

# Curriculum Vitae

Joel Ducoste

## I. Brief Resume

### 1. Include Education:

Ph.D., Environmental Engineering, 1996, University of Illinois, Urbana-Champaign, IL  
M.Eng., Mechanical Engineering, 1989, Rensselaer Polytechnic Institute, Troy, NY  
B.S., Mechanical Engineering, 1988, Rensselaer Polytechnic Institute, Troy, NY

### 2. Professional Experience:

Associate Dean of Faculty Advancement, COE, 7/22-**Present**  
Interim Associate Dean of Faculty Advancement, COE, 7/20-6/22  
Assistant Dean of Graduate Student Advancement, COE, 1/18-7/20  
Professor of Civil Engineering, North Carolina State University, 8/10 – **Present**  
Associate Professor of Civil Engineering, North Carolina State University, 8/04 – 8/10  
Assistant Professor of Civil Engineering, North Carolina State University, 8/98 – 8/04  
Water Treatment Process Engineer, CH2M HILL, 1996-1998  
Graduate Research Assistant, University of Illinois, 1991-1996  
Manufacturing Engineer, GE Aircraft Engines, 1989-1991

### 3. Scholarly and creative activities:

<i>Type</i>	<i>Number</i>
Refereed Journal Article (Published)	90
Refereed Journal Article (Submitted/under review)	4
Refereed Journal Editorial (Published)	4
Edited Special Issue Refereed Journal (Published)	1
Technical Report, Refereed	8
Conference Proceedings/Abstracts Refereed	90
Conference Proceeding Edited Book, Refereed	1
Non-Refereed Journal Article (Published)	3
Research Presentation, Invited (without paper)	77
Conference Presentations (without paper)	52

### 4. Professional Society Memberships:

- 1) Member, American Academy of Environmental Engineers and Scientists (2016-Present)
- 2) Member, Water Environment Federation (2011-Present)
- 3) Member, International Ultraviolet Association (2006-2018)
- 4) Member, American Water Works Association (1992-Present)
- 5) Member, Association of Environmental Engineering and Science Professor (1999-Present)

- 6) Member, National Society of Professional Engineers (1991-2002)
- 7) Member, American Society of Engineering Education (2003-2005)

**5. Scholarly and Professional Honors:**

<i>Elected Fellow Association of Environmental Engineering and Science Professor</i>	2023
<i>ACC Academic Leadership Network Fellow</i>	2023
<i>Fair Distinguished Engineering Educator Medal WEF</i>	2021
<i>AEESP Distinguished Service Award (President and BOD)</i>	2021
<i>Elected Fellow of Water Environment Federation</i>	2020
<i>Finalist for University Undergraduate Academic Advising award DASA</i>	2020
<i>WEFTEC Interactive Knowledge Exchange Video award</i>	2019
<i>(<a href="https://www.youtube.com/playlist?list=PLLeo-tHuuDoa54IfYSQxxlejLAhCVQHho">https://www.youtube.com/playlist?list=PLLeo-tHuuDoa54IfYSQxxlejLAhCVQHho</a>)</i>	
<i>Academy of Excellence in Global Engagement Member</i>	2019
<i>Keynote Speaker 34<sup>th</sup> Annual NC ONSITE Water Protection Conference</i>	2018
<i>COE Blessis Undergraduate Advising Award</i>	2018
<i>American Academy of Environmental Engineering and Science Excellence in Environmental Engineering and Science University Research Honor Award</i>	2017
<i>Board certified environmental engineer through eminence</i>	2016
<i>Keynote Speaker British Water FOG Forum, Cranfield UK</i>	2015
<i>NSF Advance Scholar Leadership Program</i>	2012
<i>National Academy of Engineering KECKs Future Initiative Symposium Participant</i>	
<i>(100 engineers selected to join)</i>	2011
<i>NSF Advance Scholar</i>	2009
<i>National Academy of Engineering Frontier of Engineering Japan Symposium Participant</i>	
<i>(30 engineers selected from the USA to join 30 from Japan)</i>	2008
<i>Fulbright Fellow</i>	2006
<i>(Council for International Exchange of Scholars award)</i>	
<i>FWO Visiting Faculty Scholar at Ghent University, Belgium</i>	2006
<i>(Visiting research award provided by the National Science Foundation, Belgium)</i>	
<i>NSF Career Award</i>	2001
<i>Ralph Metcalfe Chair for Minority Scholars at Marquette University</i>	
<i>(Visiting lecturer award)</i>	2000
<i>(The primary purpose of the Metcalfe Chair is to bring to Marquette University outstanding African-American and other minority scholars and professionals to interact with and enrich the academic life of Marquette University's students and faculty)</i>	

Professional Licenses: Engineer-in-Training: Ohio, 1991

**6. Professional service on campus:**

**North Carolina State University and College of Engineering Committees:**

- 1) NCSU Faculty Senate Diversity Equity Inclusion and Belonging committee (2023)
- 2) Dean College of Engineering Nominating Committee (2022-2023)
- 3) NC-AGEP Fellow program (2021-2023)
- 4) University Budget Advisory Committee (2020-2023)
- 5) University Strategic Plan Taskforce: Advancing Inclusion and Well-Being to Enhance Excellence (2019-2020)
- 6) University Graduate Diversity Equity and Inclusion Committee (Chair) (2019-Present)

- 7) College of Engineering RPT Committee (Chair 2018-2020) (2017-2020)
- 8) University Reappointment, Promotion, and Tenure (RPT) Committee (2016-2018)
- 9) University Mentor Ring Program (2015-2017)
- 10) College of Engineering Leadership Review Committee (2015-2016)
- 11) University Lifelong Faculty Involvement Committee (2015-2018)
- 12) University Diversity Advisory Committee (UDAC) (2014-2016)
- 13) University Faculty Liaison (OIED) (2014-2016)
- 14) College of Engineering Faculty Development & Special Initiatives Faculty Development Committee (2008-2016)
- 15) NSF Advance Scholar (Part of Developing Diverse Departments (3-D) program at NC STATE <http://www.ncsu.edu/odi/advance/>) (2009-2012)

In addition to the above activities, I am involved in college and university activities that focus on broadening participation and inclusion of underrepresented groups in STEM, graduate programs, and faculty positions. These activities include the following:

- Building Future Faculty Program: Provided lectures to visiting scholars in the program
- Participated in Graduate School mentoring of new faculty and post-doctoral scholars related selecting and advising graduate students
- Provided a lecture to the new AGEP-NC Faculty Fellows about the culture of inclusion and strategies on broadening participation of underrepresented students in STEM
- Organized LSAMP BD Visitation Program and am director of BD program
- Part of a university committee (currently chair) through the graduate school that is exploring collective strategies on broadening participation through recruitment and retention programs. Committee participants come from COE, CALS, CHSS, CVM, CoED, CNR, Provost office
- Completed Inclusive Excellence Certificate Program 2020-2021, NCSU OIED
- Member of 3<sup>rd</sup> NC-AGEP Cohort of Fellows Program 2021-2023

#### **Civil, Construction, Environmental Department Committees:**

- 1) EWC Graduate Applications distribution Masters Level (2017-2018)
- 2) CCEE Diversity and Recruiting Committee (Chair 2016-2018) (2016-2022)
- 3) CCEE Energy Cluster Search Committee member (2015-2017)
- 4) CCEE RPT committee (Chair, 2012-2016) (2010-2017)
- 5) ABET Design Committee Chair (2013-2016)
- 6) ABET ENE Coordinator (2006-2012)
- 7) ABET subcommittee member (2005-2010)
- 8) Seminar committee member (2005-2007)
- 9) Awards committee member (2005-2009)
- 10) Executive Committee Member (2005-2006)
- 11) Engineering Open House (1998-1999)
- 12) ABET Subcommittee: Senior Design and Lab (2001-2004)
- 13) Lab Equipment Committee (1999-2010)
- 14) Hydraulics Lab Director (Mann 108) (FWH 1351) (2002-Present)
- 15) WREE group coordinator (2004-2006)

**7. Professional service off campus:**

- 1) AAAS Multidisciplinary Working Group (2023-2024)
- 2) Wake Forest U Engineering External Advisory Board (2022-2025)
- 3) Editorial Advisory Board Member, Journal of Environmental Science: Water Research and Technology, RSC (2021-Present)
- 4) NC LSAMP Advisory Board (2019-Present)
- 5) EPA Board of Scientific Counselors Safe and Sustainable water Resources Sub-committee (2018-2022)
- 6) External Advisory board CAEE Dept. NC A&T University (2017-2020)
- 7) AEESP Board of Directors (Elected by Peers) (Vice President, President elect, President, Past President) (2017-2022)
- 8) Member, International Association of Plumbing and Mechanical Officials (IAPMO) standards committee (2016-2020)
- 9) AEESP Environmental Engineering Program representative for CCEE (2016-2018)
- 10) AEESP Membership and Demographics Committee, (chair in 2016) (2015-2017)
- 11) Member, Exploris Middle School Educational Excellence Committee (2014-2015)
- 12) Member, EPA SAB Hydraulic Fracturing Advisory Panel (2013-2016)
- 13) IWA CFD Working Group (2013-2020)
- 14) Board Member, Chartered EPA Science Advisory Board (2012-2018)
- 15) Board Member, International UV Association (2011-2018)
- 16) Adhoc Member, EPA SAB Environmental Economics Advisory Committee (2011-2012)
- 17) Member, WEF FOG Collection Systems Committee (2010-2012)
- 18) Board Member, EPA Science Advisory Board Drinking Water Com. (2009-2015)
- 19) Board Member, EPA SAB Science Technology Awards Committee (2009-2012)
- 20) North Carolina House of Representative Offshore Energy Exploration Study Committee (2009-2010)
- 21) Board Member, North Carolina Fulbright Association (Treasurer) (2008-2021)
- 22) Editorial Board Member, Journal of Environment Engineering ASCE (2007-2015)
- 23) International Population Balance Modeling Organizing Committee (2002-2009)
- 24) International Population Balance Modeling Scientific Committee (2002-2010)

## **II. Instructional Development**

Visiting Professor, YangZhou University, Civil Science and Engineering Dept. YangZhou, China (June 29-July 12, 2019): I taught a 10-day graduate level workshop on Modeling Biological Treatment Processes for Wastewater systems. Class met 2 hrs each morning

Visiting professor, Southeast University, Nanjing, China (June 24- July, 5, 2017), I served as a project advisor for a group of students that focused on the design and development of Jiangning Park in Nanjing using Sustainable infrastructure technologies. I prepared lecture materials related to the remediation and natural systems optimization and design.

Visiting professor, Southeast University, Nanjing, China (June 29- July, 11, 2015), taught a summer course in Water quality and Wastewater Treatment, advised students on a week-long design project for BMPs and storm water quality designs in urban centers.

Visiting professor, Southeast University, Nanjing, China (July 7-18, 2014), taught a summer course in Water and Wastewater Treatment, provided a research seminar on Modeling.

Visiting professor, Southeast University, Nanjing, China (June 22-July 8, 2013), taught a summer course in Physical Principles in Environmental Engineering, Co-taught undergraduate course providing an introduction to environmental engineering, provided a research seminar on Modeling UV disinfection processes.

### **A. Mentoring Activities**

#### **Undergraduate Academic Advising:**

Each academic year, I advise about 18 undergraduate students on course work and curriculum issues. In addition, each semester and during the summer, I advise 2-6 undergraduate students on research projects sponsored by my NSF grants.

I have been a Park Scholar Faculty Mentor to Matt Authement (ENE 2012) and Caiti Cremer (CHE 2015). I am currently a Park Scholar Faculty mentor to Nehemiah Macdonald (BME 2023) and Daniel Friday (CCEE, 2023)

[http://www.ncsu.edu/park\\_scholarships/experience/mentors.php](http://www.ncsu.edu/park_scholarships/experience/mentors.php)

I am also the undergraduate and graduate advisor for the following student group:

- 1) COE PENC
- 2) University Fulbright Student chapter
- 3) Minority Engineering Graduate Student Association (MEGSA)

#### **Graduate Advising:**

I am advising graduate students in multidisciplinary research activities that include wastewater: (formation of aerobic granulation in activated sludge systems, characterizing the fate of long chain fatty acids in sewer collection system, characterizing co-digestion of grease interceptor waste in anaerobic digestion), municipal solid waste: (characterizing and modeling elevated temperature formation in landfills), renewable fuels: (systems optimization of photo bio-refineries for production of jet fuels using microalgae), and plant systems biology: (characterizing and modeling of Lignin biosynthesis metabolic and

regulatory pathways, characterizing and modeling of iron homeostasis and regulation in root cells, Modeling the regulatory network of InsP6 signaling in plants).

**Graduate Academic Advising:**

***Chair or co-chair of Committee***

***Doctorate with Thesis***

Name of Student	Degree	Position in committee	Date of Completion
Diyuan Wang	Ph.D.	Chair	May 2023
Amanda Karam	Ph.D.	Co-Chair	Dec 2021
Samrin Kusum	Ph.D.	Co-Chair	Dec 2022
Zisu Hao	Ph.D.	Co-Chair	Dec 2019
Yi chun Lai	Ph.D.	Co-Chair	May 2021
Joe Weaver	Ph.D.	Co-Chair	May 2020
Punith Naik	Ph.D.	Chair	Aug 2016
Mahbuba Iasmin	Ph.D.	Chair	May 2014
Xia He	Ph.D.	Co-Chair	Dec 2011
David Olukanni	Ph.D. CE Covenant University, Nigeria	Co-Chair	May 2011
Tarek Aziz	Ph.D.	Chair	May 2010
Scott Alpert	Ph.D.	Chair	December 2008
Dong Liu	Ph.D.	Chair	December 2004
Yanjin Liu	Ph.D.	Chair	December 2004

***Master of Science with Thesis***

Name of Student	Degree	Position in committee	Date of Completion
Nathan Powell	M.S. w/thesis	Chair	May 2024
Lochan Basnet	M.S. w/thesis	Chair	August 2017
Amanda Karam	M.S. w/thesis	Co-Chair	May 2016
Richard Jenny	M.S. w/thesis	Chair	Dec. 2014
Roya Yousefelahiyeh	M.S. w/thesis	Chair	Dec. 2014
Mehrnoosh Esismiamirabadi	M.S. w/thesis	Chair	August 2012
Hunter Long	M.S. w/thesis	Chair	May 2012
Colleen Bowker	M.S. w/thesis	Chair	December 2010
Erin Gallimore	M.S. w/thesis	Chair	December 2010
Kiseok Jang	M.S. w/thesis	Chair	May 2008
Xi Zhao	M.S. w/thesis	Chair	May 2007
Brannon Richards	M.S. w/thesis	Chair	December 2004
Carolina Baeza	M.S. w/ thesis	Chair	July 2003
Cory Hopkins	M.S. w/ thesis	Chair	July 2002
Veronica A. Ortiz	M.S. w/ thesis	Chair	December 2001
Daniel K. Peplinski	M.S. w/ thesis	Chair	December 2000

***Master of Civil or Environmental Engineering no Thesis***

Name of Student	Degree	Position in committee	Date of Completion
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Nathan Simmons	MCE	Chair	May 2023
Adam Smith	MCEZ	Chair	May 2018
Ryan Peterson	MCEZ	Chair	May 2018
Pooja Deshpande	M.ENE w/Proj.	Co-Chair	May 2017
Catherine McMillan	M.ENE. w/proj.	Co-Chair	May 2016
Krysta Cione	MCEZ	Chair	May 2017
Divya Malyala	MCE Project	Chair	May 2016
Jorge Pesantez Sarmiento	MCE	Chair	May 2016
Keller Schnier	MCEZ	Chair	May 2016
Daniel Paynter	MCEZ	Chair	May 2016
Andrew Schimenti	MCEZ	Chair	May 2016
Madhu Chakravarthula	MCE	Chair	Dec 2015
Andria Pena	MENE Project	Chair	May 2015
Michele Tudor	MENEZ	Chair	May 2015
Lily Kalantar	MENEZ	Chair	May 2014
Chris Nelson	MENE	Chair	May 2014
Qian Wang	MENE	Chair	May 2014
Alberto Muniz	MENEZ	Chair	May 2014
Kathleen Boone	MENEZ	Chair	May 2014
Leonor Sanchez	MENE	Chair	May 2014
Yi Wang	MENE Project	Chair	May 2013
Christopher Cyril Sandeep Dominic	MENE	Chair	May 2012
Mohammad Shamsul Arafin	MENE	Chair	August 2011
Sara Allen	MCEZ	Chair	May 2011
Siddharth K. Lokineni	MCE	Chair	May 2011
Nandita Akunuri	MCE Project	Chair	December 2010
Vidya Mohandas	MCE Project	Chair	May 2010
Hsien Wang	MCE	Chair	December 2006
Corey Cavalier	MCE Project	Chair	May 2001
Liz Feliberty-Ruperte	MCE Project	Chair	May 2001
Stephen D. Terry	MCE Project	Chair	Transferred to Mech. E.
John E. Schrum	MCE Project	Chair	May 2000

***Member of Committee***

***Doctorate with Thesis***

Name of Student	Degree	Date of Completion
Sivaranjani Palani	Ph.D. Microbiology	May 2025
Michael Bond	Ph.D. MAE	May 2024
Yazeed Algurainy	Ph.D. CCEE	May 2023
Elvin Hossen	Ph.D. CCEE	May 2023
Lan Cheng	Ph.D. CCEE	May 2023
Chuhui Zhang	Ph.D. CCEE	May 2023
Vashti Campbell	Ph.D. Bio Ag	May 2023
Maria Auxiliadora Aleman Chona	Ph.D. MAE	Dec 2021
Asmita Narode	Ph.D. CCEE	May 2021
Zachary Hopkins	Ph.D. CCEE	Dec 2020
Mayu Kagawa	Ph.D. CCEE	May 2018
Ling Wang	Ph.D. CCEE	May 2018
Provat Saha	Ph.D. CCEE	May 2017
Zhimin Liu	Ph.D. Bio Ag	May 2017
Johnsie Lang	Ph.D. CCEE	May 2016
Jina Song	Ph.D. Electrical Engineering	May 2014
Hsi-chuan chen	Ph.D. Forestry	Dec 2012
Jack Wang	Ph.D. Forestry	Dec 2012
Bilgen Yuncu	Ph.D. CCEE	Dec 2010
Rahul Vallabh	Ph.D. Textiles	December 2009
Alfred Rossner	Ph.D. CCEE	Dec 2008
Carolina Baeza	Ph.D. CCEE	Dec 2008
Inchio Lou	Ph.D. CCEE	May 2005
Troy Doby	Ph.D. CCEE	May 2005
Lei Li	Ph.D. CCEE	May 2002
Steve Terry	Ph.D. MAE	May 2005
James Dixon	Ph.D. Chemistry	May 2004
Sumate Chaiprapat	Ph.D. BAE	December 2002
Yi Sun	Ph.D. BAE	December 2002



***Masters of Science with Thesis***

Name of Student	Degree	Date of Completion
Josue Pazmino	M.S. CE	Dec 2022
Amanda Mattingly	M.S. ENE	Dec 2021
Yoko Koyama	M.S. ENE	May 2021
Jasmine Phillips	M.S. Textiles Chemistry	May 2020
Sarang Bhagwat	M.S. CE	Dec 2019
Cody Elington	M.S. ECE	May 2018
Hounwanou Obatayo	M.S. ENE	Dec 2017
Clark Maness	M.S. ENE	May 2016
Jonathan Moreno Lopez	M.S. ENE	Dec 2016
Catalina Lopez Velandia	M.S. ENE	Dec 2016
Amber Gruene	M.S. ENE	Dec 2014
Viking Edeback	M.S. ENE	May 2014
Elisa Arevalo	M.S. ENE	May 2014
Elvin Hossen	M.S. ENE	August 2013
Ling Wang	M.S. ENE	May 2012
Zhao Jin	M.S. CCEE	May 2013
Meredith Fota	M.S. CCEE	August 2012
Leigh-Ann Dudley	M.S. CCEE	August 2012
Anjali Viswakumar	M.S. CCEE	May 2010
Lauren Wellborn	M.S. CCEE	August 2009
Lisa Mitchell	M.S. CCEE	May 2005
Gamze Gulez	M.S. CCEE	May 2005
Alfred Rossner	M.S. CCEE	May 2004
Nicholas Lindow	M.S. CCEE	May 2004
Cameron Long	M.S. CCEE	May 2004
Jon Williams	M.S. CCEE	May 2004
Patricia Quinlivan	M.S. CCEE	May 2001
Alix Rooker	M.S. CCEE	December 2000
Rinav Mehta	M.S. CCEE	December 2000
Thomas Murray	M.S. CCEE	December 2000
Caleb M. Taylor	M.S. CCEE	May 2000
C. Tyrus Clayton Jr.	M.S. CCEE	May 2000
Steven R. Gandy	M.S. CCEE	December 1999
Ryan Smith	M.S. BAE	May 2002
James Howard	M.S. BAE	December 2001
Bin Liu	M.S. BAE	December 1998

***Master of Civil Engineering no Thesis***

Hyunsuk Hong	MCE Project	May 2009
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**Post Doctoral Student Advising:**

Name of Student	Date of Completion
Zisu Hao, Ph.D.	Ongoing
Amanda Karam, Ph.D.	Ongoing
Olivier Prat, Ph.D.	August 2005

## **International Students**

### ***Visiting students to NC State:***

Adviser to Andres Rivera, University of Valle, Cali Valle Columbia, May-Aug 2016

Adviser to Jean Aoussou, Imperial college of London exchange student GTI program 2012-2013

### ***External committee member:***

MS degree David Gibbons, Dublin University, Belfield Dublin Dec. 2020

MS degree Ehsan Boute, University of Tehran, Tehran, Iran Dec. 2018

MS degree Navid Ahmadi University of Tehran, Tehran, Iran Dec. 2018

PhD degree Andres Rivera, University of Valle, Cali Valle Columbia May 2017

## **Domestic Students**

### ***External committee member***

PhD degree Kiesha Pierre, University of South Florida, Tampa May 2021

PhD degree Kari Sholtes, University of Colorado, Boulder Aug. 2019

## **Duke Preparing Future Faculty Program (Mentor)**

Mentee: Imari Walker Karega (PhD candidate, CEE Dept)

## **Adviser for the following award-winning graduate students for research**

Samrin Kusum Outstanding Teaching Assistant Award

Joe Weaver Runner-Up poster, Environmental Biotechnology Network (EBNET) Conference

Joe Weaver NSF Post-Doctoral Research Fellowship

Joe Weaver AAEES 2020 Wesley Eckenfelder graduate research award

Samrin Kusum 1<sup>st</sup> place EWC Symposium Poster Competition

Zisu Hao Best Poster Award GWMS Conference Student Poster competition

Zisu Hao Award CCEE Charles Smallwood Graduate Award

Samrin Kusum Award CCEE 3 Minute Thesis Competition

Yi-Chun Lai 2<sup>nd</sup> place 2019 NC AWWA/WEA student poster competition

Amanda Karam, 3<sup>rd</sup> place 2015 NC AWWA/WEA student poster competition

Ling Wang, 1<sup>st</sup> place 2014 NC AWWA/WEA student poster competition

Catherine McMillan, 3<sup>rd</sup> place 2014 NC AWWA/WEA student poster competition

Richard Jenny, 2<sup>nd</sup> place 2013 NC AWWA/WEA student poster competition

Mehrnoosh Eslamiamirabodi, 3<sup>rd</sup> place 2012 NC AWWA/WEA Student poster competition

Xia He, W. 2012 Wesley Eckenfelder graduate research award, AAEE

Xia He 1<sup>st</sup> place 2011 NC AWWA/WEA student poster competition

Ling Wang, 2<sup>nd</sup> place 2011 NC AWWA/WEA student poster competition

Mohammad Shamsul Arafin, 2<sup>nd</sup> place 2011 NC AWWA/WEA student poster competition

Erin Gallimore, 1<sup>st</sup> place 2010 NC AWWA/WEA student poster competition

Antonio Sobremisana, 3<sup>rd</sup> place 2008 NC AWWA/WEA Student poster competition

## **B. Cross-Disciplinary Activities -**

I participated in a program designed to increase the number of graduates in science, technology, engineering and mathematics (STEM). This program was a joint collaboration between North Carolina State University and North Carolina Agricultural and Technological State University. The program was conducted in conjunction with faculty from MEAS, CHE, Physics, and Math departments. I was an instructor for a summer course as part of this program that introduced

incoming freshmen to topics in environmental engineering. The course was a week long and involved lab work.

### **III. Scholarship in the Realms of Faculty Responsibility**

#### **A. Scholarly Accomplishments**

##### **Journal publications (Peer-reviewed) Published**

- 1) Ahmadi, N., Abbasi, M., Torabian, A., van Loosdrecht, M., Ducoste, J., 2023, Biotransformation of micropollutants in moving bed biofilm reactors under heterotrophic and autotrophic conditions, Journal of Hazardous Materials, <https://doi.org/10.1016/j.jhazmat.2023.132232>
- 2) Lai, Y.-C., Ducoste, J. J., & de los Reyes III, F. L., 2023, Growth of Dunaliella viridis in multiple cycles of reclaimed media after repeated high pH-induced flocculation and harvesting, Science of the Total Environment, 891. <https://doi.org/10.1016/j.scitotenv.2023.164087>
- 3) Bernardy, C., Elardo, N., Trautz, A., Malley, J., Wang, D., Ducoste, J., 2022, Effects of UV-C Disinfection on N95 and KN95 Filtering Facepiece Respirator Reuse, Applied and Environmental Microbiology, Vol. 88, No. 19, DOI: <https://doi.org/10.1128/aem.01221-22>
- 4) Rivera, A.M.Z , Ducoste, J.J., Peña, M.R., Portapila. M., 2021, Characterizing the Transport of Suspended Solids in a Secondary Facultative Lagoon Using Computational Fluid Dynamics, Water, 13(17), 2356; <https://doi.org/10.3390/w13172356>
- 5) \*Karam, AL, \*Lai, Y., de los Reyes III, FL , Ducoste, JJ, 2021, Chlorophyll a and non-pigmented biomass are sufficient predictors for estimating light attenuation during cultivation of Dunaliella viridis, Algal Research, Volume 55, DOI:10.1016/J.ALGAL.2021.102283
- 6) Narode, A., Pour-Ghaz, M., Ducoste, J.J., Barlaz, M.A., 2021, Measurement of heat release during hydration and carbonation of ash disposed in landfills using an isothermal calorimeter, Waste Management, 124, 348-355
- 7) Wu, J., Liu Z., Wan, J., Zhang, M., Ducoste, J.J., 2021, The effect of activated sludge floc morphology on the measurement of biomass half-saturation coefficient: a 2D CFD biofilm model-based evaluation and experimental verification, Biochemical Engineering Journal, 1, 107931. <https://doi.org/10.1016/j.bej.2021.107931>
- 8) Bouteh, B., Ahmadi, N, Abbasi, M, Torabian, A, van Loosdrecht, MCM, Ducoste J.J., 2021, Biodegradation of organophosphorus pesticides in Moving Bed Biofilm Reactors: Analysis of microbial community and biodegradation pathways, Journal of Hazardous Materials, 408, DOI: 10.1016/j.hazmat.2020.124950
- 9) \*Kusum, S. A., Pour-Ghaz, M., & Ducoste, J. J., 2020, Reducing fat, oil, and grease (FOG) deposits formation and adhesion on sewer collection system structures through the use of fly ash replaced cement-based materials, Water Research, 186, 116304. <https://doi.org/10.1016/j.watres.2020.116304>
- 10) \*Hao, Z., Barlaz, M. A., & Ducoste, J. J., 2020, Finite-Element Modeling of Landfills to Estimate Heat Generation, Transport, and Accumulation, Journal of Geotechnical and Geoenvironmental Engineering. [https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0002403](https://doi.org/10.1061/(ASCE)GT.1943-5606.0002403)

- 11) EslamiMirabadi, M. , Burton, J.D. , de los Reyes III, F.L. , Ducoste, J. J., 2020 Assessment of Alternative Herbicides for Residential Sewer Root Treatment and their Effects on Downstream Treatment Plant Nitrification, Journal of Environmental Management, 258, 110058. <https://doi.org/10.1016/j.jenvman.2019.110058>
- 12) Wu, J., de los Reyes III, F.L., Ducoste, J.J., 2020, Modeling cell aggregate morphology during aerobic granulation in activated sludge processes reveals the combined effect of substrate and shear, Water Research, 170, 115384. <https://doi.org/10.1016/j.watres.2019.115384>
- 13) Wang, L., Hossen, E., Aziz, T.N., Ducoste, J., de los Reyes III, F.L., 2020, Increased loading stress leads to convergence of microbial communities and high methane yields in adapted anaerobic co-digesters, Water Research, 169 (1) <https://doi.org/10.1016/j.watres.2019.115155>
- 14) Wang, D., Lai, Y., Karam, A.L., de los Reyes III, F.L., Ducoste, J., 2019, Dynamic Modeling of Microalgae Growth and Lipid Production under Transient Light and Nitrogen Conditions, Environ. Sci. Technol. 2019, 53, 19, 11560-11568
- 15) Lai, Y., Karam, A., Sederoff, H., Ducoste, J., de los Reyes III, 2019, Relating nitrogen concentrations and continuous light intensity data on the growth and lipid accumulation of Dunaliella viridis in a photobioreactor, Journal of Applied Phycology, <https://doi.org/10.1007/s10811-019-01897-4>
- 16) Koryachko, A., Matthiadis, A., Hague, S., Muhammad, D., Ducoste, J., Tuck, J., Long, T., Williams, C., 2019, Dynamic modeling of the iron deficiency modulated transcriptome response in Arabidopsis thaliana roots, in silico Plants, Volume 1, Issue 1, diz005, <https://doi.org/10.1093/insilicoplants/diz005>
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### **Journal publications (Peer-reviewed) Under Review**

- 1) Wang, D. de los Reyes III, F., Ducoste, J., 2023, Microplate-Based Cell Viability Assay as a Cost-Effective Alternative to Flow Cytometry for Microalgae Analysis, Environmental Science & Technology, Submitted 7/17/23; revisions requested 8/14/23
- 2) Hao, Z., Barlaz, M., Ducoste, J., 2023, Quasi-mechanistic 3D finite element model predicts temperatures in a U.S. landfill, Environmental Science & Technology Engineering, Submitted 7/17/23, Revisions requested 9/13/23
- 3) Simmons, N., Ducoste, J., 2023, Fat, Oil, and Grease Sewer Waste Management System (FOG-SWMS): A Modeling Platform for Simulating the Formation of FOG deposits in Sewer Networks, ASCE Journal of Environmental Engineering, Submitted 8/16/23
- 4) Smith, S., Weaver, J., Ducoste, J., de los Reyes III, D.L., 2023, Microbial community assembly in engineered bioreactors, Water Research, Submitted 8/18/23

### **Editorial (Peer Reviewed)**

- 1) Nopens, I., Brisen, H., Ducoste, J., 2009, Celebrating a Milestone in Population Balance Modeling, Chemical Engineering Science, 64, pg 627

### **Special Editor (Peer-reviewed)**

- 1) Nopens, I., Ducoste, J.J., Briesen, H., 2009, Advances in Population Balance Modeling, Chemical Engineering Science, 64
- 2) Ducoste, J.J., 2021, AEESP: A Collective Force to achieve Educational and Research Heights Environmental Engineering Science, <https://doi.org/10.1089/ees.2020.0402>
- 3) Ducoste, J.J., 2021, The Healing and Joyful Power of the Service to Others, Environmental Engineering Science, pp 209-210, <http://doi.org/10.1089/ees.2021.0008>
- 4) Ducoste, J.J., 2021, AEESP Endured Despite a Challenging Year, Environmental Engineering Science, Vol. 38, No. 9, <https://doi.org/10.1089/ees.2021.0269>

**Technical Reports (Peer-reviewed)** Final reports to the American Water Works Association Research Foundation undergo a rigorous two-stage peer review by a project advisory committee comprised of three to four members from academia and environmental engineering practice. Reports are published by AWWARF and are the principal product for AWWARF subscribers (900 utilities in the US, Canada, United Kingdom, Germany, France, Australia, and Brazil as well as 43 consulting firms and 11 manufacturers).

### **Published**

- 1) Ducoste, J.J., Knappe, D., Alpert, S., 2010, Evaluation of Computational Fluid Dynamics (CFD) for Modeling UV Initiated Advance Oxidation Processes, Water Research Foundation, Denver, CO.
- 2) Ducoste, J.J., Keener, K., Groninger, J., Holt, L., 2008, Fats, Roots, Oil, and Grease (FROG) in Centralized and Decentralized Systems: Characterization FOG Deposits and Root Control, Water Environment Research Foundation, Alexandria, VA.

- 3) Ducoste, J.J., Keener, K., Groninger, J., Holt, L., 2008, Assessment of Grease Interceptor Performance, Water Environment Research Foundation, Alexandria, VA.
- 4) Ducoste, J.J., Keener, K., Groninger, J., Holt, L., 2008, FOG Interceptor Design and Operation (FOGIDO) Guidance Manual, Water Environment Research Foundation, Alexandria, VA.
- 5) Hulsey, R., Linden, K.G., Ducoste, J.J., 2007, UV Disinfection for Large Water Treatment Plants, American Water Works Association Research Foundation, Denver, CO.
- 6) Ducoste, J.J. and K.G., Linden, 2006, Hydrodynamic Characterization of UV Reactors, American Water Works Association Research Foundation, Denver, CO.
- 7) Crozes, G., Hagstrom, J.P., Clark, M.M., Ducoste, J.J., Burns, C. 1998, Improving Clearwell Design for CT Compliance, American Water Works Association Research Foundation, Denver, CO.
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**Conference Proceedings Book (Peer-reviewed)** (The full conference papers are reviewed by a panel of experts with an acceptance rate of 50%)

- 1) Nopens, I., K., Malise, C., Biggs, J.J., Ducoste, 2004, Advances in Population Balance Modeling, Eurosis, Ghent, Belgium

**Conference Proceedings (Peer-reviewed)** (The full conference papers are reviewed by a panel of experts with an acceptance rate of 50%)

- 1) Ducoste\*, J.J., Malmrose, P., Weil, G., Beacham, T., 1999, Determining Design Criteria for New WTP Solids Handling Facility, AWWA/WEF Residuals and Biosolids conference, Charlotte, NC.

**Journal publications (Non-Peer-reviewed)**

- 1) Bowker, C., Alpert, S., Shatalov, M., Ducoste, J., 2012, UV LEDs for Water Disinfection, International Ultraviolet Association News, 14(2): 20-27
- 2) Ducoste, J.J., 2009, Computational Fluid Dynamics as an Integral Part of Water and Wastewater Treatment Process Design, Influents: Water Environment Association of Ontario, Volume 4, pp 40-44
- 3) Ducoste, J.J., Wood, J., Aziz, T., Groninger, J., Holt, L., Keener, K., 2008, Rooting out SSOs: Evaluating Popular Root Control Methods in a Pilot Sanitary Sewer, Water Environment Technology, Vol. 20, No. 6 pp 56-60

**Magazine Article (Non-Peer Reviewed)**

- 1) Sadler, M, Wischer, B, Gordon, J, Wilkerson, C, Tabor, C, Fredericks, D, Ducoste, J, 2017, Unintended Consequences of a Local Fats, Oils, and Grease Limits Revisions: One Utilizity's Experience with FOG, Horizons New Letter, August 28

**Conference Proceedings (Other) (\* = Presenter)**

- 1) Samrin A. Kusum, Mohammad Pour-Ghaz, Joel Ducoste 2021, Factors that Influence the Formation and Surface Adhesion of Fat, Oil, and Grease (FOG) Deposits, WEF Collection Systems. A Virtual Event, 23-25 March.
- 2) Kusum, S., Pour-Ghaz, M., Ducoste, J., 2020, Evaluation of Fly Ash as a cement replacement to reduce sewer collection system infrastructure maintenance and enhance sustainability, WRRI Annual Conference, March 18-19, Raleigh NC (Conference Cancelled)
- 3) Wang, D., Lai, YC, Karam, A., de los Reyes, FL., Ducoste, J., 2020, Dynamic and functional modeling of carbon metabolism in photosynthetic microalgae, 10th Algal Biomass, Biofuels and Bioproducts Conference, June 15-17, Pittsburgh, PA (Conference Postponed)
- 4) Lai, Y.-C., Ducoste, J. J., de los Reyes, F. L., 2020, Does the inoculum source improve anaerobic digestion of marine microalgae *Dunaliella viridis*? 10th International Conference on Algal Biomass, Biofuels and Bioproducts, June 15-17, Pittsburgh, PA, USA. (Conference Postponed)
- 5) Hao, Z., Ducoste, J., Barlaz, M., 2020, Experimental Measurement of Heat Production from Al Corrosion under Landfill-Relevant Conditions, Global Waste Management Symposium, Feb 23-26, Indian Wells, CA
- 6) Narode, A., Pour-Ghaz, M., Ducoste, J., Barlaz, M., 2020, Development of methods to measure heat released from ash hydration and carbonation in landfills, Global Waste Management Symposium, Feb 23-26, Indian Wells, CA
- 7) \*Gallimore, E., Mabry, N., \*Ducoste, J., 2019, It's Time to Disrupt this Industry, WEF IKE Video submission, Water Environment Federation Technology Conference, Chicago, IL, Sept 21-25
- 8) \*Curran, T., Broderick, C., Ducoste, J., 2018, Preliminary tests of sensors to detect sewer network blockages, ASABE Annual International Meeting, Detroit MI, July 29-August 1,
- 9) \*Diyuan Wang, Yichun Lai, Amanda Karam, Francis de los Reyes, Joel Ducoste. 2018, Dynamic modeling of *Dunaliella viridis* growth and storage molecule production under different light and nitrogen conditions, North Carolina Microbiome Consortium Symposium, May 15, Raleigh, NC
- 10) \*Kusum, S., Pour-Ghaz, M., Ducoste, J., 2018, Evaluating alternative binder materials for Sewer Collection System Concrete Structures to reduce FOG related SSOs, WEF Collection System Specialty Conf. Virginia Beach VA, April 8-11
- 11) \*Kusum, S., Pour-Ghaz, M., Ducoste, J., 2018, Alternative Binder Materials and its Application in Concrete Sewer Structures for Possible Reduction in Fat, Oil and Grease (FOG) Related Sanitary Sewer Overflows (SSOs), 2018, NCAWWA WEA Spring Symposium Conference, Ashville, NC, March 25-27
- 12) \*Sadler, M, Wischer, B, Gordon, J, Wilkerson, C, Tabor, C, Fredericks, D, Ducoste, J, 2018, Unintended Consequences of a Local Fats, Oils, and Grease Limits, Virginia WEA Industrial Waste & Pretreatment Conference Charlottesville, VA, March 5-6
- 13) \*Karam, A., Y. C. Lai, J. Liu, R. Ranjithan, J. Levis, F. L. de los Reyes III, J. Ducoste, 2017, Quantifying Light Distributions within Microalgal Photosynthetic Bioreactors

Using Novel Microsensors. 7th International Conference on Biofuels, Biomass, and Bioproducts, June 18-21, Miami, FL.

- 14) \*Lai, Y. C., A. Karam, R. Ranjithan, J. Levis, F. L. de los Reyes III, J. Ducoste, 2017, Physiological responses of microalgae, Dunaliella viridis, during nitrogen-limited growth. 7th International Conference on Biofuels, Biomass, and Bioproducts, June 18-21, Miami, FL.
- 15) \*Sadler, M, Wischer, B, Gordon, J, Wilkerson, C, Tabor, C, Fredericks, D, Ducoste, J, 2017, Unintended Consequences of a Local Fats, Oils, and Grease Limits Revision: One Utility's Experience with Fats, Oils, and Grease , WEFTEC Sept 29 Oct 4
- 16) \*Hao, Z., Sun, M., Ducoste, J., Barlaz, M., 2017, A Model to Describe Heat Generation and Accumulation at Municipal Solid Waste Landfills, Geotechnical Frontiers Conference Orlando, FL, March 12-15
- 17) \*Weaver, J.E., Ducoste, J.J., de los Reyes, F.L., 2016, Inducing Aerobic Granular Sludge Formation Through Unevenly Distributed Hydrodynamic Shear Rates, NCAWWA-WEA, Raleigh, NC, Nov. 13-16
- 18) \*Hao , Z., Malyala, D, Ducoste, J, 2016, Determination of Long Chain Free Fatty Acid (LCFFA) in Wastewater Using a Novel Double Wavenumber FTIR Technique for the Protection of Sanitary Sewer Collection Systems, NCAWWA-WEA, Raleigh, NC, Nov. 13-16
- 19) \*Malyala, D, Hao , Z., Ducoste, J, 2016, Determining the fate of Long Chain Free Fatty Acids and Fats, Oils and Grease in Sewer Collection Systems using a double waveband FTIR technique, NCAWWA-WEA, Raleigh, NC, Nov. 13-16
- 20) \*Weaver, J.E., Ducoste, J.J., de los Reyes, F.L., 2016, Fluid Shear Variation Potentially Plays a Role in Aerobic Granular Sludge Formation, WEFTEC, New Orleans, LA, Sept 24-28
- 21) Karam, A., de los Reyes, F.L., Levis, J., Ranjithan, R. and Ducoste, J., 2016, Photochemical Micro-sensors for Evaluating Light Distribution within Photosynthetic Bioreactors for Biofuels Production, 6<sup>th</sup> International Conference on Algal Biomass and Bioproducts. San Diego, CA. June 26-29
- 22) Vallabh, R., Seyam, A., Banks-Lee, P., Ducoste, J., 2015, Pore Channel Tortuosity in 3D Nonwoven Structures, 6th World Conference on 3D Fabrics and their Applications, Raleigh, NC, USA, May 26-28, 2015
- 23) Wang, L., Hossen, E.H., Aziz, T.N., Ducoste, J., de los Reyes, F.L., 2015, Directing Microbial Community Assembly by Deterministic Niche Differentiaion in Anaerobic Digesters, WEFTEC, Chicago, IL, Sept 26-30, CDROM
- 24) \*Manavi, R., de los Reyes, F.L., Levis, J., Ranjithan, R. and Ducoste, J., 2015, Coupling fluid dynamics with kinetic modeling to quantify the effects of photosynthetic bioreactor design and operation on yield performance, 249<sup>th</sup> ACS National Meeting. Denver, CO. March 22-26,
- 25) \*Jenny, R., Ducoste, J., 2014, Challenges in Designing a UV LED Reactor for Disinfection: Why CFD Should be your Best Friend, AWWA WQTC New Orleans Nov 16-20, CDROM

- 26) \*Jenny, R., Ducoste, J., 2014, Computational Fluid Dynamics Optimization of a Continuous Flow Point of Use UV LED Disinfection Reactor, IUVA Regional Conference White Plains NY Oct 26-28
- 27) Olukanni, D.O., Ducoste, J., George, T.O., 2014, Creating Water, Sanitation, and Hygiene (WASH) Program Awareness in Schools: A tool Towards the Success of Community WASH Programs, EDULEARN14, Barcelona Spain July 7-9
- 28) \*Wang, L., Hossen, E.H., Aziz, T.N., Ducoste, J., Bullard, M., de los Reyes, F.L., 2014, Pulse Feeding Of Anaerobic Digesters Treating Grease Waste To Increase Community Resistance, IWA World Water Congress & Exhibition, Lisbon Portugal, Sept 21-26, CDROM
- 29) Nopens, I., Torfs, E., Ducoste, J., Vanrolleghem, P., Gernaey, K., 2014, PBMs: A Modeling Framework for WWTP Modeling, IWA/WEF WWT MOD SPA, Belgium, CDROM, March 30-April 2
- 30) Samstag, R., Ducoste, J., Gribrio, A., Nopens, I., Batstone, D., Wicks, J., Saunders, S., Laurent, J., Potier, O., 2014, CFD as a tool for WWTP Unit Process Modeling, IWA/WEF WWT MOD SPA, Belgium, CDROM, March 30-April 2
- 31) \*Iasmin, M., Ducoste, J., 2014, Effect of Source and Environmental Factors on Properties and Kinetics of FOG Deposits in Sewer Collection Systems, WEF Collection System, Baltimore, MD, March 12-14, CDROM
- 32) \*Yousefelahiyeh, R., Dominic, C.C.S., Ducoste, J., 2014, FOGISEW: Modeling FOG Deposit Formation in Sewer Collection System, WEF Collection System, Baltimore, MD, March 12-14, CDROM
- 33) \*Wang, L., Hossen, E.H., Aziz, T.N., Ducoste, J., Bullard, M., de los Reyes, F.L., 2013, Developing Resistant and Resilient Anaerobic Co-Digesting Microbial Communities, WEFTEC, Chicago, IL, Oct 5-9, CDROM
- 34) \*Yousefelahiyeh, R., Dominic, C.C.S., Ducoste, J., 2013, A Numerical Method to Simulate the Formation of Fats, Oils, and Grease (FOG) Deposits in a Sewer Collection System, WEFTEC, Chicago, IL, Oct 5-9, CDROM
- 35) \*Iasmin, M., Ducoste, J., 2013, Quantifying Fat, Oil, and Grease (FOG) Deposits Formation Kinetics in Sewer Collection System, NCAWWA/WEA, Concord, NC, November 10-13, CDROM
- 36) \*Yousefelahiyeh, R., Dominic, C.C.S., Ducoste, J., 2013, Simulating the Formation of Fats, Oils, and Grease (FOG) Deposits in a Sewer Collection System, NCAWWA/WEA, Concord, NC, November 10-13, CDROM
- 37) \*Jenny, R.M., Simmons, O.D., Ducoste, J., 2013, Experimental and Numerical Evaluation of a UV-LED Point of Use Disinfection Device, NCAWWA/WEA, Concord, NC, November 10-13, CDROM
- 38) \*Wang, L, Aziz, T.N., Ducoste, J.J., de los Reyes, III, F.L., 2012, Anaerobic Co-Digestion of Grease Trap Waste, WEFTEC 2012 New Orleans, LA., Sept 29-Oct 3
- 39) \*Aziz, T.N., Long, J.H., Ducoste, J.J., 2012, Life Cycle Assessment of Grease Trap Waste Co-Digestion, Land Application, and Composting, Residual and Biosolids Management Session Speaker - WEFTEC 2012 New Orleans, LA., Sept 29-Oct 3

- 40) \*Arafin, M., Ducoste, J., 2011, Modeling of a Flow Through UV LED Reactor using Computational Fluid Dynamics, NCAWWA/WEA, Concord, NC, November 13-16, CDROM
- 41) \*Ducoste, J. J. and Alpert 2011, Assessing the UV Dose Delivered from Two UV Reactors in Series: Can you always assume doubling the UV dose from individual reactor validations?, IUVA, SEPT 18-20, Toronto, ONT, CDROM
- 42) \*Alpert S., Bowker, C. & Ducoste, J. J., 2011, UV-LEDs for Water Disinfection – Are We Close?, IUVA, SEPT 18-20, Toronto, ONT, CDROM
- 43) \*Bowker, C. & Ducoste, J. J., 2011, Evaluation of UV LEDs for Point of Use Disinfection Processes, AWWA Conference Washington DC, June 12-16, CDROM
- 44) Sobremisana, A., de los Reyes, F., Ducoste, J., 2011, Combined CFD, Floc Aggregation, and Microbial Growth Kinetics Modeling for Carbon and Nitrogen Removal, WEFTEC, Los Angeles, CA, Oct 16-19, CDROM
- 45) \*Vallabh, R., Seyam, A.M., Banks-Lee, and Ducoste, J., 2010, Tortuosity in Fibrous Porous Media, Proceedings of the 7<sup>th</sup> International Conference of Textile Research Division, National Research Center, Cairo, Egypt, October 10-12, CDROM
- 46) \*Aziz, T.N., Holt, L., Keener, K., Ducoste, J.J., 2010, Assessment of Field Grease Abatement Devices, WEFTEC, New Orleans, LA, Oct 10-13, CDROM
- 47) \*Gallimore, Aziz, Ducoste, 2010, Assessment of Grease Abatement Systems, WEF Sewer Collection System Conference, Phoenix, AZ, June 7-10, CDROM
- 48) \*Alpert, S.M., Jin, S., Aziz, T., Ducoste, J., 2010, The Value of Numerical Modeling in the Design and Operation of Drinking Water Treatment Processes, AWWA National Conference Chicago IL, June 20-24, CDROM
- 49) \*Alpert, S. M., & Ducoste, J. J., 2009, A CFD Modeling Protocol for Simulating the UV/H<sub>2</sub>O<sub>2</sub> Advanced Oxidation Process, AWWA Water Quality and Technology Conference, Seattle, WA.
- 50) \*H. Hong, J.C. Williams, J. Hsieh, J. Ducoste, and F.L. de los Reyes III, 2008, Monitoring Microbial Shifts During Activated Sludge Floc and Aerobic Granule Development, 81th Water Environment Federation Annual Conference and Exposition (WEFTEC 2008), October 21-25, Chicago, IL, CDROM
- 51) Hyunsuk H, J.C. Williams, J. Hsieh, J. Ducoste, \*F. L. de los Reyes, 2008, Floc Size Control and Microbial Shifts during Aerobic Flocculation in Couette-Taylor Bioreactors, International Water Association Leading edge conference, June 1-4, Zurich, Switzerland, CDROM
- 52) \*Zhao, X., Ducoste, J., 2008, Analysis Of A Low Pressure UV Reactor Under Multiple Upstream Elbow Configurations Using UV Sensitive Fluorescent Microspheres, American Water Works Association National Conference, Atlanta, GA, June 8-12, CDROM
- 53) \*Aziz, T., Holt, L., Keener, K., Ducoste, J., 2007, Field Observations of Grease Interceptor Performance, Water Environment Federation Workshop, Raleigh, NC, 4-5, CDROM
- 54) \*Aziz, T., Holt, L., Keener, K., Ducoste, J., 2007, Experimental and Numerical Analysis of Grease Interceptor Performance, NCAWWA/WEA, Greensboro, NC, December 3-5, CDROM
- 55) \*Wood, J., Aziz, T., Groninger, J., Holt, L., Keener, K., Ducoste, J., 2007, Observation and Analysis of Popular Root Control Methods in Pilot Scale Sanitary Sewer, Water

Environment Federation Technology Conference, San Diego, CA, October 15-17, CDROM

- 56) Richards, B., \*Ducoste, J., 2007, Evaluating Sequential Disinfection in Continuous Flow Water Treatment Systems, American Water Works Association Water Quality Technology Conference, Charlotte, NC, November 4-8, CDROM
- 57) \*Alpert, S., Ducoste, J., 2007, Modeling Organics Degradation with the UV/H<sub>2</sub>O<sub>2</sub> Advanced Oxidation Process Using Computational Fluid Dynamics, American Water Works Association Water Quality Technology Conference, Charlotte, NC, November 4-8, CDROM
- 58) \*Alpert, S., Knappe, D., Ducoste, J., 2007, The Use of Computational Fluid Dynamics (CFD) to Model UV-Initiated Advanced Oxidation Processes, International Ozone Association - International Ultraviolet Association World Congress, Los Angeles, CA August 27-30, CDROM
- 59) \*Alpert, S., Knappe, D., Ducoste, J.J., 2007, Incorporation of Micromixing models within CFD Simulations of UV Advanced Oxidation Processes, American Water Works Association National Conference, Toronto, Canada, June 4-8, CD-ROM
- 60) \*Bohrerova, Z., H, G.I., Bohrerova, Mohanraj, M., Ducoste, J.J and Linden, K.G, 2005, Experimental Measurements of Fluence distribution in a UV Reactor using Fluorescent Microspheres, Proceedings American Water Works Association Water Quality Technology Conference, Quebec City, Quebec. CD-ROM
- 61) \*Mamane-Gravetz, H, Ducoste, J.J and Linden, K.G, 2005, Impact of Particles on UVC Light Penetration in Natural and Engineered Systems, Proceedings International Ultraviolet Association Conference, Whistler, British Columbia, May 24-27, 10 pgs
- 62) \*Ducoste J.J., , D., Liu, K.G., Linden, Zuzana, H., Mamane-Gravetz, 2005, Impact of Influent Pipe Configuration on UV Reactor Performance: Is the Elbow Truly the Worst Case Hydraulic Condition, Proceedings WEF Disinfection Conference, Phoenix, AZ, February 6-9
- 63) \*Ducoste, J.J., K.G., Linden, D., Rokjer, 2004, Numerical Prediction of the Reduction Equivalent Fluence Bias, Proceedings AWWA Water Quality Technology Conference, San Antonio, TX, November 14-18
- 64) \*Ducoste, J.J. and Y., Liu, 2004, Numerical Prediction of Mixing Performance for Chloramines Formation , Proceedings AWWA Water Quality Technology Conference, San Antonio, TX, November 14-18
- 65) \*Prat, O., Ducoste, J.J., 2004, Modeling Spatial Distribution of Floc size in Turbulent Processes Using Quadrature Method of Moment and Computational Fluid Dynamics. 2<sup>nd</sup> International Conference on Population Balance Modeling, Valencia, Spain, May 5-7
- 66) \*Richards, B.H., C, Baeza, J. Ducoste, 2004, Assessing Sequential Disinfection Performance in a Flow Through System Using a Non-Biological Surrogate, Proceedings, AWWA Research Symposium in Baltimore, Maryland, April 18-20,
- 67) \*Liu, Y., J. Ducoste, 2003, Using CFD Model to Analyze Mixing Performance for the Formation of Chloramines, Proceedings NC AWWA/WEF Annual Conference, Greensboro, NC, November 17-20, 12 pgs.
- 68) \*Baeza, C., B.H. Richards, J. Ducoste, 2003, Evaluation Of Sequential Disinfection Strategy in Drinking Water Treatment using a Non-Biological Surrogate, NC AWWA/WEF Annual Conference, Greensboro, NC, November 17-20, 12 pgs.



- 69) \*Rokjer, D., M. Valade, D. Keesler, M. Borsykowsky, J. Ducoste, 2003, Medium Pressure UV Reactor Models for Validation Purposes, Proceedings AWWA Water Quality and Technology Conference, Philadelphia, PA, 22 pgs.
- 70) \*Hulse, R., H. Mackey, J. Neemann, K. Linden, J. Ducoste, 2003, Implementing UV into Large Water Treatment Plants, Proceedings International Ultraviolet Association Conference, Vienna, Austria, July 9-11., 10 pgs
- 71) \*Ducoste, J.J., D. Liu, J. Shanshan, K.G. Linden, 2003, Evaluation of UV Fluence Rate Distribution Models, Proceedings International Ultraviolet Association Conference, Vienna, Austria, July 9-11., 10 pgs
- 72) \*Jin, S., J.J. Ducoste, K.G. Linden, 2002, Determination of fluence rate distribution in UV reactors using spherical actinometry and mathematical analysis approaches, Proceedings American Water Works Association WQTC Conference, Seattle, WA, November 10-14., 15 pgs
- 73) \*Hopkins, C., J.J. Ducoste, 2002, Characterizing The Spatial Variation In Particle Aggregation Due To Heterogeneous Turbulence In A Flocculation Reactor, NC AWWA/WEF Annual Conference, Winston-Salem, NC, November 17-20, 12 pgs.
- 74) \*Ducoste, J.J., D. Liu, K. Linden, 2002, Modeling Drinking Water UV Disinfection Reactors using PHOENICS: Comparison between Eulerian and Lagrangian Approach, Proceedings, Phoenix User Conference, Moscow, Russia, September 21-28, 15 pgs.
- 75) Ortiz, V. and J.J. \*Ducoste, 2002, Characterization of Drinking Water Treatment Chemical Mixing Performance using CFD, Proceedings Joint CSCE/EWRI of ASCE International Conference, Niagara Falls , Ontario , Canada July 21 – 24, 15 pgs.
- 76) \*Ducoste, J.J. and K. Linden, 2002, An Alternative Approach to Determining Dose Distribution and Microbial Inactivation in UV Reactors using Computational Fluid Dynamics (CFD), Proceedings American Water Works Association National Conference, New Orleans, LA, June 17-21, 20 pgs.
- 77) \*Doby, T., D. Loughlin, F. de los Reyes, J. J. Ducoste, 2002, Use of Design Scenarios and Chance-Constrained Genetic Algorithm for Wastewater Treatment Plant Design, Environmental & Water Resources Systems, Analysis (EWRSA) Symposium, in conjunction with the Water EWRI Conference, Roanoke, Virginia, USA, on May 19-22, 20 pgs.
- 78) Doby, T., D. \*Loughlin, J. Ducoste, and F. L. de los Reyes III 2001, System-Wide Optimization of Wastewater Treatment Unit Processes Using a Distributed Genetic Algorithm, Environmental and Water Resources Institute/ASCE World Water and Environmental Resources Congress, May 20-24, Orlando FL. 15 pgs.
- 79) \*Peplinski, D. and Ducoste, J.J., 2001, Lessons for Applying Computational Fluid Dynamics Modeling to Disinfection Clearwells, Environmental and Water Resources Institute/ASCE World Water and Environmental Resources Congress, May 20-24, Orlando FL, 10 pgs.
- 80) \*Terry, S.D. and Ducoste, J.J., 2000, Modeling density current events in drinking water sedimentation processes using CFD, Proceedings NCAWWA/WEA Conference, Charlotte, NC, 10 pgs.
- 81) \*Ducoste, J.J. Carlson, K., Bellamy, W., Carlson, M., 1999, A Systematic Approach to Reactor Hydraulic Characterization: Part 1 of the Integrated Disinfection Design

- Framework Protocol, Proceedings AWWA Water Quality and Technology Conference, Tampa, FL., 10 pgs.
- 82) \*Ducoste, J.J., Daigger, G.T., Smith, R., 1999, Evaluation of Stacked Secondary Clarifier Design using Computational Fluid Dynamics, Proceedings Water Environment Federation Technology Conference, New Orleans, LA., 10 pgs.
- 83) \*Peplinski, D. and Ducoste, J.J., 1999, Enhancement of Computational Fluid dynamics (CFD) Modeling of Clearwell Performance, Proceedings NCAWWA/WEA Conference, Asheville, NC., 10 pgs.
- 84) \*Ducoste, J.J. and Brauer, R., 1999, Computational Fluid Dynamics Model of WTP Clearwell: Evaluation of Critical Parameters Influencing Model Performance, Proceedings, ASCE-CSCE Environmental Engineering Conference, Norfolk, VA., 10 pgs.
- 85) \*Carlson, K.H., Bellamy, W., Pier, D., Ducoste, J., Carlson, M., 1999, Implementation of the Integrated Disinfection Design Framework, Proceedings American Water Works Association National Conference, Chicago, IL., 10 pgs.
- 86) \*Ducoste, J.J. and Clark, M.M. 1997, The Influence of Tank Size and Impeller Type on Floc Size Distribution, Proceedings of the American Water Works Association National Conference, Atlanta, Georgia., 10 pgs.
- 87) \*Hagstrom, J.P., Crozes, G., Reddy, S., Verghes, V., Clark, M.M., Ducoste, J.J., Burns, C. 1997, The Use of Computational Fluid Dynamics for Improving Clearwell Design for CT Compliance, Proceedings of the American Water Works Association Computer Conference, Austin, Texas., 10 pgs.
- 88) \*Crozes, G., Hagstrom, J.P., Clark, M.M., Ducoste, J.J., Hermanowicz, S.W., Huntamer, J., 1996, Hydraulic Modeling for Improved CT Contactor Design, Proceedings of the American Water Works Association Annual Conference, Toronto, Ontario, 10 pgs.
- 89) \*Clark, M.M. and Ducoste, J.J. 1996, A Journey in Understanding Mixing and Flocculation, Proceedings of the American Water Works Association Virginia Section, Williamsburg, Virginia., 1 pg.
- 90) \*Ducoste, J.J., Clark, M.M., Weetman, R.J., 1995, The Evaluation of the Fluid Mechanics Generated in the Flocculation Process: Effects of Tank Size and Impeller Type, Proceedings of the American Water Works Association National Conference, Anaheim, California, 10 pgs.

**Invited Presentations (No Paper)**

- 1) Ducoste, J.J., 2022, Grease and Grease Interceptors – Evaluation of FOG removal performance and design optimization, NC Onsite Wastewater Treatment Workshop, Raleigh, NC, October
- 2) Ducoste, J.J., 2022, Navigating a Career in Academia, GEM Consortium National Conference, Phoenix, AZ, September
- 3) Ducoste, J.J., 2022, Grease Interceptors: How can we improve their performance to remove FOG, West Coast FOG Inspectors Virtual Workshop, August
- 4) Ducoste, J.J., 2022, Modeling to achieve mechanistic understanding and develop optimized transformative engineering solutions, University of Michigan, April

- 5) Ducoste, J.J., 2021 Understanding the Generation of Elevated Temperature Landfills through Finite Element Modeling, University of Florida Virtual Presentation April
- 6) Ducoste, J.J., 2021, Ding Ding Ding, Fatberg right ahead!: The challenges of sewer collection system sustainability and dealing with fats, oils, and grease discharge, Drexel university Virtual Presentation March
- 7) Ducoste, J.J., 2020, Clearing the Haze from Grease Interceptor Design, WEAT CMOM Virtual Conference, August 27
- 8) Ducoste, J.J., 2020, Improving Diversity in Environmental Engineering and Science, CentrEau Webinar, Laval University August 6
- 9) Ducoste, J.J., 2020, Changing the Tide of Post Tenure Review, ASEE Virtual Annual Conference, June 24
- 10) Ducoste, J.J., 2020, Successfully Obtaining Tenure and Promotion at an R1 University, Preparing Future Minority Faculty (PFMF) 2020 Symposium, NC A&T, May 14
- 11) Ducoste, J.J., 2020, Explaining the Formation of Elevated Temperatures in Municipal Solid Waste Landfills, Southern Methodist University, February 12, Dallas TX
- 12) Ducoste, J.J., 2019, Tips on Successfully Navigating Graduate School, Florida International University, Miami, FL, October 18
- 13) Ducoste, J.J., 2019, Full of Gold (FOG): Identifying value added initiatives for Fats, oil, and Grease waste streams, WEAT CMOM Conference, Austin, TX August 19-
- 14) Ducoste, J.J., 2019, Designing Efficient Grease Abatement Systems, National Precast Concrete Association Annual Conference, Louisville, KY, March 2
- 15) Ducoste, J.J., 2018, A life's Journey in Being a Transformative Agent of Change, Florida State University, Tallahassee, FL, November 19
- 16) Ducoste, J.J., 2018, The Art of a graduate school Application: What's in the mind of Faculty, University of Alabama Huntsville, AL, November 13
- 17) Ducoste, J.J., 2018, Tips/information to successfully navigate graduate school Application/Decision and Fellowship Opportunities, University of North Carolina Charlotte, NC, October 30
- 18) Ducoste, J.J., 2018, Tips/information to successfully navigate graduate school Application/Decision and Fellowship Opportunities, St Augustine College, Raleigh, NC, October 25
- 19) Ducoste, J.J., 2018, Assessing Surface Characteristics to reduce the adhesion of Fats, Oils, and Grease Deposits, North Carolina ONSITE Water Protection Conference, October 16, (Keynote Speaker)
- 20) Ducoste, J.J., 2018, Slip Sliding away: Minimizing FOG Deposit Adhesion to Sewer Surfaces, August 16, CMOM Conference, Austin, TX August 20

- 21) Ducoste, J.J., 2018, Development of Photochemical Microsensors for Evaluating Light Distributions within Algal Photosynthetic Bioreactors, Clemson University, Clemson, SC April 13
- 22) Ducoste, J.J., 2018, Building your Academic Brand, Academic and Research Leadership Network Symposium, Pittsburgh, PA, March 23-24
- 23) Ducoste, J.J., 2017, Raising the Value of Water: A strategy for Greater Public Health Protection, Seminar at Shaw University, Raleigh, NC
- 24) Ducoste, J.J., 2017, Drinking Water Treatment: What Happens from Source to Tap, Seminar at St Augustine University, Raleigh, NC
- 25) Ducoste, J.J., 2017, Holy Dish Pan Hands Batman, there are Soaps in the Sewers: Fats, Oil, and Grease Issues in Sewer Systems, Seminar at University of South Florida, Tampa, FL
- 26) Ducoste, J.J., 2016, Grease Removal Devices: Challenges in the Removal of FOG Emulsions and the Impact of Food Service Establishment Operations, 32 Annual Onsite Water Protection Conference, Raleigh, NC
- 27) Ducoste, J.J., 2016, Game Changer: A New Technique for Measuring the Performance of Grease Interceptors, CMOM Conference, Austin, TX
- 28) Ducoste, J.J., 2016, Drinking Water Treatment: What Happens from Source to Tap, Durham Technical Community College, Durham NC
- 29) Ducoste, J.J., 2015, Internal and External Grease Interceptors: Challenges in the Removal of FOG Emulsions and the Impact of Food Service Establishment Kitchen Operations, Keynote Speaker, FOG New Times New Solutions Conference Cranfield University UK
- 30) Ducoste, J.J., 2015, How Restaurant Kitchen Practices Influence FOG Deposit Formation in Sewer Collection Systems, Invited Presentation, CMOM Conference, Austin, TX
- 31) Ducoste, J.J., 2014, Evaluation of Alternative Herbicides for Root Control: Should we be worried about their impact on Wastewater Treatment Plants?, Invited Presentation, CMOM Conference, Austin, TX
- 32) Ducoste, J.J., 2014, Data and CFD to Compare Horizontal and Vertical/enclosed UV Reactors, IUVA Specialty Conference UV Disinfection for Wastewater and Reuse Program, Irvine, CA
- 33) Ducoste, J.J., 2013, New Tools to Assess the Potential Risk of FOG deposit Accumulation in a Wastewater Collection System, Invited Presentation, CMOM Conference, Austin, TX
- 34) Ducoste, J.J., 2012, Modeling the removal of EDC chemicals using Advance Oxidation, WEFTEC, New Orleans, LA

- 35) Ducoste, J.J., 2012, Fat, Oil, and Grease (FOG) in Sanitary Sewer Systems: Factors that influence Deposit formation, Invited Presentation at NC Annual Onsite Water Protection Conference, Raleigh NC
- 36) Ducoste, J.J., 2012, Chemical and Hydraulic Factors that influence the formation of FOG Deposits in Sewer Collection Systems, Invited Presentation, CMOM Conference, Austin, TX
- 37) Ducoste, J.J., 2012, Modeling Advance Oxidation Processes for Optimizing Reactor Performance, Invited Presentation, IUVA Conference, Washington, DC
- 38) Ducoste, J.J., 2012, Numerical Approach to Modeling UV Disinfection Processes: A State of the Art Review, Southeast University, Nanjing, PR China
- 39) Ducoste, J.J., 2012, Using Computational Fluid Dynamics Modeling to guide design decisions, AWWA UVCFD Presentation Sue Bach Email, Dallas, TX, June 10-14
- 40) Ducoste, J.J., 2011, Fat, Roots, Oil, and Grease (FROG) in Sanitary Sewer Systems: Is a Sustainable Sewer system in Jeopardy, Invited Presentation at NC Annual Onsite Water Protection Conference, Raleigh NC
- 41) Ducoste, J.J., 2011, Velocity Profiles and their Relevance in UV Reactor Validation, IUVA workshop, Tracy CA,
- 42) Ducoste, J.J., 2010, Fat, Roots, Oil, and Grease (FROG) in Sanitary Sewer Systems: Is a Sustainable Sewer system in Jeopardy, Invited Presentation at NC Annual Onsite Water Protection Conference, Raleigh NC
- 43) Ducoste, J.J., 2010, Can CFD Answer Hydraulic Questions and make Validation more broadly applicable?, Invited Presentation at AWWA Nation Conference Workshop: UV Today – Ten Years Post-*Cryptosporidium*– Myths and Reality
- 44) Ducoste, J.J., 2010, Fats Roots Oil and Grease in US Sewer Systems: An overview, Invited Presentation at FOGS Buildup and Removal: Problems and Solutions Workshop Cranfield University, UK
- 45) Ducoste, J.J., 2010, Simulating the UV/H<sub>2</sub>O<sub>2</sub> Advanced Oxidation Process using Computational Fluid Dynamics, Invited Presentation, Rensselaer Polytechnic Institute, Troy, NY
- 46) Ducoste, J.J., 2010, Grease Interceptors vs Under the Sink Grease Traps: Who won the Taste Test of Removing influent Fats, Oils, and Grease, Invited Presentation, CMOM Conference, Austin, TX
- 47) Ducoste, J.J., 2009, Assessment of Root Control Methods and Root Regrowth in a Pilot Scale Sanitary Sewer, Invited Presentation, CMOM Conference, Austin, TX
- 48) Ducoste, J.J., 2009, Analysis of Field Grease Interceptors, Invited Presentation, CMOM Conference, Austin, TX

- 49) Ducoste, J.J., 2009, The Intricacies of Analyzing/Designing Ultraviolet UV Disinfection Reactors using CFD, Invited Presentation, Water Reuse Workshop, Polytechnic University at Bari, Taranto, Italy
- 50) Ducoste, J.J., 2009, Population Balance Modeling in CFD Simulations, Invited Presentation, Water Reuse Workshop, Polytechnic University at Bari, Taranto, Italy
- 51) Ducoste, J.J., 2009, Computational Fluid Dynamics Modeling for Unit Process simulations in Drinking Water Treatment, Invited Presentation, Water Reuse Workshop, Polytechnic University at Bari, Taranto, Italy
- 52) Ducoste, J.J., 2009, Analysis of Fat, Oil, and Grease (FOG) in Sanitary Sewer Systems: Challenges to a Sustainable system, Invited Presentation, Villanova University, Villanova, PA
- 53) Ducoste, J.J., 2009, CFD Modeling for UV Disinfection and UV-Initiated Advanced Oxidation Processes, Invited Presentation, Disinfection 2009, Atlanta, GA
- 54) Ducoste, J.J., 2009, Simulating Ultraviolet Advance Oxidation Processes in Continuous Flow UV Reactors, Invited Presentation, University of Michigan, Ann Arbor, MI
- 55) Ducoste, J.J., 2008, Analysis of FOG and Roots in Sewer Collection systems, Invited Presentation, Water Environment Research Foundation Forum, Clearwater Beach, FL
- 56) Ducoste, J.J., 2008, Analysis and Design of Grease Interceptors, Invited Presentation, Water Environment Technology Conference, Workshop 115, Chicago, IL
- 57) Ducoste, J.J., 2008, FAT, Roots, Oil, and Grease (FROG) in Sanitary Sewers: Results from a Recent WERF Sponsored Study, Invited Presentation, Water Environment Research Foundation Webinar
- 58) Ducoste, J.J., 2008, An Introduction to Population Balance Modeling, Invited Presentation, MBR Training Seminar, Ghent University, Belgium
- 59) Ducoste, J.J., 2008, An Overview of Computational Fluid Dynamics Modeling, Invited Presentation, MBR Training Seminar, Ghent University, Belgium
- 60) Ducoste, J.J., 2008, Some Thoughts on CFD Modeling for Membrane Bioreactor Processes, Invited Presentation, 2<sup>nd</sup> Workshop CFD Modeling for MBR Applications, Ghent University, Belgium
- 61) Ducoste, J.J., 2008, Analysis of FAT, Roots, Oil, and Grease (FROG) in Sanitary Sewers, Invited Presentation, CMOM Conference, Austin, TX
- 62) Ducoste, J.J., 2008, Modeling UV reactors in Drinking Water Systems, Invited Presentation, Chemical Engineering Department, Mississippi State University
- 63) Ducoste, J.J., 2008, Analysis of Grease Interceptors for the Removal of FAT, Oil, and Grease (FOG): Are they Sufficient to Stop FOG related Sanitary Sewer Overflows, Invited Presentation, Civil and Environmental Engineering Department, Arizona State University

- 64) Ducoste, J.J., 2008, Analysis of Fat, Oil, and Grease Deposits in Sanitary Sewer Systems, Invited Presentation at Borchardt Conference, University of Michigan, Ann Arbor, MI
- 65) Ducoste, J.J., 2006, Modeling the Regulatory Behavior of *E coli* in Heterogeneous Substrate Environment, University of Ghent, Belgium, Biomath Department
- 66) Ducoste, J.J., 2006, Modeling Flocculation in Secondary Clarifiers using Quadrature Method of Moments, Water Environment Federation Technology (Weftec) Workshop, Dallas, Texas.
- 67) Ducoste, J.J., 2006, The Impact of Upstream turbulence characteristics on Ultraviolet (UV) Disinfection Reactors Performance, Invited Presentation at Purdue University, Department of Chemical Engineering
- 68) Ducoste, J.J., 2005, The Intricacies of Designing Ultraviolet (UV) Disinfection Reactors using Numerical Models, Invited Presentation at ATLANTIUM LTD, Har Tuv, Israel
- 69) Ducoste, J.J., 2005, Simulation of Flocculation in Stirred Vessels using Quadrature Method of Moments: Evaluation of Lagrangian versus Eulerian Approaches, Invited Presentation at Department for Applied Mathematics, Biometrics and Process Control, Ghent University, Ghent, Belgium
- 70) Ducoste, J.J., 2005, Impact of Upstream Hydraulic Structures on UV Reactor Performance, Invited Presentation at Borchardt Conference, University of Michigan, Ann Arbor, MI
- 71) Ducoste, J.J., 2004, Numerical Prediction of the Reduction Equivalent Fluence Bias, Invited Presentation at Degremont North American Research & Development Center, Richmond, VA
- 72) Ducoste, J.J., 2004, Characterization of Dose Distribution in UV Reactors, Invited Presentation at Pennsylvania State University Department of Civil Engineering
- 73) Ducoste, J.J., 2003, The Intricacies of using Numerical Models for Analyzing/Designing Ultraviolet UV Disinfection Reactors, Invited Presentation at North Carolina Central University Environmental Engineering Science Program
- 74) Ducoste, J.J., 2001, An Overview of Computational Fluid Dynamics Modeling for Evaluation of Water and Wastewater Treatment Process Performance, Invited Presentation at Duke University Department of Civil and Environmental engineering
- 75) Ducoste, J.J., 2000, Modeling Flocculation in Water Treatment Processes: Impact of Tank Size and Impeller Configuration, Invited Presentation, Engineering Foundation on Population Balance Modeling of Particulate Systems, Kailua-Kona, Hawaii. (A portion of the invited speakers conference fees are waived by the conference organizers.)
- 76) Ducoste, J.J., 2000, IDDF Approach to Enhanced Reactor Hydraulic Characterization, Invited Presentation, Department of Civil and Environmental Engineering, Marquette University, (Seminar part of the Metcalf Chair)

- 77) Ducoste, J.J., 2000, Water Scarcity in the 21<sup>st</sup> Century: Has Time Come for Water Reuse, Invited Presentation, Public Forum at Marquette University, (Seminar part of the Metcalf Chair)

**Presentations (No Paper)**( \* = Presenter)

- 1) Weaver, J., de los Reyes, F., Ducoste, J.J., 2021, Modeling environmental bioreactors treating wastewater by integrating biological processes, floc microenvironments, and computational fluid dynamics, Early Career Research Conference, June 15-19 Virtual
- 2) Kusum, S.A., Pour-Ghaz, M., Ducoste, J.J., 2021, Surface Factors that Influence the Formation and Adhesion of Fat, Oil, and Grease (FOG) Deposits, WRRRI Annual Conference. A Virtual Event, 25-26 March.
- 3) Wang, D., Lai, Y., Karam, A.L., de los Reyes, III, F.L., and Ducoste, J.J., Algae Dynamic and functional modeling of carbon metabolism in photosynthetic microalgae, 10th Algal Biomass, Biofuels and Bioproducts Conference, June 16, 2021
- 4) Karam, A., de los Reyes, F., Ducoste, J., 2019, Evaluation of alternative light models for estimating light attenuation during microalgal cultivation, AEESP 2019 Research and Education Conference, Arizona State University, May 14-16, Tempe, AZ
- 5) \*Hao, Z., Ducoste, J., Barlaz, M., 2018, A Spatial Variation Model Describing Generation, Accumulation, and Propagation of Heat in Municipal Solid, Global Waste Management Symposium, Indian Wells CA Feb 11-14
- 6) \*Cranos Williams, Alexandr Koryachko, Anna Matthiadis, Durreshahwar Muhammad, Siobhan M. Brady, Joel Ducoste, James Tuck, Terri A. Long, 2017, Integrative Dynamic Modeling Using Diverse Biological Datasets, Crops In Silico Symposium and Workshop, University of Oxford, UK, June 12.
- 7) \*Karam, A.L., Ducoste, J.J., de los Reyes III, F.L., 2017, Development of Photochemical Microsensors for Evaluating Light Distribution within Microalgal Photosynthetic Bioreactors, AEESP Conference, Ann Arbor Michigan, June 22-24
- 8) \*de los Reyes, F. L. III, L. Wang, P. Shen, J. Yeh, T. Aziz, and J. Ducoste (2016). Directing microbial community assembly in anaerobic reactors: implications for increasing methane yields and improving start-up. WRRRI Conference, March 17-18, 2016, Raleigh, NC
- 9) \*Hao, Z., Sun, M., Ducoste, J., Barlaz, M., Benson, C., Castaldi, M., Luetlich, 2016, Understanding and Predicting Temperatures in Municipal Solid Waste Landfills, Global Waste Management Symposium, January 31-February 3, Indian Wells, CA
- 10) \*Cranos Williams, Alexandr Koryachko, Anna Matthiadis, Durreshahwar Muhammad, Jessica Foret, Siobhan M. Brady, Joel Ducoste, James Tuck, Terri A. Long., 2016, “Clustering and Differential Alignment Algorithm: Identification of Early Stage Regulators in the A. thaliana Iron Deficiency Response.” Pittcon Conference, Atlanta, GA, March 2016.
- 11) Anna Matthiadis, Alexandr Koryachko, Durreshahwar Muhammad, Jessica Foret, Siobhan M. Brady, Joel Ducoste, James Tuck, Cranos Williams, and Terri A. Long., 2016, “Computational prediction of regulatory relationships: New players in the Arabidopsis



thaliana iron deficiency response.” Salt & Minerals Symposium, American Society of Plant Biology (ASPB) Annual Meeting, Austin, TX, July 2016.

- 12) \*Wang, L, Hossen, E., Aziz, T.N., Ducoste, J., de los Reyes, F.L., 2015, How to train your digester - Using step and pulse feeding of grease waste to increase community resistance and methane yield above 336%, Student Platform Presentation Speaker, Air & Waste Management Association (A&WMA), 108th Annual Conference & Exhibition, Raleigh NC
- 13) \*Wang, L, Hossen, E., Aziz, T.N., Ducoste, J., de los Reyes, F.L., 2015, How to train your digester - Step and pulse feeding of grease interceptor waste increased community resistance and methane yield by up to 350%, “Fresh Ideas” Poster session, Annual Conference & Exposition (ACE), American Water Works Association (AWWA), Anaheim, California
- 14) Anna Matthiadis, Alexandr Koryachko, Durreshahwar Muhammad, Jessica Foret, Siobhan M. Brady, Joel Ducoste, James Tuck, Cranos Williams, and Terri A. Long., 2015, Algorithm application to identify novel regulators in the Arabidopsis thaliana iron deficiency response. Systems Biology and New Approaches Session, International Conference on Arabidopsis Research (ICAR), Paris, France, July, 2015.
- 15) Anna Matthiadis, Alexandr Koryachko, Durreshahwar Muhammad, Jessica Foret, Siobhan M. Brady, Joel Ducoste, James Tuck, Cranos Williams, and Terri A. Long. "Algorithm application to identify novel regulators in the Arabidopsis thaliana iron deficiency response." Ionomics Workshop, International Conference on Arabidopsis Research (ICAR), Paris, France, July, 2015
- 16) Wang, L., Hossen, E.H., Aziz, T.N., Ducoste, J., Bullard, M., de los Reyes, F.L., 2014, Step and Pulse Feeding Of Anaerobic Co-Digesters Treating Thickened Waste Activated Sludge and Grease Interceptor Waste, Water Resources Research Institute Annual Conference, Raleigh, NC, March 19
- 17) Anna Matthiadis, Alexandr Koryachko, Durreshahwar Muhammad, Joel Ducoste, James Tuck, Cranos Williams, and Terri Long., 2014, “Using a systems biology approach to identify key transcriptional regulators in the Arabidopsis thaliana iron deficiency response.” 9<sup>th</sup> International BioMetals Symposium, Poster Presentation, Duke University, July 2014.
- 18) Weaver, J., Ducoste, J., de los Reyes, F.L., 2014, Influencing Aerobic Granulation through Variable Shear in an Eccentric Couette Micro-Reactor, NC AWWA/WEA Conference, Winston Salem NC, Nov 16-19
- 19) \*He, X., Ducoste, J., de los Reyes, F., 2012, A Comprehensive Mechanistic Model Showing How Fat, Oil, and Grease (FOG) Deposits Form in Sewer Lines, NC AWWA-WEA Annual Conference Raleigh, NC., Nov. 11-14
- 20) \*Wang , Y., Ducoste, J., Challenges in the Measurements of Fat, Oil and Grease in Food Service Establishment Waste Streams, 2012, NC AWWA-WEA Annual Conference Raleigh, NC., Nov. 11-14
- 21) \*Song, J., Chen, H., Shuford, C.M., Li, Q., Shi, R., Muddiman, D.C., Williams, C.M., Ducoste, J., Sederoff, R.R., Chiang, V.L., 2012, Mechanistic Modeling Frameworks for Multiple Enzyme Regulation in Metabolic Pathway, KSEA South Atlantic Regional Conference, Nov 15-17

- 22) \*Aziz, T.N., Wang, L., Long, J.H., Ducoste, J.J., de los Reyes, III, F.L., 2012, Sustainable Energy from Grease Interceptor Waste Co-Digestion, NC AWWA-WEA Annual Conference Raleigh, NC., Nov. 11-14
- 23) \*Iasmin, M., Ducoste, J., 2012, Factors that Influence the Physical and Chemical Characteristics of Fat, Oil, and Grease Deposits in Sewer Systems, North Carolina Water Resources Research Institute, March 28
- 24) \*He, X., de los Reyes, F.L., Ducoste, J., 2012, How do Fat, Oil, and Grease Deposits form in Sewer Lines, North Carolina Water Resources Research Institute, March 28
- 25) Aziz\*, T.N., Long, J.H., Wang, L., de los Reyes, F.L., Ducoste, J.J., 2012, Exploring Sustainable Energy from Grease Interceptor Waste, WRRRI Annual Conference & NCWRA Symposium, Raleigh, NC.
- 26) \*Williams, C.M., Chen, H., Song, J., Ducoste, J., Shuford, C.M., Li, Q., Liu, J., Shi, R., Muddiman, D.C., Sederoff, R.R., Chiang, V.L., 2012, Predictive Models of Regulatory and Metabolic Pathways for Monolignol Biosynthesis in *Populus trichocarpa*, Plant & Animal Genome XX Conference, Jan. 14-18, San Diego, CA
- 27) \*He, X., Ducoste, J., de los Reyes, F.L., 2011, How are Fat, Oil and Grease (FOG) Deposits Formed in Sewer Lines?, NCAWWA/WEA, Nov 15,16, Winston-Salem, NC
- 28) \*Karami, B., de los Reyes, F., Ducoste, J., 2011, Studying Formation of Nitrifying Aerobic Granules and Effect of Shear Distribution on Granulation NCAWWA/WEA, Nov 15,16, Winston-Salem, NC
- 29) \*Arafin, M., Ducoste, J., 2011, Modeling and experimental Evaluation of UV LED Reactor using Computational Fluid Dynamics (Poster), NCAWWA/WEA, Nov 15,16, Winston-Salem, NC (3<sup>rd</sup> prize award)
- 30) \*Ducoste, J., 2011, Water and Waster Treatment Process on Steriods: Using Computational Fluid Dynamics to Drive out Unit Process Inefficiencies, KECKS Futures Initiative, Nov 10-13, Irvine, CA
- 31) Sobriminsana\*, Ducoste, de los Reyes, 2011, Combining CFD, floc dynamics, and biological reaction kinetics to model carbon and nitrogen removal in an activated sludge system, WRRRI, March 21, Raleigh, NC
- 32) Gallimore\*, Ducoste, Assessment of Grease Abatement Systems, WEF Sewer Collection System Conference, NCAWWA/WEA, Nov 15,16, Winston-Salem, NC
- 33) Vallabh, R., Seyam, A.M.\*, Banks-Lee, and Ducoste, J., Tortuosity in Fibrous Porous Media, the Proceedings of the 7<sup>th</sup> International Conference of Textile Research Division, National Research Center, Cairo, Egypt, October 10-12, 2010.
- 34) Vallabh, R., Seyam, A.M.\*, Banks-Lee, and Ducoste, J., Tortuosity of Nonwoven Structures, the 7<sup>th</sup> International Conference of Textile Research Division, National Research Center, Cairo, Egypt, October 10-12, 2010.

- 35) Vincent Chiang\*, Ron Sederoff, John Ralph, Joel Ducoste, Fikret Isik, Cranos Williams, David Muddiman, Lignin proteome, metabolome, enzymology, biochemistry, transgenics, structural chemistry, and systems modeling, Forest Biotechnology Industry Research Consortium (FORBIRC) Annual Meeting McKimmon Center, NCSU, May 26-28, 2010
- 36) Cranos Williams\*, Joel Ducoste, Jina Song, Fikret Isik, Ron Sederoff and Vincent Chiang Predicting regulatory control of lignin biosynthesis using signaling graph methodology Forest Biotechnology Industry Research Consortium (FORBIRC) Annual Meeting McKimmon Center, NCSU, May 26-28, 2010
- 37) Joel Ducoste\*, Cranos Williams, Jina Song, His-Chuan Chen, Fikret Isik, Ron Sederoff and Vincent Chiang, Regulatory constrained flux balance analysis of monolignol biosynthesis Forest Biotechnology Industry Research Consortium (FORBIRC) Annual Meeting McKimmon Center, NCSU, May 26-28, 2010
- 38) Sobriminsana\*, Ducoste, de los Reyes, 2010, A Numerical Approach for Modeling Carbon and Nitrogen Removal Under the Influence of Floc Size Distribution, IWA Leading Edge Conference, Pheonix, AZ June 4-8, 2010
- 39) de los Reyes, F., \*Ducoste, J., 2010, Factors Affecting the Formation of FOG Deposits in Sewer Lines, Urban Water Consortium Meeting, June 4, Raleigh NC
- 40) Xia\*, Ducoste, de los Reyes, 2010, Investigating the Formation of Fat Oil and Grease Deposits in Sewer Collection Systems, WRI Conference, Raleigh, NC March 15....
- 41) Alpert, S. M., & Ducoste, J. J., 2009, Validation of CFD Models Simulating the UV/H<sub>2</sub>O<sub>2</sub> Advanced Oxidation Process. North Carolina AWWA/WEA Annual Conference, Raleigh, NC.
- 42) \*de los Reyes, F., \*Ducoste, J., 2009, Factors Affecting the Formation of FOG Deposits in Sewer Lines, Urban Water Consortium Meeting, March 11, Burlington NC
- 43) \*Sobremisana, A., F. L de los Reyes III, and J. J. Ducoste (2009) Simultaneous Modeling Carbon and Nitrogen Removal under the Influence of Floc Size Distribution. NC American WaterWorks Association/Water Environment Association Annual Conference, November 15-18, Raleigh, NC
- 44) Ducoste, J., \*Aziz, T., Buckley, T., Movahed, Z., Card, C., Gallimore, E., 2008, Design Considerations for Volume Based Grease Interceptors, Chesapeake Water Environment Association Conference on Collection Systems, November 14, Linthicum, MD
- 45) \*Ducoste, J., 2008, Improving our Understanding of Complex Reacting Processes in Water and Wastewater Treatment through Computational Fluid Dynamics, National Academy of Engineering Frontiers of Engineering Conference, November 17-19, Kobe, Japan
- 46) \*Sobrimisana A., de los Reyes, F., Ducoste, J., 2008, A Numerical Approach for Modeling Carbon and Nitrogen Removal under the Influence of Floc Size Distribution poster presentation, NCAWWA/WEA 88<sup>th</sup> Annual Conference, November 16-19, Winston Salem, NC

- 47) \*Gallimore, E., Ducoste, J.J., 2008, Performance of Grease Interceptors: Evaluating Design Alternatives, poster presentation, NCAWWA/WEA 88<sup>th</sup> Annual Conference, November 16-19, Winston Salem, NC
- 48) de los Reyes, F. L., J. Ducoste, M. Hyman, C. Mota, D. Aslett, and H. Hong (2007), New Approaches in Determining the Spatial and Metabolic Interactions of Nitrogen-Transforming Bacteria in Microbial Flocs, NSF MO/MIP Meeting, Mar. 1, Washington, DC
- 49) \*Liu, Y. and Ducoste. J.J., 2005, Impact of Turbulent Mixing on Chloramines Formation Proceedings Chesapeake Section AWWA Annual Conference, Dover, DE
- 50) \*Richards, B., J.J., Ducoste, 2004, Characterizing Sequential Disinfection in Flow Through Systems, 4th Annual Eastern Regional Conference, New Bern. NC
- 51) \*Prat, O., Ducoste, J.J., 2004, Performance Analysis of Quadrature Method of Moments (QMOM) for PBM Systems used in Assessing Flocculation Processes in Water and Wastewater Treatment, 2<sup>nd</sup> International Population Balance Modeling, Valencia, Spain May 7-9
- 52) \*Ducoste, J.J., V., Ortiz, Y., Liu, 2002, A Multifluid Modeling Approach to Characterizing Chemical Dispersion in Drinking Water Treatment, Water Resources Research Institute Annual Conference, Raleigh, NC, April 9

B. **Technology Transfer** - Include invention disclosures, patents files and patents awarded, new cultivars developed and released, major software packages, design patents, and other pertinent evidence.

Case #: 13192

Title: Process of developing aerobic granules in activated sludge using shear variation

Lead Inventor: Francis de los Reyes

Co-Inventors: Joel Ducoste, Bahareh Karami

- C. **Cross-Disciplinary Activities** - Include participation in centers, institutes, and other organized research efforts between departments within and across colleges.
- Collaborating with Amy Grunden (Microbiology), Heike sederoff (Plant Biology) on the development of photobioreactors for microalgae harvesting and production of lipids for biofuels
  - Collaborating with Cranos Williams (Electrical Engineering), Terri Long (Plant Biology), John Tuck (Electrical Engineering) on a Biosystems modeling project for Iron deprivation in plants
  - Collaborating with Imara Perera (Plant biology), Brian Phillips (Plant Biology), Cranos Williams (Electrical Engineering), and Glenda Gillaspay (Biochemistry Virginia Tech) on Myo-inositol pathway regulation in plant cells
  - Collaborated with Jim Burton in Horticulture on the assessment of alternative herbicides for the abatement of roots intrusion in sewer pipe lines

- Collaborated on a proposal involving Marty Hubbe and Orlando Rojas from Pulp and Paper Science and Melissa Pasquinelli from Textile Engineering to understand the structure and reactivity of zero-valent iron nanoparticles, using molecular dynamics simulations. A proposal to NSF was submitted in September 2009.
- Collaborating on an NSF project involving Vincent Chiang and Ron Sederoff from Forestry department, and William Edmonson and Windser Alexander from Electrical engineering on developing biosystem models for the analysis tree plant cell metabolism for the production of lignin.
- Collaborated with Michael Hyman in Microbiology with Francis de los Reyes to understand how the microbial ecology changes with physical floc conditions in an activated sludge reactor.
- Collaborated with the Kenan Institute for Engineering, Technology, and Science as a University mentor for the Kenan Fellows for Curriculum and Leadership Development program. The program involves working with a middle school teacher to integrate water quality and treatment concepts into the K-12 curriculum.
- Collaborated on a project involving fat, oil, and grease deposit formation in sanitary sewers with Kevin Keener in the Food Science department.
- Collaborated on a project to develop a program designed to increase the number of graduates in science, technology, engineering and mathematics (STEM) with John Fountain in MEAS department
- A participant in a 5 yr NSF REU project with Christine Grant and Steven Peretti (CHE Dept.)
- Collaborated on a proposal involving the demonstration and evaluation of a constructed wetland and spray field system for leachate treatment with Sarah Liehr of BAE. The proposal has been submitted to SEAGRANT and is pending
- Collaborated on a project involving modeling nitrogen transport in duckweed ponds for secondary treatment of swine wastewater with Jiayang Cheng of BAE
- Collaborated on two proposals and a project involving the design and implementation of a reconfigurable computer for simulation of turbulent-induced flocculation models with Clay Gloster (formerly of the ECE Dept.)
- Collaborated on Combined Research-Curriculum Development (CRCDD) NSF Proposal with Christine Grant NCSU-CHE, Clay Gloster NCSU-ECE, Richard Felder NCSU-CHE, Sandra Williams NCSU-Education, and Fred Boadu DUKE-CE, that looks at using high computing techniques to integrate engineering research into curriculum development.

#### **IV. Extension And Engagement With Constituencies Outside The University**

- A. **Scholarly Accomplishments** - Include refereed publications, brochures, reports, pamphlets, non-refereed publications, computer software, educational videotapes, slide sets, popular press articles, and other pertinent evidence.

Collaborating with Professor Lorenzo Liberti, Politecnico di Bari. The project involves the development and validation of computational fluid dynamic models of unit process for water reuse applications. This project is only one phase of a larger project entitled “Integrated Strategies For Municipal Wastewater Productive Reuse In Apulia Region” This multiphase research also involves collaboration with Dr. J. Cotruvo from USEPA Prof. C. Haas from Drexel University, USA, Prof. R. Gehr from McGill Univ., Canada, Prof. H. Shuval from Jerusalem Hadassah Academy, Israel, and Prof. G. Huppes from Leiden Univ., Netherlands.

- B. **Technology Transfer** - Include major accomplishments, program impacts.

Ducoste, J.J., 2011, Design and Assessment of Grease Abatement Systems, Design Your Own Workshop series, NCSU, December 3, Raleigh N.C.

Ducoste, J.J., 2010, The Intricacies of Designing Ultraviolet (UV) Disinfection Reactors using Numerical Models, Design Your Own Workshop series, NCSU, November 18, Raleigh N.C.

Ducoste, J.J., 2003, The Intricacies of Designing Ultraviolet (UV) Disinfection Reactors using Numerical Models, Design Your Own Workshop series, NCSU, November 18, Raleigh N.C.

Ducoste, J.J., 2002, The Intricacies of Designing Ultraviolet (UV) Disinfection Reactors using Numerical Models, Design Your Own Workshop series, NCSU, December 4, Raleigh N.C.

Ducoste, J.J., 2001, Overview of Integrated Drinking Water Disinfection Design Framework Approach, Design Your Own Workshop series, NCSU, December 5, Raleigh N.C.

- C. **Recognized Creative and Professional Achievement** - Include exhibitions, honors, awards, prizes, grants and contracts, and other pertinent evidence.

- D. **Public Service** - Include seminars and meetings arranged, special intervention programs, workshops, special projects, design assistance, and other pertinent evidence.

Working with Washington Suburban Sanitation Commission on evaluating Grease Abatement Systems for removal of Fat Oil and Grease Laden waste streams

Associate Editor for Journal of Environmental Engineering ASCE

Moderator of Technical Session at Disinfection 2009 Conference Atlanta, GA

Guest Instructor at Leesville Middle School 8<sup>th</sup> grade Science Class

Moderator at an NSF Workshop WATERS 08 DC

Speaker at a workshop on Fat, Oil, and Grease for engineers and pretreatment coordinators in NC

Organizer of a Workshop on modeling membrane bioreactors for researchers and scientists at Ghent University

Member of the conference organizing and scientific committee for the 3rd International Conference on Population Balance Modeling, September 2007, Quebec City, Quebec  
Conference website :<http://modeleAU.org/pbm2007>

Member of the conference organizing and scientific committee for the 2nd International Conference on Population Balance Modeling, May 2004, Valencia (Spain) Conference website:<http://biomath.rug.ac.be/PBM2004>

Developed a proposal/project for the Senior Design Course in Civil Engineering that involves the neutralization of wastewater for a local company: Kennametal. The work is being performed with Lisa Bullard of Chemical Engineering to foster both process and waste treatment solutions and multidisciplinary activities for the students in the design course

Member of Senior Project Review for New York City Department of Environmental Protection (DEP) Catskill Turbidity Control Study

This work involves the evaluation of computer modeling developed for a multi-level Shandaken Tunnel Intake facility and reservoir dredging/Cofferdam removal project. I am also responsible for helping review the technical and economic feasibility and environmental benefits for the alternatives developed through the modeling performed.

Co-chaired the UV Measurement sessions at the IUVA 2nd International Congress on Ultraviolet Technologies in Vienna, Austria, July, 2003

Developed a proposal/project for the Senior Design Course in Civil Engineering that involves the neutralization of wastewater for a local pharmaceutical company: Novo Nordisk.

Member of Senior Project Review for New York City Department of Environmental Protection (DEP) Catskill and Delaware UV Disinfection Facility

This work consists of the evaluation of computer modeling and/or biosimetry testing data developed for validation of the ultraviolet light (UV) reactors to be installed within the New York City Department of Environmental Protection (DEP) Catskill and Delaware UV Disinfection Facility. The Catskill and Delaware system supplies nearly 90% of the 2 billion gallons of drinking water consumed daily in New York City. The DEP has developed a Conceptual Design of the UV disinfection facility that incorporates low pressure high output (LPHO) UV reactors with nominal capacities of 40-mgd. As part of the Conceptual Design, DEP began a modeling program with the basic goal of using modeling as a means for validating full-scale UV reactors.

Member of Senior Project Review for Hydraulic Feasibility and Demonstration-Scale UV Testing at the Richard Miller Treatment Plant

The Greater Cincinnati Water Works (GCWW) requests for professional engineering services to conduct a hydraulic feasibility and cost effective analysis for the purpose of evaluating an optimal location for UV (Ultra Violet) technology installation into the existing treatment process and to provide recommendations for the most viable and cost effective UV technology for the Richard Miller Treatment Plant (RMTP). The project include services to design and conduct a yearlong demonstration-scale UV study at the RMTP to collect operation and maintenance data including performing feasible microbial inactivation tests and Computational Fluid Dynamics (CFD) modeling.

Performed consulting work for ATLANTIUM Inc and Gas Delivery Systems (GDS) that involved the review of Ultraviolet modeling work performed by both companies. In addition, modeling work was performed by me to review strategies for GDS to improve their UV reactor design.

Provided senior review of the modeling section of the EPA UV Guidance manual

Served as a member of the EPA Science Advisory Board member and related adhoc and subcommittees for 9 years

Currently serve as a member of the EPA Board of Scientific Counselors subcommittee for Sustainable and Safe Water Resources

Serve as an external representative of the Civil, Architecture, and Environmental engineering Department Board of Advisors at NCA&T

Served as an external evaluator for the Civil and Environmental Department Graduate Program Review Wayne State University

Served on the committee to organize the GEM Grad Lab at NC State University during the Spring semester 2018

Committee on developing a pipeline for URMs for Environmental Engineering and Science in NC

Working with Water Environment Federation Introducing Future Leaders to Opportunities in Water (InFLOW) program to broaden participation and inclusion of workforce. Developed video to help encourage effort ([https://www.youtube.com/watch?v=cqE-E2\\_GIMc&list=PLLeo-tHuuDoa54IfYSQxxIejLAhCVQHho&index=4&t=0s](https://www.youtube.com/watch?v=cqE-E2_GIMc&list=PLLeo-tHuuDoa54IfYSQxxIejLAhCVQHho&index=4&t=0s))

Executive Board Member of AEESP (Elected Vice President, President-Elect)

### **Summary of Consulting Services**

Fall 1999, Fall 2000, Fall 2003	CH2M HILL	Senior reviewer for CFD models of disinfection contactor designs and UV systems (See Extension section)
Spring 2002, Fall 2002, Fall 2003	Hazen & Sawyer	Senior reviewer for CFD models of UV reactor designs with the city of New York (See Extension section)



Spring 2003	Novo Nordisk	Senior reviewer for waste discharge project. This project was performed through CE 481 senior design course.
Spring 2004	Kennametal	Senior reviewer for waste discharge project. This project was performed through CE 480/481 senior design course.
Fall 2003 and Spring 2004	Hazen & Sawyer	Senior reviewer for CFD models of New York City's Catskill Turbidity Control Study (See Extension section)
Spring 2004	CH2M HILL	Senior reviewer for CFD models of Anaerobic digester project (See Extension section)
Summer 2005	Atlantium	Senior reviewer for CFD models of UV reactor for drinking water disinfection (See Extension section)
Spring 2006		
Fall 2005	GDS Inc	Senior reviewer for CFD models of UV reactor for drinking water disinfection (See Extension section)
Fall 2006	CH2M HILL	Senior Reviewer UV Disinfection System, Cincinnati
Fall and spring 2011	Eaton	Senior reviewer of UV disinfection design of new reactors for Ballasted flocculation
Fall 2011, Spring 2012	WRF	Senior review of UV Validation of UV reactors for NYC
Spring and Summer 2012	Arcadis/ MalcomPirnie	Senior reviewer for UV installation design for City of Rochester NY and Los Angeles CA
Fall 2012, Spring 2013	SETI	Developing CFD models of novel LED reactors
Spring 2014	Arcadis/ MalcomPirnie	Senior reviewer for UV low wavelength assessment of action spectra correction factor design for City of Los Angeles CA
Fall 2016	Emerson electric	Provided consulting on the state of FOG research in sewer collection system
Summer-Fall 2016	Oldcastle Precast	Senior reviewer of new designs for grease interceptors

E. **Cross-Disciplinary Activities** - Include contributions to special University-wide initiatives.

Participant in a 3 yr (2004-2007) NSF RET project with Ruben Carbonell and Deborah Mangum (Kenan Institute for Engineering, Technology, and Science). The proposed site will provide science and engineering research projects for 20 middle and high school teachers from multiple school districts in order to develop a cohort of teacher leaders who will bring enhanced knowledge of engineering and technological innovation into their classrooms.

Participant in a 5 yr (2000-2005) NSF REU project with Christine Grant and Steven Peretti (CHE Dept.). This project involves several researchers from different departments all providing research projects that can be completed by an undergraduate student during the summer months. As a member of this research team, I have provided research projects related to water and wastewater treatment processing and design.