition of a Proteomics Analyzer to Elucidate Pathways of Petroleum Hydrocarbon Bioremediation in the Gulf of Mexico.** Kartik Chandran (PI), National Science Foundation, **09/15/2010-08/31/2011**
- **People, Prosperity and Planet.** Kartik Chandran (PI), United States Environmental Protection Agency, **08/15/2010-08/14/2011**
- **ARPA-E Biofuels from CO_2 Using Ammonia-Oxidizing Bacteria in a Reverse Microbial Fuel Cell.** Kartik Chandran (co-PI)**,** Scott Banta (PI), Alan West (co-PI), United States Department of Energy **2010-2012**

- **Mitigation of N-GHG emissions from Activated Sludge.** Kartik Chandran (PI), Water Environment Research Foundation, **07/01/2010-06/30/2011**
- **Role of carbonaceous substrates on the kinetics and yields of nitrifying and denitrifying bacteria and resulting generation of nitrous oxide.** Kartik Chandran (PI), District of Columbia Water and Sewer Authority, **07/01/2010-06/30/2010**
- **NSF EAGER Feasibility Study of Micro-Level Sensing and Process Level Control of Nitrification.** Daniel Attinger (PI), Kartik Chandran (co-PI), National Science Foundation, **03/15/2010-02/28/2011**
- **Optimization of external COD Augmented Denitrification at Stamford WPCA.** Kartik Chandran (PI), Jeanette Brown (co-PI), Connecticut Department of Environmental Protection, **01/01/2010-12/31/2011**
- **Graduate Research Supplement to NSF CAREER: Molecular mechanisms and metabolic modeling of N_2O and NO emission fluxes from biological nitrogen removal reactors.** Kartik Chandran (PI), National Science Foundation, **01/01/2010-12/31/2010**
- **NSF CAREER: Molecular mechanisms and metabolic modeling of N_2O and NO emission fluxes from biological nitrogen removal reactors.** Kartik Chandran (PI), National Science Foundation, **01/01/2009-12/31/2013**
- **Microbial and chemical sequestration of carbon dioxide.** Kartik Chandran (co-PI), U.S. Department of Energy, **01/01/2010-12/31/2012**
- **Mitigation of nitrogen greenhouse gas (N-GHG) emission from wastewater treatment plants.** Kartik Chandran (PI), National Fish and Wildlife Foundation, **01/01/2009-12/31/2010**
- **Supplementary Funding from USEPA for "Molecular level through whole reactor level characterization of greenhouse nitrogen emission from wastewater treatment operations."** Kartik Chandran (sub-contractor), *United States Environmental Protection Agency,* **01/01/2009-12/31/2009**
- **"Molecular level through whole reactor level characterization of greenhouse nitrogen emission from wastewater treatment operations."** Kartik Chandran (PI), Equipment Grant and Project Continuation, *Water Environment Research Foundation*, TCR support, **01/01/2009-03/31/2010**
- **Molecular level through whole reactor level characterization of greenhouse nitrogen emission from wastewater treatment operations.** Kartik Chandran (PI), Water Environment Research Foundation and matching support, **04/01/2008-09/30/2009**
- **Molecular Characterization of ANAMMOX Bioreactors.** Kartik Chandran (PI), New York City Department of Environmental Protection, **05/15/2008-05/14/2010**
- **Environmentally Sustainable Wastewater Treatment: Measurement of Gaseous and Nitrogenous-Greenhouse (N-GHG) Emissions from Nitrifying and Denitrifying Activated Sludge** Kartik Chandran (PI), Washington DC Water and Sewer Authority, **09/01/2008-08/31/2009**
- **A metallomics based approach to bacterial physiology and toxicity.** Synchrotron beamtime **(March, 2008)**, Department of Energy (DOE), Advanced Photon Source, Argonne National Laboratory, Argonne, IL. Kartik Chandran (PI).
- **Molecular through whole reactor characterization of gaseous nitrogen emission from autotrophic ammonia oxidation pathways.** Kartik Chandran and Mark van Loosdrecht (co-PIs), Delft University of Technology, **06/01/2008-12/31/2008**

- **Molecular based evaluation of the active fraction and biokinetics of methylotrophic denitrification**. Kartik Chandran (PI), Charles Bott (co-PI), Water Environment Research Foundation and TCR support, **09/01/2007-08/31/2009**

- **Cost-effective strategies to reduce nitrogen discharges into the Long Island Sound: Optimization of partial nitrification and external COD based denitrification at Stamford WPCA.** Kartik Chandran (PI), National Fish and Wildlife Foundation and matching support, **09/01/2007 – 08/31/2009**

- **Molecular and nano-scale studies into the impact of monochloramine exposure on biofilm formation, chemical stress resistance and cell-surface characteristics of a model nitrifying bacterium** USEPA Summer Faculty Research Fellowship Award, Kartik Chandran (PI);award period: **Summer 2007**. Funding agency: United States Environmental Protection Agency, Cincinnati, OH.

- **The global nitrogen genome project – A key to the evolution and functioning of the modern biosphere**. Co-Principal Investigator Columbia University Initiatives in Science and Engineering. **09/01/2006 – 08/31/2008**.

- **Preliminary investigations into the microbial diversity of denitrifying bacteria in activated sludge**, Kartik Chandran (PI); Funding agency: Washington D.C. Water and Sewer Authority.

- **A metallomics based approach to bacterial physiology and toxicity.** Synchrotron beamtime **(August, 2007)**, Department of Energy (DOE) Advanced Photon Source, Argonne National Laboratory, Argonne, IL. Kartik Chandran (PI).

- **Inhibition of Biological Nitrogen Removal (BNR) At POTWs - A Critical Investigation of Microbiology, Physical Chemistry and Process Engineering at a New York BNR Facility.** Co-Principal Investigator with B. F. Smets (University of Connecticut) and R. R. Sharp (Manhattan College). Long Island Sound Research Fund, Environmental Protection Agency Region I. $69,945, **03/15/2000 - 03/14/2001.**

- **Development of Predictive Tools to Infer Inhibition of Biological Nitrogen Removal at POTWs via Long Term Bench Scale and Full Scale Monitoring.** Co-Principal Investigator with B. F. Smets (University of Connecticut). Connecticut Institute of Water Resources and United States Geological Survey. **March 1, 2001 - February 28, 2002.**

REVIEWER ACTIVITIES

- **Journals :** Environmental Science and Technology, Environmental Microbiology, ISME Journal, Applied and Environmental Microbiology, Chemical Engineering Journal, Scientific Reports, Bioresource Technology, PLoS One, Letters in Applied Microbiology, Journal of Environmental Quality, Biodegradation, Chemosphere, Journal of Applied Microbiology, Journal of Environmental Engineering (American Society of Civil Engineers), Applied Microbiology and Biotechnology Biotechnology and Bioengineering, Water Research, Water Environment Research, Environmental Engineering Science, Journal of Hazardous Materials, Soil & Sediment Contamination: an International Journal

- **Proposals and reports:** National Science Foundation (IOB, MCB, CBET)**,** United States Environmental Protection Agency, United States Department of Agriculture, Smithsonian Institution, Bill and Melinda Gates Foundation, the World Bank, Water Environment Research Foundation, National Water Resources Institute and several State WRIs

TEACHING

University Courses

Sole Instructor

- Environmental Microbiology: Spring 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2015, 2016, 2017, 2018. Columbia University
- Environmental Biochemical Processes Fall 2006, 2007, 2008, 2009, Summer 2008, Fall 2011, 2012, 2013, 2014, 2015, 2016, 2017. Columbia University
- Environmental Engineering Laboratory Spring and Fall 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014. Columbia University
- Introduction to Environmental Engineering Fall 2010, 2011, 2012, 2013, 2014, 2015, 2016. Columbia University
- Environmental Engineering Design Spring 2004. Smith College
- Water Quality Engineering: Spring 2001. University of Connecticut

Guest Lecturer

- Advanced Course in Environmental Biotechnology, (2008, 2014) Delft University of Technology.
- Environmental Biotechnology, 2014, UAM, Mexico City, Mexico
- A Better Planet by Design: Spring 2006, 2009, 2012. Columbia University
- Industrial Ecology: Fall 2005. Columbia University.
- Environmental Engineering Microbiology: Fall 2004. Virginia Polytechnic Institute and State University.
- Environmental Biochemical Processes: Spring 2000 - 2001. University of Connecticut.

Teaching Assistant

- Environmental Processes Laboratory: (Graduate and senior level undergraduate course). 1997-1999. University of Connecticut.

Workshops and short courses

- Environmental Biotechnology, PhD Course, **2012** *Universidade de A Coruna,* Spain
- Environmental Biotechnology, Masters Course, **2011** *Universidade de A Coruna,* Spain
- "Bridging the gap between environmental engineering practice and research" **2008** Organized a regional New England workshop to foster a dialogue between environmental engineering practitioners, regulator, academics and students at Columbia University. Held under the auspices of the first ever Columbia University NYWEA Student Chapter.
- "Kinetics based design and monitoring of BNR reactors". **2003**. Conducted workshops to introduce graduate and undergraduate students at Rennselaer Polytechnic Institute to reaction specific kinetic tools for designing and monitoring full-scale BNR reactors.
- "Measuring Extant Nitrification Kinetics of Activated Sludge". **August 29, 2000, January 16, 2001**. Conducted workshops to introduce the personnel at the Stamford Water Pollution Control Authority to a rapid biokinetic monitoring tool, developed at the University of Connecticut.
- Da Vinci Project. An intensive 5-day residential short-course introducing engineering concepts to Connecticut math and science teachers. **August 6-11, 2000**. Demonstration of experiments describing particle removal for drinking water purification.

Other teaching experience

- "Process design of a novel technology for biologically treating anaerobic digestion centrate". Metcalf and Eddy Environmental Engineering Senior Design Project. **Fall 2003, Spring 2004**. Technical

liaison and instructor for Environmental Engineering students at the University of Connecticut, Rennselaer Polytechnic Institute and Smith College.

RESEARCH SUPERVISED

Post-doctoral

1. Dr. Sungpyo Kim (November, 2006 – March 2009), currently Professor, Korea University, Seoul
2. Dr. Ran Yu (February, 2007 - March 2010), currently Associate Professor, Southeast University, China
3. Dr. Brian Rahm (April 2009 – December 2009)
4. Dr. Wendell Khunjar (August 2010 – January 2012), currently Director of Applied Research, Hazen and Sawyer
5. Dr. Hongkeun Park (February 2011 – to date), currently Project Manager, BKT Technologies, CA
6. Dr. Daqian Jiang (July 2011 – May 2013)
7. Dr. Young Mo Kim (November 2011 – March 2013), currently Associate Professor, GIST, Korea
8. Dr. Huijie Lu (January 2012 – January 2013), Currently, Professor, Zheijiang University (2016-) and previously, Assistant Professor, University of Vermont, Burlington, VT (2014-2016),
9. Dr. Sandeep Sathyamoorthy (October 2013-to July 2015), Currently Manager of Innovation, Black and Veatch Corporation
10. Dr. Haydee de Clippeleir (November 2012 – February 2015), Currently Research Manager, DC Water
11. Dr. Luis Arellano (June 2015 – August 2017), Currently Research Scientist, Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco | CIATEJ · Environmental Technology
12. Dr. Joon Ho Ahn (February 2015 – to date)
13. Dr. Halil Kurt (June 2017 – to date)
14. Dr. Keunje Yoo (October 2017 – to date)

Doctor of Philosophy (Environmental Engineering)

1. Baideme, M., Columbia University (2019, expected), *Major Advisor*
2. Hoar, C. Columbia University (2018, expected), *Major Advisor*
3. Hu, R. Columbia University (2018, expected), *Major Advisor*
4. Pavlakis, E. Columbia University (2018, expected), *Major Advisor*
5. Li, Z. Columbia University (2018), *Major Advisor*
6. Annajhavala, M. Columbia University (2017), *Major Advisor*
7. Su, Y-C., Columbia University (2017), *Major Advisor*
8. Vajpeyi, S. Columbia University (2017), *Major Advisor*
9. Park, M-R. (Columbia University (2017), *Major Advisor*
10. Coehlo-Brotto, A., Columbia University (2016), *Major Advisor*
11. Lu, H., Columbia University (2011 with Honors), *Major Advisor;* Currently, Professor, Zheijiang University (2016-), previously, Assistant Professor, University of Vermont, Burlington, (2014-2016)
12. Park, H., Columbia University (2010), *Major Advisor*, currently Project Manager, BKT Technologies, CA
13. Ahn, J. H., Columbia University (2010), *Major Advisor,* currently post-doc, Columbia University

Master of Science (Environmental Engineering)

1. Chowdhury, N. Columbia University (2018), *Major Advisor*
2. Jiang, M. Columbia University (2018), *Major Advisor*
3. Yuan, G. Columbia University (2018), *Major Advisor*
4. Lou, G. Columbia University (2018), *Major Advisor*
5. Plante, L. T. Columbia University (2016), *Major Advisor*
6. Xu, Y. Columbia University (2016), *Major Advisor*
7. Hoar, C. Columbia University (2015), *Major Advisor*
8. Li, Z. Columbia University (2014), *Major Advisor*
9. Annajhavala, M. Columbia University (2014), *Major Advisor*
10. Ma, Y. Columbia University, (2013), *Major Advisor*

11. Ravindhar, J. Columbia University, (2011), *Major Advisor*
12. Arsova, L. Columbia University, (2010), *Co-Advisor*
13. Gordon, A. B. Columbia University, (2011), *Major Advisor*
14. Ahn, J. H. Columbia University, 2007, *Major Advisor.*
15. Ranade, S. S. Columbia University, 2008, *Major Advisor*
16. Feighery, J. Columbia University, 2008, *Major Advisor*
17. Zaklikowski , Anna Virginia Polytechnic Institute and State University, 2006. *Committee member*

PROFESSIONAL SERVICE

Service to Columbia University

- Faculty Advisor, Engineers without Borders Ghana Program
- Faculty Mentor, Egleston Scholars Program, Columbia University School of Engineering and Applied Science
- Co-organizer of the Inaugural "New York City Water Summit" at Columbia University, **2010, 2011, 2012, 2015**
- Organizer and Faculty Advisor of the first ever New York State Water Environment Association Student Chapter at Columbia University, (**since 2008)**.
- Organizer of a workshop titled "Bridging the Gap between Environmental Engineering Research and Practice", Columbia University, April 28th, 2008
- External PhD dissertation examiner, Departments of Chemical Engineering and Civil Engineering and Engineering Mechanics
- Speaker, Columbia Undergraduate Science Program (CUSP)
- Host to High-school teacher 2006-2009, 2012-2014 as part of Columbia University's STEM Summer Research Program for Science Teachers - participant teacher profiled in *Science* (*http://www.cumc.columbia.edu/psjournal/features/stimulus-funding-connects-high-school-students-cumc*)
- Host to High-school students for summer research 2006-2014. Select student awards include
  - Semifinalists in Intel STS competition (2)
  - Winner regional Stockholm Junior Water Prize competitions (1+)
  - Regional Science Talent Fairs (2+)
- Participant in Annual Summer Research Program with Teachers College (2012-2014)
  - Participation through annual lectures and laboratory modules
- Joint programs with Graduate School of Architecture and Planning (by invitation from former Dean Mark Wigley)
  i. Studio X (since 2014, joint studio scheduled for Fall 2014)
  ii. Mortality Lab (since 2012)

Service to the School of Engineering and Applied Science

- Faculty Mentor, Rio Innovation Hub on the Urban Water Cycle (2016)
- Faculty Mentor, Egleston Scholars Program, Columbia University School of Engineering and Applied Science (2010 -)
- Delegate, World Economic Forum, Davos, 2012 (member of a group of four including Dean Linda Fried, former Dean Mark Wigley and Dean Carol Becker, invited to present at the IDEAS LAB at WEF)- representing SEAS
- Speaker, SEAS Family Day, 2010 (by invitation from former Dean, late Prof. Morton Friedman
- Speaker, Masterclass, 2012, Bergen County Academies, NJ
- Speaker, Masterclass, 2014, Columbia University
- Departmental Representative Laboratory Tour for admitted Freshmen and Egleston Scholars, 2010
- Departmental Representative Laboratory Tour for admitted Freshmen, 2014

Service to the Department

- Past Chair, Laboratory Committee
- Past member, Junior Faculty Search Committee
- Past member, Graduate Admissions Committee

External Service

- **Advisory Board**, Environmental Science: Water Research and Technology **2017 – to date**
- **Chair,** International Water Association, Water Environment Federation Nutrient Removal , Recovery and Management Conference (**2016**)
- **Co-Editor,** Chemical Engineering Journal (**2016 - 2017**)
- **Chair:** Academic Committee, Water Environment Federation, **2016 – to date**
- **Scientific Committee and Executive Steering Committee - Grand Challenges Conference, IWA Nepal, 2014**
- **Executive Steering Committee** Inaugural Activated Sludge Forum **(2013**)
- **Panel of Experts** designated to chart out directions for the Utility of the Future WEF, NACWA (**2012-2013)**
- **Board of Trustees, Water Environment Federation (2010-2013)**
- **Program Committee:** International Water Association Leading Edge Technology Conference, Phoenix, AZ (**2010),** Amsterdam, (**2011**), Queensland (**2012**)
- **Chair:** Research Subcommittee of the Program Committee, Water Environment Federation, **2012 – 2014**
- **Vice-Chair:** Research Subcommittee of the Program Committee, Water Environment Federation, **2009 – 2012**
- **Associate Editor,** Frontiers in Environmental Engineering and Biotechnology (Nature Publishing Group)
- **Editorial Board,** Journal of Water and Climate Change (IWA Publishing)
- **Editor,** Journal of Environmental Science and Engineering (Elsevier)
- **Steering Committee,** International Water Association, Water Environment Federation Nutrient Removal , Recovery and Management Conference, Miami, FL **(2011)**, Vancouver, BC (**2013**)
- **Wastewater Technical Advisory Committee,** ICLEI Local Governments for Sustainability **(2010 – 2012)**
- **Member (2009-2010), Chair (2010-2011),** Internet Resources Committee, Association of Environmental Engineering Science Professors (AEESP)
- **Co-Organizer,** WEF-AEESP Special Sessions on (1) Emerging Contaminants and (2) Water Sustainability at WEFTEC 2010, WEFTEC 2011 and WEFTEC 2012
- **Chair,** Microbial Diversity and Community Dynamics Session, The Water Research Conference, Lisbon, Portugal, April, 2010
- **Co-Chair:** Molecular studies session, 2nd IWA Specialized Conference on Nutrient Removal, 2009, Krakow, Poland
- **Scientific Committee**, 1st IWA-WEF Wastewater Treatment Modeling Seminar, Mont-Saint-Anne, Quebec, Canada, June 1-3, 2008
- **Panel of Experts on Nutrient Removal** invited to define future research directions by Water Environment Research Foundation, March 7-8, 2007, Baltimore, MD
- **Contributor to the Manual of Practice (MOP)** on Disposal, Treatment and Management of Industrial Wastes.
- **External PhD committee** of Doctoral Candidate, S. Govindaradjane, Department of Civil Engineering, Pondicherry Engineering College. Dissertation title: "Studies on the performance

and kinetics of UASB and HUASB reactors for treating tapioca-based starch industrial waste stream".

- **Nominated member of the Academic Committee (2012 – to date):** Water Environment Federation
- **Nominated member of the Research Committee (2006 – to date):** Water Environment Federation
- **Nominated member of the Technical Practice Committee (2003 – 2008):** Water Environment Federation
- **Chair:** Leading Edge Research Symposium Sessions, WEFTEC, (**2001, 2006, 2007, 2008, 2009, 2010, 2011, 2012**).
- **Session Chair:** 35th Mid-Atlantic Industrial and Hazardous Waste Conference. (**2003**) Brooklyn Polytechnic University, Brooklyn, NY.
- **Speakers Panel:** NEWEA Technical Specialty Seminar on Biological Nutrient Removal in New England. (**2000**) University of Connecticut, Storrs, CT.
- **Session Chair:** 31st Mid-Atlantic Industrial and Hazardous Waste Conference. (**1999**) University of Connecticut, Storrs, CT.

PROFESSIONAL AFFILIATION

- International Water Association
- Water Environment Federation
- New York Water Environment Association
- Association of Environmental Engineering Science Professors
- American Association for the Advancement of Science

SELECTED PUBLICITY OF DR. CHANDRAN'S WORK

- **Special Coverage of MacArthur Foundation Fellowship**
  - https://www.macfound.org/fellows/930/
  - http://engineering.columbia.edu/professor-kartik-chandran-wins-macarthur-%E2%80%9Cgenius%E2%80%9D-grant
  - http://www.wnyc.org/story/what-its-win-macarthur-genius-award/
  - http://www.wsj.com/articles/macarthur-genius-grant-winners-include-modern-day-alchemist-1443499262
  - http://news.wef.org/wef-leader-kartik-chandran-named-macarthur-fellow/
  - https://www.washingtonpost.com/news/speaking-of-science/wp/2015/10/03/ask-a-macarthur-genius-can-feces-fuel-cars/
  - https://www.scientificamerican.com/podcast/episode/macarthur-genius-grant-winner-makes-waste-a-resource/

- Feature by the National Science Foundation on Resource Recovery from Wastewater
  - https://www.nsf.gov/news/mmg/mmg_disp.jsp?med_id=81812

- Special Feature in *Science* on anammox research
  http://211.144.68.84:9998/91keshi/Public/File/41/337-6095/pdf/675.full.pdf
- **TEDx talk on Urban Sustainability**
  http://www.youtube.com/watch?v=-E-9VaEgFIE
- **Paul L. Busch Award Ceremony videos**
  http://www.youtube.com/watch?v=sBqW4qo5Yxw&feature=related

http://www.youtube.com/watch?v=D5bTwUBwUKQ&feature=related

- **Video of the first N_2O measurement protocol reviewed by the USEPA, which was developed by Dr. Chandran, (April, 2010)** http://www.werf.org/AM/Template.cfm?Section=Nutrients&Template=/CM/HTMLDisplay.cfm&ContentID=13937
- **MIT Technology Review** interview on the application of novel technologies related to harnessing energy from solid wastes (February 2007) (Link)
- **Interview in New York Times on biodegradable credit cards**, http://greeninc.blogs.nytimes.com/2009/02/23/making-credit-cards-landfill-friendly/
- **Distinguished Alumni,** University of Connecticut, School of Engineering, 2008
- **Wastewater treatment and climate change project** profiled in Water Environment Research Foundation Progress, 2008
- **Methylotrophic denitrification project** profiled in Water Environment Research Foundation Progress, 2009
- **Columbia University web profile 2009** http://engineering.columbia.edu/announcements/2009/nitrous7_14/index.html
- **Discovery News and MSNBC "Fungi digest plastic trash" 2010**
  - http://news.discovery.com/earth/fungi-plastic-chemicals-bpa.html
  - http://www.msnbc.msn.com/id/38637577

- **Articles about our N_2O research**
  - http://www.engineering.columbia.edu/wastewater-plant
  - http://cleantechnica.com/2010/05/27/greenhouse-gas-emissions-from-wastewater-treatment-plants-get-closer-scrutiny/
  - http://www.physorg.com/news195233972.html
  - http://www.waterworld.com/index/display/article-display/0133790814/articles/waterworld/wastewater/treatment/2010/05/Water-treatment-plant-survey-shows-high-emissions-of-nitrous-oxide.html
  - http://www.wwdmag.com/plants%E2%80%99-nitrous-oxide-emissions-may-be-higher-first-thought

- **Select Articles on our Resource Recovery Research in Africa**
  - https://www.thestar.com/news/world/2013/09/15/poop_power_ghana_turning_human_waste_into_energy.html
  - http://engineering.columbia.edu/fecal-sludge-fed-biodiesel-pilot-plant-opens-ghana
  - http://www.rwlwater.com/african-pilot-facility-converts-human-waste-into-biodiesel/
  - http://inhabitat.com/poo-power-bill-melinda-gates-foundation-funds-first-fecal-sludge-to-bio-diesel-plant-in-ghana/fecal-sludge-disposal-by-linda-sandec-1/
  - http://www.fastcompany.com/1758911/bill-gates-funds-human-waste-biofuel-project-ghana
  - http://www.biodieselmagazine.com/articles/7873/wastewater-treatment-professor-to-develop-biodiesel-process
    http://www.theguardian.com/sustainable-business/blog/making-energy-from-human-waste