Curriculum Vitae

Joel Ducoste

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I. Biosketch

Dr. Joel Ducoste is the Associate Dean for Faculty Development and Success in the College of Engineering and Professor in the Civil, Construction, and Environmental Engineering Department at North Carolina State University (NCSU). He holds a B.S. (1988) and M.Eng. (1989) in Mechanical Engineering from Rensselaer Polytechnic Institute, and a Ph.D. in Environmental Engineering (1996) from the University of Illinois at Urbana-Champaign. He has over 5 years of academic leadership and administrative experience that includes 3+ years of senior leadership as the Associate Dean. In addition, Dr. Ducoste has over 25 years of Environmental Engineering experience, is a board certified environmental engineering member with the American Academy of Environmental Engineers and Scientists, and is a recognized expert in modeling water and wastewater treatment processes using Computational Fluid Dynamics (CFD). His current research interests include physico-chemical processes in water treatment, computational fluid dynamics modeling, water/wastewater process optimization, wastewater sewer collection system sustainability, renewable energy, plant biosystems engineering, solid waste process modeling, and disinfection of pathogenic aerosols. He is a respected researcher and productive scholar with over 190 peer reviewed journal publications, conference proceedings, and research reports and over 75 invited presentations. Dr. Ducoste has received a number of awards including: an NSF Career Award, a Fulbright fellowship, Visiting Professorships at Ghent University, South East University, and Yangzhou University, NC State mentoring award, elected Fellow of both the Water Environment Federation (WEF) and the Association of the Environmental Engineering and Science Professors (AEESP), AEESP Distinguished service award, and the WEF Fair Distinguished Engineering Educator Medal. Dr. Ducoste serves on the Editorial Advisory Board Member for the Journal of Environmental Science: Water Research and Technology, RSC, North Carolina Louis Stokes Alliance for Minority Participation Advisory Board, and participated as a fellow in the NC Alliances for Graduate Education and the Professoriate (AGEP) program. He has served on EPA Science Advisory Boards (2009-2018) and the EPA Board of Scientific Counselors Safe and Sustainable Water Resources committee (2018-2022). He was also the 2020-2021 President of AEESP. Dr. Ducoste also spent 5 years in industry at CH2M Hill as a senior process engineer and as an advance-manufacturing engineer at GE Aircraft Engines.

II. Administrative and Leadership Experience

Associate Dean for Faculty Development and Success, College of Engineering (2020-Present)

This position is one of four Associate Deans that report directly to the Dean of a College with 9 departments and 3 affiliate departments. The college has approximately 400 faculty. Responsibilities and accomplishments included:

- Contribute as an active member of the Dean's cabinet, participating in monthly meetings discussing all matters of priority to the College, including planning for College-wide activities, managing personnel issues, and leveraging resources.
- Provide support to identify resources and clarify policy for department heads in the college on faculty hiring, annual performance review, and promotion and tenure process.
- Assisted in the search process for faculty positions across the College of Engineering.
- Managed the 5 yr review process for the department heads of the following departments: Mechanical and Aerospace Engineering, Fitts Industrial and Systems Engineering, Material and Science Engineering, and Computer Science.
- Supervise the College process for faculty reappointment, promotion and tenure.
- Manage Onboarding process for New Faculty and check in meetings
- Developed content and managed the New Faculty Orientation Workshop, Faculty Mentoring workshops, NSF Career Just in Time Workshops
- Developed the Mentoring Program for Postdoctoral fellows and PhD graduate students interested in faculty/academic careers
- Developed the COE Postdoctoral Career Engagement Workshop
- Lead for the Kern Family Foundation Entrepreneurial Engineering Network
- Coordinating the development of the College of Engineering Teaching Council
- Leading efforts to capture data through a faculty needs assessment to help set priorities of faculty support
- Managed COE faculty prestigious awards submission (e.g. University Faculty Scholar, Goodnight Early Career Innovator)
- Lead a session of Academic Career Branding in the Building Future Faculty Program

Assistant Dean for Graduate Student Advancement*, College of Engineering (2018-2020)

This position reported to the Associate Dean for Graduate Programs. Responsibilities and accomplishments included (*position title was internal to COE):

- Managed the LSAMP Bridge to the Doctorate Program that supervised the progression of 14 PhD URM graduate students. This involved the development and submission of the NSF proposal, developing workshops for graduate student success and retention, faculty training on inclusive excellence and diverse culture and climate in research groups.
- Coordinated graduate student recruiting and broadening participation programs for URM graduate students
- Participated in Graduate school NC State Visitation day
- Co-chaired and a member of the inaugural Graduate Diversity Equity and Inclusion Committee (GDEIC)
- Provided faculty workshops on CIMER and Appreciative Advising Mentoring
- Managed scholarship budgets for GEM Consortium fellows

President and Board Member, Association of Environmental Engineering and Science Professors

(Board member: 2017-2020; President: 2020-2021)

- Coordinated efforts of the Demographics and Membership committee that lead to development of AEESP's commitment to justice, equity, diversity, and inclusion (JEDI) statement and developed a values statement
- Led the association's strategic plan initiative, where we redefined our vision and mission statements and prioritized goals for the next 5-7 years
- Led the association efforts to become members of the Societies Consortium on Sexual Harassment in science, technology, engineering, mathematics, and medicine (STEMM)
- Coordinated efforts to revamp the association's website to improve member's engagement with resources and interactions with committees and universities

III. Relevant Leadership Training

Fellow of the ACC Academic Leadership Development Program
This professional development opportunity aims to prepare and advance academic leaders for roles within ACC institutions and beyond. It has two components, a university-level development program designed by each institution for its own participants and two, three-day, ACC-wide workshops held on specified campuses for all program participants.

Fellow of the NC AGEP Program
AGEP-NC (North Carolina Alliances for Graduate Education and the Professoriate) Fellows serve two-year terms learning about cross-cultural mentoring, promoting diversity in doctoral programs, and facilitating departmental dialog. Fellows develop initiatives to raise awareness, promote buy-in and build cross-cultural and mentoring skills among the faculty in their department. In addition, Fellows coordinate a faculty process of developing a departmental plan for doctoral student diversity and inclusion. As a Fellow, my department plan was the development of a Mentoring Leadership Academy.

MIT Course: Leadership Skills for Engineering and Science Faculty
This course focuses on human-centered strategies for leading effective teams in technical academic environments. Through a series of interactive role-playing activities, self-assessment instruments, and group discussions, you will develop a repertoire of techniques for addressing issues that commonly arise within engineering research groups and teaching staff.

General Hugh Shelton Leadership Forum
The General Hugh Shelton Leadership Forum is an annual seminar series that focuses attention on the importance of leadership development. The Forum is a program offered through the General Hugh Shelton Leadership Center administered by the NC State University Office of the Provost. Topics discussed at this forum included: Critical Conversations with Innovators; Defining What's Possible: Leadership, Innovation, and Connecting the Unconnected; and Insights About Strategic Leadership and Innovation.

Inclusive Excellence certificate
The Office for Institutional Equity and Diversity provides the Inclusive Excellence Certificate (IEC) program for faculty. Participants examine several aspects of diversity and inclusion that will increase their effectiveness in creating workplaces and classrooms that exhibit inclusive excellence. The IE Certificate focuses on providing the foundational components of diversity, equity and inclusion through four two-hour workshops: Applied Cultural Identity; Understanding Unconscious Bias; The Macro of Micro-aggressions; Fundamentals of Equal Opportunity

Strategic Practice Certificate-JEDI Track
JEDI stands for Justice, Equity, Diversity, and Inclusion. The IESP Strategic Practice Certificate Program (JEDI Track) will: 1) Help participants identify individual and/or organizational inclusive practices to incorporate into workplace environments; 2) Encourage participants to advocate for policy shifts that reflect a more equitable and inclusive culture; 3) Allow participants to develop strategic relationships in order to foster impactful and meaningful changes within campus environments.

IV. Brief Resume

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

Professional Experience:

Associate Dean of Faculty Development and Success, 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

Scholarly and creative activities:

Type	*Number*
Refereed Journal Article (Published)	95
Refereed Journal Article (Submitted or in revision)	1
Refereed Journal Editorial (Published)	4
Refereed Edited Special Issue Journal (Published)	1
Refereed Technical Report	8
Refereed Conference Proceedings/Abstracts	101
Refereed Conference Proceeding Edited Book	1
Non-Refereed Journal Article (Published)	3
Invited Research Presentation	77
Conference Presentations (without paper)	52

Professional Society Memberships:

1) Member, American Association for the Advancement of Science	(2021-Present)
2) Member, American Society of Engineering Education	(2019-Present)
3) Member, American Academy of Environmental Engineers and Scientists	(2016-Present)
4) Member, Water Environment Federation	(2011-Present)
5) Member, Association of Environmental Engineering and Science Professor	(1999-Present)
6) Member, American Water Works Association	(1992-Present)

Scholarly and Professional Honors:

Elected Fellow Association of Environmental Engineering and Science Professor	2023
Warren Distinguished Lecture University of Minnesota	2023
ACC Academic Leadership Network Fellow	2023
Presidential colloquium Distinguished Lecture Brown university	2022

Fair Distinguished Engineering Educator Medal WEF 2021
AEESP Distinguished Service Award (President and BOD) 2021
Elected Fellow of Water Environment Federation 2020
Finalist for University Undergraduate Academic Advising award DASA 2020
WEFTEC Interactive Knowledge Exchange Video award 2019
(https://www.youtube.com/playlist?list=PLLeo-tHuuDoa54IfYSQxxIejLAhCVQHho)
Academy of Excellence in Global Engagement Member 2019
Keynote Speaker 34th Annual NC ONSITE Water Protection Conference 2018
COE Blessis Undergraduate Advising Award 2018
American Academy of Environmental Engineering and Science Excellence in Environmental Engineering and Science University Research Honor Award 2017
Board certified environmental engineer through eminence 2016
Keynote Speaker British Water FOG Forum, Cranfield UK 2015
NSF Advance Scholar Leadership Program 2012
National Academy of Engineering KECKs Future Initiative Symposium Participant (100 engineers selected to join) 2011
NSF Advance Scholar 2009
National Academy of Engineering Frontier of Engineering Japan Symposium Participant (30 engineers selected from the USA to join 30 from Japan) 2008
Fulbright Fellow 2006
(Council for International Exchange of Scholars award)
FWO Visiting Faculty Scholar at Ghent University, Belgium 2006
(Visiting research award provided by the National Science Foundation, Belgium)
NSF Career Award 2001
(The award is the highest honor given by NSF to young university faculty in science and engineering)
Ralph Metcalfe Chair for Minority Scholars at Marquette University
(Visiting lecturer award) 2000
(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)

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

Professional service on campus:

North Carolina State University and College of Engineering Committees:

1) University Research Implementation Task Force (2024)
2) NCSU Faculty Senate Diversity Equity Inclusion and Belonging committee (2023)
3) Dean College of Engineering Nominating Committee (2022-2023)
4) NC-AGEP Fellow program (2021-2023)
5) University Budget Advisory Committee (2020-2023)
6) University Strategic Plan Taskforce: Advancing Inclusion and Well-Being to Enhance Excellence (2019-2020)
7) University Graduate Diversity Equity and Inclusion Committee (Chair) (2019-Present)
8) College of Engineering RPT Committee (Chair 2018-2020) (2017-2020)
9) University Reappointment, Promotion, and Tenure (RPT) Committee (2016-2018)
10) University Mentor Ring Program (2015-2017)
11) College of Engineering Leadership Review Committee (2015-2016)

12) University Lifelong Faculty Involvement Committee (2015-2018)
13) University Diversity Advisory Committee (UDAC) (2014-2016)
14) University Faculty Liaison (OIED) (2014-2016)
15) College of Engineering Faculty Development & Special Initiatives Faculty Development Committee (2008-2016)
16) NSF Advance Scholar (Part of Developing Diverse Departments (3-D) program at NC STATE http://www.ncsu.edu/odi/advance/) (2009-2012)

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)

Professional service off campus:

1) AEESP Fellows Steering Committee (2024-2027)
2) AAAS Multidisciplinary Working Group (2023-2024)
3) Kern Entrepreneurial Engineering Network Lead at NC State (2022-Present)
4) Wake Forest U Engineering External Advisory Board (2022-2025)
5) Editorial Advisory Board Member, Journal of Environmental Science: Water Research and Technology, RSC (2021-Present)
6) NC LSAMP Advisory Board (2019-Present)
7) EPA Board of Scientific Counselors Safe and Sustainable water Resources Sub-committee (2018-2022)
8) External Advisory board CAEE Dept. NC A&T University (2017-2020)
9) AEESP Board of Directors (Elected by Peers) (Vice President, President elect, President, Past President) (2017-2022)
10) Member, International Association of Plumbing and Mechanical Officials (IAPMO) standards committee (2016-2020)
11) AEESP Environmental Engineering Program representative for CCEE (2016-2018)
12) AEESP Membership and Demographics Committee, (chair in 2016) (2015-2017)
13) Member, Exploris Middle School Educational Excellence Committee (2014-2015)
14) Member, EPA SAB Hydraulic Fracturing Advisory Panel (2013-2016)
15) IWA CFD Working Group (2013-2020)
16) Board Member, Chartered EPA Science Advisory Board (2012-2018)
17) Board Member, International UV Association (2011-2018)
18) Adhoc Member, EPA SAB Environmental Economics Advisory Committee (2011-2012)
19) Member, WEF FOG Collection Systems Committee (2010-2012)

20) Board Member, EPA Science Advisory Board Drinking Water Com. (2009-2015)
21) Board Member, EPA SAB Science Technology Awards Committee (2009-2012)
22) North Carolina House of Representative Offshore Energy Exploration Study Committee (2009-2010)
23) Board Member, North Carolina Fulbright Association (Treasurer) (2008-2021)
24) Editorial Board Member, Journal of Environment Engineering ASCE (2007-2015)
25) International Population Balance Modeling Organizing Committee (2002-2009)
26) International Population Balance Modeling Scientific Committee (2002-2010)

V. Instructional Development and Mentoring

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 advised about 18 undergraduate students on course work and curriculum issues. In addition, each semester and during the summer, I advised 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), Caiti Cremer (CHE 2015), Nehemiah Macdonald (BME 2023) and Daniel Friday (CCEE, 2023) 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 Eslsmiamirabadi	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
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**
Sarangi Joseph	Ph.D. CCEE	May 2026
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

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 1st 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 2nd place 2019 NC AWWA/WEA student poster competition
Amanda Karam, 3rd place 2015 NC AWWA/WEA student poster competition
Ling Wang, 1st place 2014 NC AWWA/WEA student poster competition
Catherine McMillan, 3rd place 2014 NC AWWA/WEA student poster competition
Richard Jenny, 2nd place 2013 NC AWWA/WEA student poster competition
Mehrnoosh Eslamiamirabodi, 3rd place 2012 NC AWWA/WEA Student poster competition
Xia He, W. 2012 Wesley Eckenfelder graduate research award, AAEE
Xia He 1st place 2011 NC AWWA/WEA student poster competition
Ling Wang, 2nd place 2011 NC AWWA/WEA student poster competition
Mohammad Shamsul Arafin, 2nd place 2011 NC AWWA/WEA student poster competition
Erin Gallimore, 1st place 2010 NC AWWA/WEA student poster competition
Antonio Sobremisana, 3rd 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.

VI. Scholarship in the Realms of Faculty Responsibility

A. **Scholarly Accomplishments**

Journal publications (Peer-reviewed) Published

1) Narode, A, *Hao, Z, Pour-Ghaz, M, Ducoste, J, Barlaz, M, 2024, Measurement and Temperature Prediction from Ash Disposed in Landfills Using a Quasi-Adiabatic Flow Reactor, Environmental Science & Technology Engineering, DOI: 10.1021/acsestengg.4c00023
2) Smith, S., *Weaver, J., Ducoste, J., de los Reyes III, D.L., 2024, Microbial community assembly in engineered bioreactors, Water Research, DOI: 10.1016/j.watres.2024.121495
3) *Simmons, N., Ducoste, J., 2024, 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, Volume 150, Issue 4, https://doi.org/10.1061/JOEEDU.EEENG-7543
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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).

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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) Morin, M., Brown, E., Berglund, E., Ducoste, J., 2024, WIP: Piloting a Comprehensive Needs Assessment to Enhance Engineering Faculty Development, ASEE Annual Conference & Exposition, Portland OR, June 24-27
2) Prast, E., Randall, J., Blatchley, E., Bowers, C., Bryden, W., Ducoste, J., Jones, C., Linden, K., Mosca, D., Kelley, K., Rasansky, R., 2023, Next Generation PPE for Real-time Inactivation of Airborne Biological Threats Pt 3: UVC Powered Symmetrical Flow Disinfection Device, IUVA World Congress, Dubai UAE, September 10-13
3) Bowers, C., Ducoste, J., Randall, J., Blatchley, E., Bryden, W., Jones, C., Linden, K., Mosca, D., Prast, E., Kelley, K., Rasansky, R., 2023, Next Generation PPE for Real-time Inactivation of Airborne Biological Threats, Pt 2: Multi-physics computational fluid dynamics simulations, IUVA World Congress, Dubai UAE, September 10-13
4) Randall, J., Blatchley, E., Bowers, C., Bryden, W., Ducoste, J., Jones, C., Linden, K., Mosca, D., Prast, E., Kelley, K., Rasansky, R., 2023, Next Generation PPE for Real-time Inactivation of Airborne Biological Threats, Pt 1: Experimental Measurements, IUVA World Congress, Dubai UAE, September 10-13
5) Narode, A., Pour-Ghaz, M., Ducoste, J., Barlaz, M., 2022, Development of methods to measure heat released from hydration and carbonation of ash in landfills, AEESP BI-Annual Conference, St Louis, MO, June 28-30
6) Kusum, S., Pour-Ghaz, P., Ducoste, J., 2022, Understanding the adhesion mechanism of FOG deposits on sewer line surfaces, AEESP BI-Annual Conference, St Louis, MO, June 28-30
7) Lai, Y., Wang, D., Ducoste, J., de los Reyes, F.L., 2022, Disrupting Dunaliella viridis cells using hydrodynamic cavitation, AEESP BI-Annual Conference, St Louis, MO, June 28-30
8) Weaver, J., de los Reyes, F.L., Ducoste, J., 2021, Modeling environmental bioreactors treating wastewater by integrating biological processes, floc microenvironments, and computational fluid dynamics, Runner-Up poster, Environmental Biotechnology Network (EBNET) 3rd Annual Early Career Researcher Conference. Virtual.
9) Weaver, J., de los Reyes, F.L., Ducoste, J., 2021, Drift Matters, Until it Doesn't: Quantifying the Fitness Advantage Necessary to Overcome Negative Drift Selection using an Agent-Based Model of Spatially Competing Heterotrophic Bacteria, IWA MEWE, Delft, NL, Oct 18-20
10) Weaver, J., de los Reyes, F.L., Ducoste, J., 2021, Implementing a Single Modeling Approach that Combines Computational Fluid Dynamics (CFD), Biokinetics, Micro-floc Scale Diffusion, and Particle Sizes, WEFTEC, Chicago, IL, October 17-20
11) Davis, O., Wright, A., Ducoste, J.J., 2021, Effective Mentoring: A Catalyst to Improve Climate for STEM Research Productivity, WEEF/GEDC, Madrid, Spain, from November 15-18
12) 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.
13) 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)

14) 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)

15) 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)

16) 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

17) 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

18) *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

19) *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,

20) *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

21) *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

22) *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

23) *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

24) *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.

25) *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.

26) *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

27) *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

28) *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

29) *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

30) *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

31) *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

32) Karam, A., de los Reyes, F.L., Levis, J., Ranjithan, R. and Ducoste, J., 2016, Photochemical Micro-sensors for Evaluating Light Distribution within Photosyntheitic Biioreactors for Biofuels Production, 6th International Conference on Algal Biomass and Bioproducts. San Diego, CA. June 26-29

33) 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

34) 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

35) *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, 249th ACS National Meeting. Denver, CO. March 22-26,

36) *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

37) *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

38) 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

39) *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

40) 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

41) 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

42) *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

43) *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

44) *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

45) *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

46) *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

47) *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

48) *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

49) *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

50) *Aziz, T.N., Long, J.H., Ducoste,J.J., 2012, Life Cycle Assessment of Grease Trap WasteCo-Digestion, Land Application, and Composting, Residual and Biosolids Management Session Speaker - WEFTEC 2012 New Orleans, LA., Sept 29-Oct 3

51) *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

52) *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

53) *Alpert S., Bowker, C. & Ducoste, J. J., 2011, UV-LEDs for Water Disinfection – Are We Close?, IUVA, SEPT 18-20, Toronto, ONT, CDROM

54) *Bowker, C. & Ducoste, J. J., 2011, Evaluation of UV LEDs for Point of Use Disinfection Processes, AWWA Conference Washington DC, June 12-16, CDROM

55) 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

56) *Vallabh, R., Seyam, A.M., Banks-Lee, and Ducoste, J., 2010, Tortuosity in Fibrous Porous Media, Proceedings of the 7th International Conference of Textile Research Division, National Research Center, Cairo, Egypt, October 10-12, CDROM

57) *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

58) *Gallimore, Aziz, Ducoste, 2010, Assessment of Grease Abatement Systems, WEF Sewer Collection System Conference, Phoenix, AZ, June 7-10, CDROM

59) *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

60) *Alpert, S. M., & Ducoste, J. J., 2009, A CFD Modeling Protocol for Simulating the UV/H_2O_2 Advanced Oxidation Process, AWWA Water Quality and Technology Conference, Seattle, WA.

61) *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

62) 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

63) *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

64) *Aziz, T., Holt, L., Keener, K., Ducoste, J., 2007, Field Observations of Grease Interceptor Performance, Water Environment Federation Workshop, Raleigh, NC, 4-5, CDROM

65) *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

66) *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

67) 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

68) *Alpert, S., Ducoste, J., 2007, Modeling Organics Degradation with the UV/H_2O_2 Advanced Oxidation Process Using Computational Fluid Dynamics, American Water

Works Association Water Quality Technology Conference, Charlotte, NC, November 4-8, CDROM

69) *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

70) *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

71) *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 Fluroescent Microspheres, Proceedings American Water Works Association Water Quality Technology Conference, Quebec City, Quebec. CD-ROM

72) *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

73) *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

74) *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

75) *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

76) *Prat, O., Ducoste, J.J., 2004, Modeling Spatial Distribution of Floc size in Turbulent Processes Using Quadrature Method of Moment and Computational Fluid Dynamics. 2nd International Conference on Population Balance Modeling, Valencia, Spain, May 5-7

77) *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,

78) *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.

79) *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.

80) *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, Philidelphia, PA, 22 pgs.

81) *Hulsey, 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

82) *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

83) *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

84) *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.

85) *Ducoste, J.J., D. Liu, K. Linden, 2002, Modeling Drinking Water UV Disinfection Reactors using PHOENICS: Comparison between Eulerian and Lagrangian Approach, Proceedings, Phoenics User Conference, Moscow, Russia, September 21-28, 15 pgs.

86) 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.

87) *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.

88) *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.

89) 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.

90) *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.

91) *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.

92) *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.

93) *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.

94) *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.

95) *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.

96) *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.

97) *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.

98) *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.

99) *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.

100) *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.

101) *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_2O_2 Advanced Oxidation Process using Computational Fluid Dynamics, Invited Presentation, Rensselaer Polytechnic Instititute, 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, 2nd 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 21st 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 Concference, 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, WRRI 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. WRRI Conference, March 17-18, 2016, Raleigh, NC

9) *Hao, Z., Sun, M., Ducoste, J., Barlaz, M., Benson, C., Castaldi, M., Luettich, 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." 9th 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, WRRI Annual Conference & NCWRA Symposium, Raleigh, NC.

26) *Willliams, 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 (3rd 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, WRRI, 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 7th 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 7th 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, WRRI Conference, Raleigh, NC March 15….

41) Alpert, S. M., & Ducoste, J. J., 2009, Validation of CFD Models Simulating the UV/H_2O_2 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 88th 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 88th 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, 2nd 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 Gillaspy (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 (CRCD) 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.

VII. 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 8th 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 biodosimetry 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_GlMc&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 Spring 2006	Atlantium	Senior reviewer for CFD models of UV reactor for drinking water disinfection (See Extension section)
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.