Desirée L. Plata, Ph.D.

Massachusetts Institute of Technology
Department of Civil & Environmental Engineering
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APPOINTMENTS

Massachusetts Institute of Technology

Co-director, MIT Climate and Sustainability Consortium	Sept '23-present
Co-director, MIT Superfund Research Center	April '22-present
Director, MIT Methane Network	Sept '19-present
Department of Civil and Environmental Engineering	
Associate Professor with Tenure,	July '22-present
Gilbert W. Winslow Career Development Associate Professor,	July '20-present
Faculty, MIT/WHOI Joint Program, Chemical Oceanography,	Jan '19-present
Gilbert W. Winslow Career Development Assistant Professor,	July '18-July '20

Moxair Inc.

Co-founder and President	Jul '23-present

Nth Cycle

Co-founder and Advisor	July '17-present

Yale University,

Department of Chemical and Environmental Engineering,	
John J. Lee Assistant Professor,	July '17-July '18
Assistant Professor,	July '14-July '17
Center for Green Chemistry and Green Engineering at Yale	
Associate Director for Research,	July '15-'18

Duke University,

Department of Civil and Environmental Engineering,	
Assistant Professor,	Aug '11-June '14
Adjunct Professor,	July '14 - Aug '17

Mount Holyoke College,

Department of Chemistry	
Visiting Assistant Professor,	June '09- July '11

Massachusetts Institute of Technology, Visiting Assistant Professor,
Department of Aeronautics and Astronautics, June '09- July '11
Department of Civil and Environmental Eng., June '10- July '11

EDUCATION

Massachusetts Institute of Technology and the Woods Hole Oceanographic Institution: Joint Program in Oceanography/ Applied Ocean Science and Eng.
Doctor of Phil. in Chemical Oceanography and Environmental Chemistry, June 2009

Dissertation Title: *Carbon nanotube synthesis and detection: Limiting the environmental impact of novel technologies*
Dissertation Advisors: Philip M. Gschwend (MIT) and Christopher M. Reddy (WHOI)

Union College
Bachelor of Science in Chemistry, *Summa Cum Laude,* June 2003
Minors in Biology and Mathematics,

Thesis Title: *Sol-gel-platform optical sensors for oxygen gas: Sensor development and investigation of probe partitioning in sol-gel matrices*
Honors Thesis Advisor: Mary K. Carroll

AWARDS AND HONORS

Frank Perkins Graduate Advising Award, MIT, 2022

Edgerton Faculty Achievement Award, MIT, 2021

National Academy of Engineering Frontiers of Engineering Fellow, 2020

Junior Bose Award for Excellence in Teaching, MIT, 2019

Gordon and Betty Moore Foundation Inventor Fellows Top 10 Finalist, 2018

Yale Innovation Summit, Pitch Contest 1st Place Winner, 2018

Department of Energy Innovation Crossroads Program (to *N*th Cycle LLC), 2018

Young Investigator Sustainability Fellow, Resnick Institute, Caltech, 2017

NSF CAREER Award, 2016

Odebrecht Award for Sustainable Development (2nd Place), 2015

National Academy of Sciences US-Korea Kavli Frontiers of Science Fellow, 2013

National Academy of Engineering Frontiers of Engineering Fellow, 2012

National Academy of Sciences Kavli Frontiers of Science Fellow, 2011

Mt. Holyoke College Student Government Association Mentoring Award, 2011

George “Gera” P. Panteleyev Award for greatest contribution to the MIT/WHOI Joint Program, 2009
C. Ellen Gonter Environmental Chemistry Award for top graduate student paper in American Chemical Society’s Environmental Division, 2008
MIT Martin Family Society of Fellows for Sustainability, 2007
Ocean Ventures Fund Graduate Student Award, 2007
MIT/Harvard COOP Grant for K-8 Science Education, 2004, 2005, 2006
National Science Foundation Graduate Research Fellow, 2004

Selected undergraduate awards:
Sigma Xi, 2003, 2010
Phi Beta Kappa, 2003
Frank Bailey Prize for the greatest service to Union College in any field, 2003
Robert Fuller Prize for outstanding chemistry research, 2003
George Catlin Prize for promise in graduate study and college teaching, 2003
Woods Hole Oceanographic Institution Summer Student Fellow, 2002
Barry M. Goldwater Scholar, 2001

Major invited talks (full list of invited talks in “Presentations” section):
Nobel Symposium, Stockholm Sweden, May 2025
Gordon Research Conf., Environmental Nanotechnology, 2023
TedX Boston, November 2022
National Academy of Engineering Frontiers of Engineering, 2020
Gordon Research Conf., Environ. Sciences: Water, 2016
Gordon Research Conf., Environmental Nanotechnology, 2011

Best paper awards:
Best Paper of 2019 Runner Up in *Environmental Science: Nano*, 2020
Emerging Investigator Highlight Issue, *Environmental Science & Technology*, 2019
Best Paper of 2018 in *Environmental Science: Processes and Impacts*, 2019
ACS’ C. Ellen Gonter Environmental Chemistry Award, 2008
Most Accessed Article, *Nanotechnology*, 2008

PUBLICATIONS IN REFEREED JOURNALS

§ = Plata research scientist, postdoc, doctoral student, or masters student

¥ = Plata undergraduate researcher

¥¥ = Plata high school researcher

‡ = Plata served on doctoral committee

† = co-first authors

79. §de Vera, G.A.D.; Caldiero, L.; Conte, G.; **Plata, D.L.** Mitigating matrix effects in oil and gas wastewater analysis: LCMS method for ethanolamines. *Submitted.*

78. §Li, Y.; ¥Zhang, J.; ¥Nguyen, E.; ¥Bernard, L.; ¥McClennen, K.; ¥Lei, M.; ¥Lambaric, L.; ¥¥McBride, L.; ¥Alder, M.; ¥Sherif, A.; ¥Quintero, S.; ¥Zhang, E.; ¥Yanez-Laguna, F.; **Plata, D.L.** Prediction of oil and gas well integrity using well construction physical parameters and geospatial metrics. *Submitted.*

77. ‡Hocken, A.; **Plata, D.L**.; Olsen, B.D. A cyclone separation process for sorting small-format plastics. *In revision.*

76. Clark, C.J.; Casey, J.A.; Bell, M.L.; **Plata, D.L**.; Saiers, J.E.; Deziel, N.C. Accuracy of self-reported distance to nearest unconventional oil and gas well in Pennsylvania, Ohio, and West Virginia. *Journal of Exposure Science & Environmental Epidemiology.* **2024** DOI: 10.1038/s4170-023-00637-8

75. §Albergamo, V.; Wohlleben, W.; **Plata, D.L**. Tracking Dynamic Chemical Reactivity Networks with High-Resolution Mass Spectrometry: A Case of Microplastic-Derived Dissolved Organic Carbon. *Environmental Science and Technology.* **2024** DOI: 10.1021/acs.est.3c08134

74. §Jankovic, N.Z.; Leong, W.L.; Ryan, Andrew I.; §Tantawi, O.; Smith, B.S.; **Plata, D.L.** Particles in a box: Novel design of an engineering control for a common split tube furnace to eliminate occupational exposure to refractory ceramic fibers. **2024** *Environmental Science: Nano.* DOI: 10.1039/D3EN00041A

73. He, M.; ‡Ditto, J.C.; Gardner, L.; Machesky, J.; Hass-Mitchell, T.N.; Chen, C.; Khare, P.; Sahin, B.; Fortner, J.D.; **Plata, D.L.**; §Drollette, B.D.; Hayden, K.L.; Wentzell, J.J.B.; Mittermeier, R.L.; Leithead, A.; Lee, P.; Darlington, A.; Wren, S.N.; Zhang, J.; Wolde, M.; Moussa, S.G.; Li, S-M.; Liggio, J.; Gentner, D.R. Total organic carbon measurements reveal major gaps in petrochemical emissions reporting. **2024** *Science*. 383 (6681), 426-432. DOI: 10.1126/science.adj6233

72. §Li, Y.; ‡Siegel, H.G.; ¥Thelemaque, N.; ¥Bailey, K.R.; ¥Moncrieffe, P.A.; ¥Nguyen, T.; Clark, C.J.; Johnson, N.P.; Soriano, M.A.; Deziel, N.C.; Saiers, J.E.; **Plata, D.L.** Conventional fossil fuel extraction, associated biogeochemical processes, and topography influence methane groundwater concentrations in Appalachia.

2023 *Environmental Science and Technology* 57, 48, 19702-19712. DOI: 10.1021/acs.est.3c01862

71. Gaughan, C.; Sorrentino, K.M.; Liew, Z.; Johnson, N.P.; Clark, C.J.; Soriano, M.; Plano, J.; **Plata, D.L.;** Saiers, J.E.; Deziel, N.C. Residential Proximity to Unconventional Oil and Gas Development and Birth Defects in Ohio. **2023**. *Environmental Research.* July 15: 229:115937. DOI: 10.1016/j.envres.2023.115937.

70. §Johnson, E.P.; Aquino de Carvalho, N.; Gilbertson, L.M.; **Plata, D.L**. Acid treatment in alkyl-functionalized carbon nanotubes: chemical insights and environmental applications. **2023**. *ACS Sustainable Chemistry & Engineering* 11 (43), 15523-15532.

69. Ciccarese, D., §Tantawi, O.; Zhang, I.H.; **Plata, D.L.**; Babbin, A.R. Microscale dynamics promote segregated denitrification in diatom aggregates sinking slowly in bulk oxygenated seawater. **2023**. *Communications Earth & Environment*. 4:275. DOI: 10.1038/s43247-023-00935-x

68. §Karatum, O.; Steiner III, S.A.; **Plata, D.L.** Developing aerogel surfaces via switchable-hydrophilicity tertiary amidine coating for improved oil recovery. **2023**. *Science of the Total Environment.* 163062. DOI: 10.1016/j.scitotenv.2023.163062

67. §Albergamo, V.; Wohlleben, W.; **Plata, D.L**. Photochemical weathering of polyurethane microplastics produced complex and dynamic mixtures of dissolved organic chemicals. *Environmental Science: Processes and Impacts.* **2023** DOI: 10.1039/d2em00415a

66. §Giannetto, M.J., §Johnson, E.P.; ¥Watson, A.; Dimitrov, E.; ¥Kurth, A.; §Shi, W., Fornasiero, F.; Meshot, E.R.; **Plata, D.L.** Modifying molecular structure of carbon nanotubes through gas-phase reactants. *ACS Nanoscience Au* **2023** DOI:10.1021/acsnanoscienceau.2c00052

65. Siegel, H.G.; Soriano, M.A.; Clark, C.J.; Johnson, N.P.; Wulsin, H.G.; Deziel, N.C.; **Plata, D.L.**; Darrah, T.H.; Saiers, J.E. Natural and anthropogenic processes affecting domestic groundwater quality within the Northwestern Appalachian Basin. *Environmental Science and Technology.* **2022**. DOI: 10.1021/aces.est.2c04011

64. Deziel, N.C.; Clark, C.J.; Casey, J.A.; Bell, M.L.; **Plata, D.L.**; Saiers, J.E. Assessing Exposure to Unconventional Oil and Gas Development: Strengths, Challenges, and Implications for Epidemiologic Research. *Current Environmental Health Reports* **2022** *9, 436-450.*

63. §Xiong, B.; Soriano, M.A.; Gutchess, K.M., §Hoffman, N.; Clark, C.J., Siegel, H.G.; §De Vera, G.A.D.; §Li, Y., §Brenneis, R.J.; ¥Cox, A.J.; Ryan, E.C.; Deziel, N.C.;

Saiers, J.E.; **Plata, D.L.** Low organic chemical occurrence in groundwaters near hydraulic fracturing activities associated with limited groundwater derived transport in northeastern Pennsylvania. *Environmental Science: Processes and Impacts.* **2022**. DOI: 10.1039/d1em00124h

62. §Brenneis, R.J.; §Johnson, E.J.; §Shi, W.; **Plata, D.L** Atmospheric and low-level methane abatement via Earth abundant catalysts. *ACS Environment Au*. **2022.** 3, 233-231. DOI: https://doi.org/10.1021/acsenvironau.1c00034

61. Clark, C.J.; §Xiong, B.; Soriano, Jr. M.A.; Gutchess, K.; Siegel, H.G.; Ryan, E.C.; Johnson, N.P.; Cassell, K.; ‡Elliott, E.G.; Li, Y.; ¥Cox, A.J.; ¥Bugher, N.; ¥¥Glist, L.; §Brenneis, R.J.; Sorrentino, K.M.; Plano, J.; Ma, X.; Warren, J.L.; **Plata, D.L**.; Saiers, J.E.; Deziel, N.C. Assessing unconventional oil and gas exposure in the Appalachian Basin: Comparison of exposure surrogates and residential drinking water measurements*. Environmental Science and Technology.* **2022** DOI: https://doi.org/10.1021/acs.est.1c05081

60. §Li, Y.; ¥Thelemaque, N.; ‡Siegel, H.G.; Clark, C.J.; Ryan, E.C.; §Brenneis, R.J.; Gutchess, K.; Soriano, M.; §Xiong, B.; Deziel, N.C.; Saiers, J.E.; **Plata, D.L.** Groundwater methane in Northeastern Pennsylvania attributable to thermogenic sources and hydrogeomorphologic migration pathways. **2021** *Environmental Science and Technology. 55 (24)* 16413-16422*.* DOI: https://doi.org/10.1021/acs.est.1c05272

59. Soriano, Jr. M.A.; Johnson, N.P.; ‡Siegel, H.G.; Gutchess, K.; §Xiong, B.; Clark, C.J.; **Plata, D.L.;** Deziel, N.C.; Saiers, J.E. Assessment of groundwater well vulnerability to contamination through physics-informed machine learning. **2021** *Environmental Research Letters. 16 (8); 084013.*

58. Ghafari, M.; Mohona, T.M.; Su, L.; Lin, H.; **Plata, D.L.;** §Xiong, B.; Dai, N. Effect of peracetic acid on aromatic polyamide nanofiltration membranes: a comparative study with chlorine. *Environ. Sci.: Water Research &* Technology **2021**, DOI: 10.1039/D0EW01007C

57. **Plata, D.L.,** §Jankovic, N.Z. Achieving sustainable nanomaterial design through strategic cultivation of big data. *Nature Nanotechnology*. **2021** *16,* 612–614 DOI: 10.1038/s41565-021-00902-7

56. §Johnson, E.P.; §Shi, W.; **Plata, D.L.** Oxygen-functionalized alkyne precursors in carbon nanotube growth. *MRS Bulletin*. ***2021*** 46 (*6),* 471-480. DOI: https://doi.org/10.1557/s43577-020-00019-7

55. Gleason, K.; **Plata, D.L.**; §Sumner, A.J.; §Drollette, B.D.; Carbone, F.; Gomez, A. Small aromatic hydrocarbons control incipient soot formation. *Combustion and Flame*. **2021**DOI: 10.1016/j.combustflame.2020.08.029

54. Soriano, M.A.; ‡Siegel, H.G.; Gutchess, K.M., Clark, C.J., §Li, Y., §Xiong, B., **Plata, D.L.**; Deziel, N.C.; Saiers, J.E. Evaluating domestic well vulnerability to contamination from unconventional oil and gas development sites. *Water Resources Research.* **2020** DOI: https://doi.org/10.1029/2020WR028005

53. §Drollette, B.D.; Gentner, D.R.; **Plata, D.L.** Oil sands waste ponds are a significant source of secondary organic aerosols. *Environmental Science and Technology **2020**,* 54, 16, 9872-9881. DOI: 10.1021/acs.est.0c01735

52. Pham, T.A.; §Coulthard, R.; Zobel, M; Maiti, A.; Buchsbaum, S.; Loeb, C.; Campbell, P.; **Plata, D.L.;** Wood, B.; Fornasiero, F.; Meshot. E.R. Structural anomalies and electronic properties of an ionic liquid under nanoscale confinement. *J. Phys. Chem. Lett.* **2020** *11 (15),* 6150-6155; DOI: https://doi.org/10.1021/acs.jpclett.0c01810

51. Sheih, P.; Zhang,W.; Husted, K.E.L; Kristufek, S.L.; §Xiong, B.; Lundberg, D.J.; **Plata, D.L.**; Johnson, J. A comonomer strategy for triggered degradation and re/upcycling of high-performance thermoset plastics. *Nature* **2020** *583,* 543-547*.* DOI: https://doi.org/10.1038/s41586-020-2495-2

50. §Sumner, A.; **Plata, D.L.** A geospatially resolved database of hydraulic fracturing wells for chemical transformation assessment. *Environmental Science: Processes and Impacts* **2020** DOI: 10.1039/c9em00505f

49. Diringer, S.; Berky, A.; Marani, M.; Ortiz, E.; §Karatum, O.; **Plata, D.L.;** Pan, W.; Hsu-Kim, H. Deforestation due to artisanal and small-scale gold mining exacerbates soil and mercury mobilization in Madre de Dios, Peru. *Environmental Science and Technology*. **2020**. *54 (1*), 286-296. DOI: 10.1021/acs.est.9b06620

48. Evans, M.; §Sumner, A.; Daly, R.; Luek, J.; **Plata, D.L.;** Wrighton, K.; Mouser, P. Hydraulically fractured natural-gas well microbial communities contain genomic halogenation and dehalogenation potential. *Environmental Science and Technology Letters.* **2019***. 6 (10)*, 585-591. DOI: 10.1021/acs.estlett.9b00473

47. §Janković, N.Z.; **Plata, D.L.** Engineered nanomaterials in the context of global element cycles. *Environmental Science: Nano.* **2019** DOI: 10.1039/c9en00322c.

Best Paper Runner Up of 2019 in ES:Nano; awarded by the Royal Society of Chemistry.

46. ‡Dee, N.T.; Li, J.; White, A.O.; Jacob, C.; §Shi, W.; Kidambi, P.R.; Cui, K.; Zakharaov, D.N.; §Janković, N.J.; Bedewy, M.; Carpena-Núñez, J.; Maruyama, B.; Stach, E.A.; **Plata, D.L.**, and Hart, A.J. Carbon-assisted catalyst pretreatment enables straightforward synthesis of high-density carbon nanotube forests. *Carbon* **2019** DOI: 10.1016/j.carbon.2019.06.083

45. §Sumner, A.J.; **Plata, D.L.** Oxidative breakers can stimulate halogenation and competitive oxidation in guar-gelled hydraulic fracturing fluids. *Environ. Sci. Technol.* **2019** DOI: 10.1021/acs.est.9b01896

44. Sun, M.; Boo, C. §Shi, W.; Rolf, J.; Shaulsky, E.; Cheng, W.; **Plata, D.L.;** Qu, J.; Elimelech, M. Engineering carbon nanotube forest superstructure for robust thermal desalination membranes. *Advanced Functional Materials* **2019** DOI: 10.1002/adfm.201903125

43. Loundsbury, A.W.; Wang, R.; **Plata, D.L**.; Billmyer, N.; Muhich, C.; Kanie, K.; Sugimoto, T.; Peak, D.; Zimmerman, J.B. Preferential adsorption of selenium oxyanions onto {1 1 0} and {0 1 2} nano-hematite facets. *J. Colloid and Interface Science* **2019**, *537,* 465-474. DOI: 10.1016/j.cis.2018.11.018

42. Rao, R.; Pint, C.L.; Islam, A.E.; Weatherup, R.S.; Hofmann, S.; Meshot, E.R.; Wu, F.; Zhou, C.; Dee, N.; Amama, P.B.; Carpena-Nunez, J.; Shi, W.; **Plata, D.L.**; Penev, E.S.; Yakobson, B.I.; Balbuena, P.B.; Bichara, C.; Futaba, D.N.; Noda, S.; Shin, H.; Kim, K.S.; Simard, B.; Mirri, F.; Pasquali, M.; Fornasiero, F.; Kauppinen, E.I.; Arnold, M.; Cola, B.A.; Nikolaev, P.; Arepalli, S.; Cheng, H-M.; Zakharaov, D.N.; Stach, E.A.; Zhang, J.; Wei, F.; Terrones, M.; Geohegan, D.B.; Maruyama, B.; Maruyama, S.; Li, Y.; Adams, W.W.; Hart, A.J. Carbon Nanotubes and Related Nanomaterials: Critical Advances and Challenges for Synthesis toward Mainstream Commercial Applications. *ACS Nano*. **2018.** *12 (12),* 11756-11784. DOI: 10.1021/acsnano.8b06511

41. §Shi,W.; **Plata, D.L.** Vertically aligned carbon nanotubes: Production and applications for environmental sustainability. *Green Chemistry* **2018***. 20*, 5245-5260. DOI: 10.1039/C8GC02195C

40. §Shi, W.; Zhou, X.; Li, J.; Meshot, E.R.; Taylor, A.D.; Hu, Sh.; Kim, J-H.; Elimelech, M.; **Plata, D.L.** High-performance capacitive deionization via manganese oxide-coated, vertically aligned carbon nanotubes. *Environmental Science & Technology Letters.* **2018** *5* (11), 692-700. DOI: 10.1021/acs.estlett.8b00397

39. ‡Elliott, E.G.; Ma, X.; Leaderer, B.P.; McKay, L.A.; Pedersen, C.J.; Wang, C.; Gerber, C.J.; ¥Wright, T.J.; ¥Brennan, M.; §Sumner, A.J.; Silva, G.; Warren, J.L.; **Plata, D.L**.; Deziel, N.C. A community-based evaluation of proximity to unconventional oil and gas wells, drinking water contaminants, and health symptoms in Ohio. *Environmental Research* **2018**, *167,* 550-557. DOI: 10.1016/j.envres.2018.08.022.

38. §Drollette, B.D.; §Brenneis, R.J.; **Plata, D.L.** Oligomer-specific linear alcohol ethoxylate quantification via comprehensive two-dimensional gas chromatography. *Environ. Sci. Technol. Lett*. **2018**, *5 (9)*, 539-545. DOI: 10.1021/acs.estlett.8b00358.

Included in *EST Letters* 2018 Emerging Investigators Virtual Issue as high-impact research.

37. §Sumner, A.J.; **Plata, D.L.** Halogenation chemistry of hydraulic fracturing additives under highly saline simulated subsurface conditions. *Environ. Sci. Technol.* **2018**, *53 (16)*, 9097-9107. DOI: 10.1021/acs.est.8b01591.

36. §Falinski, M.M.; **Plata, D.L**.; Chopra, S.S.; Theis, T.L.; Gilbertson, L.M.; Zimmerman, J.B. A framework for sustainable nanomaterial selection and design based on performance, hazard, and economic considerations. *Nature Nanotechnology.* **2018** 13, 708-714. DOI: 10.1038/s41565-018-0120-4

35. Erythropel, H.C.; Zimmerman, J.B.; de Winter, T.M.; Petitjean, L.; Melnikov, F.; Lam, C.H.; Lounsbury, A.W.; Mellor, K.E.; §Janković, N.Z.; Tu, Q.; ‡Pincus, L.N.; §Falinski, M.M.; §Shi, W.; Coish, P.; **Plata, D.L.**; Anastas, P.T.; The Green ChemisTREE: 20 years after taking root with the 12 principles, *Royal Society of Chemistry: Green Chemistry*, **2018.** 20, 1929-1961. DOI:10.1039/C8GC00482J

34. §Karatum, O.; Bhuiya, M.M.H.; Carroll, M.K.; Anderson, A.M.; **Plata, D.L**. Life cycle assessment of aerogel manufacture on small and large scales: Weighing the use of advanced materials in oil spill remediation. *Journal of Industrial Ecology* **2018** DOI:10.1111/jiec.12720

33. §Sumner, A.J.; **Plata, D.L**. Exploring the hydraulic fracturing parameter space: A novel high-pressure, high-throughput reactor for investigating subsurface chemical transformations. *Environmental Sciences: Processes and Impacts* **2018** 20, 318-331. DOI:10.1039/C7EM00470B

Best Paper of 2018 in ESPI; awarded by the Royal Society of Chemistry.

32. §Shi, W.; Peng, Y.; Steiner III, S.A.; Li, J.; **Plata, D.L.** Carbon dioxide promotes dehydrogenation in the equimolar C_2H_2-CO_2 reaction to synthesize carbon nanotubes. *Small.* **2018** 14, 11, 1703482. DOI:10.1002/smll.201703482

31. §O'Connor, M.P.; §Coulthard, R.M.; **Plata, D.L.** Electrochemical deposition for the separation and recovery of metals using carbon nanotube-enabled filters. *Environmental Sciences: Water Research and Technology* **2018**, *4*, 58-66. DOI:10.1039/C7EW00187H

30. §Shi, W.; §Xue, K.; Meshot, E.R.; **Plata, D.L**. Mapping the carbon nanotube formation parameter space: Data mining and mechanistic understanding for efficient resource use. *Green Chemistry* **2017** *19, 3787-3800.* DOI: 10.1039/C7GC01421J

29. §Shi, W.; Li, J.; Polsen, E.S.; Oliver, C.R.; §Zhao, Y.; Meshot, E.R.; Barclay, M.; Fairbrother, D.H.; Hart, A.J.; **Plata, D.L**. Oxygen-promoted catalyst sintering influences number density, alignment, and wall number of vertically aligned carbon nanotubes. *Nanoscale* **2017** *9,* 5222-5233. DOI:10.1039/C6NR09802A

28. §O'Connor, M.P; Zimmerman, J.B; Anastas, P.T.; **Plata, D.L**. A strategy for material supply chain sustainability: Enabling a circular economy in the electronics industry through Green Engineering. *ACS Sustainable Chemistry and Engineering*. **2016**. *4 (11*), pp 5879–5888 DOI:10.1021/acssuschemeng.6b01954

27. †‡Hoelzer, K.; †§Sumner, A.J., §Karatum, O.; Nelson, R.K.; §O'Connor, M.P.; §Drollette, B.D.; ¥D'Ambro, E.; ‡Getzinger, G.J.; Ferguson, P.L.; Reddy, C.M.; Elsner, M.; **Plata, D.L**. Indications of transformation products from hydraulic fracturing additives in shalegas wastewater. *Environ. Sci. Technol.* **2016** *50 (15)*, 8036–8048. DOI: 10.1021/acs.est.6b00430. †co-first authors

26. Liggio, J.; Li, S-M.; Hayden, K.; Taha, Y.M.; Stroud, C.; Darlington, A.; §Drollette, B.D.; Gordon, M.; Lee, P.; Liu, P.; Leithead, A.; Moussa, S.G.; Wang, D.; O'Brien, J.; Mittermeier, R.L.; Brook, J.; Lu, G.; Staebler, R.; Han, Y.; Tokarek, T.T.; Osthoff, H.D.; Makar, P.A.; Zhang, J.; **Plata, D.L.**; Gentner, D.R. Oil Sands Operations Are a Major Source of Secondary Organic Aerosols. *Nature* **2016** *534*, 91-94. DOI: 10.1038/nature17646

25. Dasgupta, S.; DiGiulio,R.T.; §Drollette, B.D.; **Plata, D.L**.; Brownawell, B.J.; McElroy, A.E. Hypoxia depresses CYP1A induction and enhances DNA damage, but has minimal effects on antioxidant responses in sheepshead minnow (*Cyprinodon variegatus*) larvae exposed to dispersed crude oil. *Aquatic* Toxicology **2016** *177*, 250-260. DOI:10.1016/j.aquatox.2016.05.022

24. Petersen, E.; Flores-Cervantes, D.; Bucheli, T/; Elliot, L.; Fagan, J.; Gogos, A.; Hanna, S.; Kaegi, R.; Mansfield, E.; Montoro Bustos, A.; **Plata, D.L.**; Reipa, V.; Westerhoff, P.; Winchester, M.R. Quantification of carbon nanotubes in environmental matrices: Current capabilities, case studies, and future prospects. *Environ. Sci. Technol.* **2016** *50 (9)*, 4587-4605. DOI:10.1021/acs.est.5b05647

23. §Karatum, O; Steiner III, S.A.; Griffin, J.S.; §Shi, W.; **Plata, D.L**. Flexible, mechanically-durable aerogel composites for oil capture and recovery. **2016** *8 (1)*, 215-224. DOI: 10.1021/acsami.5b08439

22. §Drollette, B.D.; ‡Hoelzer, K.; Warner, N.R.; Darrah, T.H.; §Karatum, O.; §O'Connor, M.P.; Nelson, R.K.; Fernande, L.A.; Reddy, C.M.; Vengosh, A.; Jackson, R.B.; Elsner, M.; **Plata, D.L.** Elevated levels of diesel range organic compounds in groundwater near Marcellus gas operations are derived from surface activities. *Proceedings of the National Academy of Sciences.* **2015** *112 (43)*, 13184-13189. DOI: 10.1073/pnas.1511474112

21. ‡Getzinger, G.; §O'Connor, M.P.; ‡Hoelzer, K.; §Drollette, B.D.; §Karatum, O.; Deshusses, M.A.; Ferguson, P.L.; Elsner, M.; **Plata, D.L.** Natural Gas Residual Fluids: Sources, Endpoints, and Organic Chemical Composition after Centralized Waste Treatment in Pennsylvania. *Environ. Sci. Technol.* **2015** *49 (14)*, 8347-8355. DOI: 10.1021/acs.est.5b00471

20. Kekacs, D.; Drollette, B.; Brooker, M.; Plata, D.L.; Mouser, P.J. Aerobic biodegradation of organic compounds in hydraulic fracturing fluid. *Biodegradation*. **2015** *26 (4)*, 271-287. DOI: 10.1007/s10532-015-9733-6

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13. **Plata, D.L.;** Reddy, C.M.; Gschwend, P.M. Thermogravimetry- mass spectrometry for carbon nanotubes detection in complex mixtures. *Environ. Sci. Technol.* **2012**. *Environ. Sci. Technol*. **2012** *46 (22)*, 12254-12261. *DOI*: 10.1021/es203198x

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10. **Plata, D.L.**; Hart, A.J.; Reddy, C.M.; Gschwend, P.M. Early evaluation of environmental impacts of carbon nanotube synthesis by catalytic chemical vapor deposition. *Environ. Sci. Technol.* **2009**, 43 (21), 8367-8373.

9. ‡Meshot, E.R.; **Plata, D.L.**; Tawfick, S.; Zhang, Y.; Verploegen, E.; Hart, A.J. Engineering vertically aligned carbon nanotube growth by decoupled thermal treatment of precursor and catalyst. *ACS Nano* **2009**, 3 (9), 2477-2486.

8. Flores-Cervantes, D.X.; **Plata, D.L.**; MacFarlane, J.K.; Reddy, C.M.; Gschwend, P.M. Black carbon in the ocean: Inputs and cycling of highly recalcitrant organic carbon in the Gulf of Maine. *Marine Chemistry* **2009**, 111 (3-4), 172-181

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6. **Plata, D.L.**; Sharpless, C.M.; Reddy, C.M. Photochemical degradation of polycyclic aromatic hydrocarbons in oil films. *Environ. Sci. Technol.* **2008,** 42 (7), 2432-2438. DOI:10.1021/es702384f

Best paper submitted by a graduate student, awarded by the Environmental Division of the American Chemical Society.

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3. **Plata, D.L.**; Briones, Y.J.; Wolfe, R.L.; Carroll, M.K.; Bakrania, S.D.; Mandel, S.G.; Anderson, A.M. Aerogel-platform optical sensors for oxygen gas. *J. Non-crystalline Solids* **2004**, 350, 326-335.

2. Brown, G.E.; Gershaneck, D.L; **Plata, D.L.**; Golub, J.L. Ontogenetic changes in response to heterospecific alarm pheromones by juvenile largemouth bass are phenotypically plastic. *Behaviour* **2002**, 139, 913-927.

1. Brown, G.E.; Golub, J.L.; **Plata, D.L.** Attack cone avoidance during predator inspection visits by wild finescale dace (*Phoxinus neogaeus*): the effects of predator diet. *J. Chem. Ecology* **2001**, 27, 1657- 1666.

BOOK CHAPTERS

Woignier, T.; Karatum, O. and **Plata, D.L.** Environmental Applications of Aerogels, in, Aegertner, M; Koebel, M.; Steiner III, S.A., eds., *Aerogel Handbook*. Springer. **2023**. eBook ISBN: 978-3-030-27322-4; Print ISBN: 978-3-030-27321-7

Hower, J.C., Kolker, A., Hsu-Kim, H., and **Plata, D.L.,** Rare earth elements in coal combustion fly ash and their potential recovery, in, Karamalidis, A.K. and Eggert, R.G., eds., *Rare earth elements and their sustainable extraction from secondary sources: Wiley-AGU Geophysical Monograph Series*. **2023**.

PATENTS ISSUED OR FILED

6. Hocken, A.; D.L. Plata; B.D. Olsen. Cyclone-like separation to sort recycled materials. MIT Case No. 25201. Provision Application No. 63/597298. (Dec 2023)
5. **D.L. Plata**, A. Henry, Q. Zhu, M. Pishahang, R. Brenneis, A.J. Hart. Catalytic Oxidation Reactors for the Removal of Low-Level Methane in Air. MIT Case No. 24434. Provisional Application No. 63/415,821. (Oct 25, 2022)
4. K. L. Jones Prather**, D.L. Plata**, B.D. Olsen, S. Av-Ron, W. Joo, and O. Tantawi. Biodegradable Sustainable Polyesters M.I.T. Case No. 23864. US Patent 11,787,900
3. **D.L. Plata**, R.J. Brenneis. Abatement of low-level methane through the use of catalytic, Earth-abundant materials. (May 19, 2021). 63/190,404. MIT Reference No. 23205.
2. M.O'Connor, **D.L. Plata**. Electrochemical Separation and Recovery of Metals. 62/480,930 (April 3, 2017); 623/636,719 (2/28/2018). US Application 15/941,679. Issued: August 31, 2021. U.S. Patent No. 11,103,878).
1. **D.L. Plata**, E.R. Meshot, A.J. Hart, C.M. Reddy, P.M. Gschwend. "Alkyne-assisted nanostructure growth." MIT TLO 13779. U.S. Provisional Application Serial No. 61/187,704 (June 17, 2009). Full Patent Filed June 16, 2010. Issued: October 29, 2013; Patent No: 8,545,791. Issued: June 19, 2016. U.S. Patent No. 9,394,174

PRESENTATIONS BY PLATA

84. Plata, D.L. Thermocatalysts for Atmospheric Methane Abatement. National Academy of Science, Engineering, and Medicine. Atmospheric Methane Removal Workshop. November 17, 2023. ***Invited lecture.***

83. Plata, D.L. The Race for Methane Mitigation MIT-Congressional Senior Staffers Presentation. Oct 2023. ***Invited lecture.***

82. Plata, D.L. Thermocatalysts for Atmospheric Methane Abatement. April 11-12, 2023. Spark Climate Atmospheric Methane Removal Workshop. ***Invited lecture.***

81. Plata, D.L. Design for Degradation: Or Bust. TedX Planetary Stewardship Speaker. Quin House. November 14, 2022. ***Invited lecture.***

80. Plata, D.L. How to Change the Rate of Global Warming in our Lifetime. TedX Planetary Stewardship Speaker. MIT Media Lab. November 13, 2022. ***Invited lecture.***

79. Plata, D.L. Climate and Clean Air Coalition. Washington, DC. September 27, 2022. ***Invited panelist.***

78. Plata, D.L. The importance of methane abatement technologies. MITEI Symposium. Sept 14, 2022. ***Invited lecture***

77. Plata, D.L.; Johnson, E.P. Functionalized alkyne precursors for direct placement of heteroatoms in carbon nanotube growth. Guadalupe X Carbon nanotube synthesis meeting. May 19, 2022. ***Invited lecture.***

76. Plata, D.L.; Johnson, E.P. Functionalized alkyne precursors for direct placement of heteroatoms in carbon nanotube growth. Materials Research Society. Nanotubes and other related low-dimensional materials. May 16, 2022. ***Invited lecture.***

75. Plata, D.L. Methane abatement strategies on the horizon. MIT-Congressional Senior Staffers Presentation. April 20, 2022. ***Invited lecture.***

74. Plata, D.L. Methane emissions reduction strategies: Unsolved but tractable solutions to change global warming rates in our lifetime. MITEI Future Energy Systems Webinar. Jan 19, 2022. ***Invited webinar lecture.***

73. Plata, D.L. "Early assessment of environmental and material performance to guide sustainable materials design." MIT Materials Research Lab. Materials Day. October 20, **2021**. ***Invited lecture.***

72. Plata, D.L. "Environmental Chemistry as a Catalyst for Innovation." ACS Presidential Symposium. ACS National Meeting & Exposition. Atlanta, GA and Virtual. August 23, **2021** ***Invited lecture.***

71. Plata, D.L. "Fossil Energy in a Modern World: Managing Impacts on Water and Climate from Domestic Energy Extraction." Women in Science and Engineering (WISE) Symposium (Environmental Division). ACS National Meeting & Exposition. Atlanta, GA and Virtual. August 23, **2021** ***Invited lecture.***

70. Plata, D.L. *Nature Nanotechnology* Talks: Data Reusability and the FAIR principles in nanotechnolocy. Convergence Accelerator Workshop. "Accelerating Translational Materials R&D for Global Challenges" June 23, 2021. ***Invited panelist and speaker***.

69. Plata, D.L. "Macroscopic joy in a nanoscopic world: Michael Hagerman's influence on my path to nanoengineering" May 22, 2021. *Invited Talk. Prof. Michael E. Hagerman Memorial Seminar.*

68. Plata, D.L. and §Janković,, N.Z.. NSF Convergence Accelerator Workshop. "Accelerating Translational Materials R&D for Global Challenges" May 17, 20, 24, and June 1, 2021. ***Invited workshop speaker.*** *(Series of videos to stimulate workshop)*.

67. Plata, D.L. "How you can help guide more sustainable material and process design." XIV CONIIQUAAE "*Forjando aptitudes para enfrentar soluciones futuras*". University of the Americas Puebla, April 15, **2021.** ***Invited keynote.***

66. Plata, D.L. “Hydrophobic organic contaminants: Advanced tools for predicting environmental exposure.” Williams College Class of 1960 Scholars Seminar. (Department of Chemistry). March 19, **2021**. ***Invited lecture.***

65. Plata, D.L. “Challenges in Plastics Circularity: The Necessity for Environmental Degradability as a Design Metric.” National Academy of Engineering Frontiers of Engineering Symposium. February 26, **2021**. ***Invited lecture.***

64. Plata, D.L. “Fossil Energy in a Modern World: Managing Impacts on Water and Climate from Domestic Energy Extraction.” February 17, **2021**. Montana Tech Public Lecture Series. ***Invited keynote.***

63. Plata, D.L. “Early assessment of environmental and material performance to guide sustainable design.” Stanford Materials Science Colloquium. November 20, **2020**. ***Invited lecture.***

62. Plata, D.L. “Hydrophobic organic chemicals associated with hydraulic fracturing: Advanced tools for predicting environmental exposure.” University of Wisconsin-Madison, Civil & Environmental Engineering Seminar. October 9, **2020**. ***Invited lecture.***

61. Plata, D.L. “Sustainability as a catalyst for innovation.” BASF Sustainable Innovation Week. October 8, **2020**. ***Invited keynote.***

60. Plata, D.L. “Challenges in Plastics Circularity: The necessity for environmental degradability as a design metric.” Union College. Department of Chemistry and Biochemistry Seminar. March 5, **2020**. ***Invited lecture.***

59. Plata, D.L. “Fossil Energy in a Modern World: Managing Impacts on Water and Climate from Domestic Energy Extraction.” Environmental Science, Policy, and Engineering Seminar Series: Water Resources in a Changing World. Union College. March 4, **2020**. ***Invited keynote.***

58. Plata, D.L. “Environmental and economic sustainability in advanced manufacturing of nanomaterials.” NSF Nanoscale Science and Engineering Conference. December 10, **2019**. ***Invited lecture.***

57. Plata, D.L. “Environmental and economic sustainability in advanced manufacturing of nanomaterials.” MIT’s Nano-engineered composite aerospace structures (NECST) Consortium Meeting. December 4, **2019**. ***Invited lecture.***

56. Plata, D.L. “Simultaneous optimization of environmental and technical performance in materials and process design.” MIT Research and Development Conference. November 13, **2019**. ***Invited lecture.***

55. Plata, D.L. “Challenges in plastic circularity: The necessity of environmental degradability as a design metric.” BASF North American Research Alliance Meeting. October 2, **2019**. ***Invited keynote.***

54. Plata, D.L. “Hydrophobic organic chemicals associated with hydraulic fracturing: Advanced tools for predicting environmental exposure.” Wolman Lecture. Johns Hopkins University. Department of Environmental Health and Engineering. September 27, **2019**. ***Invited lecture.***

53. Plata, D.L. “Simultaneous optimization of environmental and technical performance in nanomaterials.” McGill University. Trottier Institute for Sustainability in Engineering and Design (TISED). Sustainable Development of Nanomaterials for the Energy Sector. June 12, **2019**. ***Invited lecture.***

52. Plata, D.L. “Promise and limitations for substituted alkynes to impart atomic-scale structural changes in carbon nanotubes.” April 16, **2019**. Guadalupe IX: Guadalupe Workshop for Single Walled Carbon Nanotube Formation. ***Invited lecture.***

51. Plata, D.L. “Hydrophobic organic chemicals associated with hydraulic fracturing: Advanced tools for predicting environmental exposure.” April 5, **2019**. MIT Superfund Research Program Friday Forum. ***Invited lecture.***

50. Plata, D.L. “The chemical complexity of energy waste streams.” Willamette University. Department of Chemistry. February 4, **2019**. ***Invited lecture.***

49. Plata, D.L. “Environmental optimization enables discovery of carbon nanotube formation mechanisms.” University of Maryland- Baltimore County. Department of Biological, Chemical, and Environmental Engineering. December 3, **2018**. ***Invited lecture.***

48. Plata, D.L. et al., “The chemical complexity of energy waste streams.” UMass Amherst. Department of Civil and Environmental Engineering Seminar. November 30, **2018**. ***Invited lecture.***

47. Plata, D.L. et al., “The chemical complexity of energy waste streams.” Oak Ridge National Laboratory. Special Seminar. November 29, **2018**. ***Invited lecture.***

46. Plata, D.L. et al., “Unconventional oil and gas extraction: Advanced tools for predicting environmental impact.” Tufts University. Department of Civil and Environmental Engineering Seminar. November 16, **2018**. ***Invited lecture.***

45. Plata, D.L., Johnson, E.J. “Explorations with functionalized alkyne precursors: Limitations and possibilities” Yellow Springs CNT Collaborators Workshop. (Organized by the Air Force Research Laboratory). Oct 17, **2018**. ***Invited lecture.***

44. Plata, D.L. “Sustainable design at small and large scales: A new role for engineers on a path to a low carbon future” University of Delaware. Department of Civil and Environmental Engineering Seminar. Oct 12, **2018**. ***Invited lecture.***

43. Plata, D.L., “Chemical complexity in unconventional oil and gas extraction: Are we beholden to carbon and can we use it better?” Yale Young Global Scholars program. June 22, **2018**. ***Invited lecture.***

42. Plata, D.L.; Drollette, B.D. “Alberta oil sands extraction and tailings pond emissions: Predicting the fate of thousands of oil hydrocarbon compounds simultaneously." 255th ACS National Meeting & Exposition, New Orleans, LA. March 21, **2018**. Talk.

41. Plata, D.L.; O’Connor, M.P. "Electrochemical filters for the selective recovery of rare earth and specialty metals." 255th ACS National Meeting & Exposition, New Orleans, LA. March 22, **2018**. Talk.

40. Plata, D.L. and Jankovic, N. “Engineered nanomaterials in the context of global element cycles.” November 5, **2017**. Sustainable Nanotechnology Organization. Los Angeles, CA. Talk***.***

39. Plata, D.L. “Can controlling matter at the atomic scale solve global-scale problems?: Environmental optimization enables precision carbon nanotube synthesis” October 2, **2017**. Resnick Institute, Resnick Symposium, California Institute of Technology, Pasadena, CA. ***Invited lecture.***

38. Plata, D.L., “Chemical complexity in unconventional oil and gas extraction: Are we beholden to carbon and can we use it better?” Yale Young Global Scholars program. July 17, **2017**. ***Invited lecture.***

37. Plata, D.L. “Evidence for carbon nanotube formation via the polymerization of alkynes” April 22, **2017**. Guadalupe VIII: Guadalupe Workshop for Single Walled Carbon Nanotube Formation. Bandera, TX. ***Invited lecture.***

36. Plata, D.L.; Sumner, A.; Drollette, B.D. “Chemical Transformations in High Volume Hydraulic Fracturing Fluids” April 5, **2017**. Lawrence Livermore National Laboratory, Livermore, CA. ***Invited lecture.***

35. Plata, D.L.; Sumner, A.; Drollette, B.D. “Chemical Transformations in High Volume Hydraulic Fracturing Fluids” April 6, **2017**. ACS 253rd National Meeting. San Francisco, CA. Talk.

34. Plata, D.L. “Mechanistic understanding of carbon nanotube formation enabled by environmental chemistry” March 31, **2017**. Harvard Applied Physics Colloquium. Cambridge, MA. ***Invited lecture.***

33. Plata, D.L.; Sumner, A.; Drollette, B.D. “Unconventional oil and gas Development: Predicting impacts on air and water through detailed chemical analysis” November 29, **2016**. McMaster University. Hamilton, Canada. ***Invited lecture.***

32. Plata, D.L.; Sumner, A.; Drollette, B.D. “Unconventional oil and gas Development: Predicting impacts on air and water through detailed chemical analysis” July 19, **2016**. Helmholtz Zentrum Munchen (German Center for Excellence), Munich, Germany. ***Invited lecture.***

31. Plata, D.L. “Can manipulated matter at the nanoscale solve global-scale challenges?” Gordon Research Conference Environmental Science: Water. June 30, **2016**. ***Invited lecture***.

30. Plata, D.L., “Limitations in nanomanufacturing: Can we really manipulate matter at the nanoscale to solve global scale challenges?” Yale Young Global Scholars program. June 23, **2016**. ***Invited lecture.***

29. Plata, D.L. “Controlling matter at the nanoscale to reduce global impacts” NSF-AEESP Grand Challenges Workshop. May 20, **2016**. ***Invited lecture.***

28. Plata, D.L. “What does environmental chemistry have to do with nanotechnology and vice versa? Controlling matter at the nanoscale to reduce global impacts?” Yale Institute for Nanoscience and Quantum Engineering, Yale University, New Haven CT. April 22, **2016**. ***Invited lecture.***

27. Plata, D.L. “Hydrophobic organic contaminants in hydraulic fracturing flowback water.” AEESP Research and Education Conference. June 15, **2015**. Talk.

26. Plata D.L. “Limitations in nanomanufacturing: Precision control to enable sustainable nanomedicine.” ASME 4th Global Conference on Nanoengineering for Medicine and Biology, Minneapolis, MN, April 20, **2015**. ***Invited keynote.***

25. Plata, D.L. “Horizontal drilling and hydraulic fracturing: What are the primary public health concerns?” Center for Perinatal, Pediatric, and Environmental Epidemiology. Yale University. April 15, **2015**. ***Invited lecture***.

24. Plata, D.L. “How big is small? Nanotechnology’s influence on global element cycles” Goldschmidt. June 11, **2014**. ***Invited lecture.***

23. Plata, D.L. “Nano-doom?: The myths, facts, and uncertainties surrounding the environmental and public health implications of nanotechnology.” Nano- and Micromanufacturing Workshop (NSF-sponsored). May **2013**. ***Invited lecture.***

22. Plata, D.L. “Manufacturing sustainability: Requisite nanotechnologies and benign fabrication challenges.” NSF Nanoscale Science and Engineering Grantees Conference. December 3, **2012**. ***Invited lecture***.

21. Plata, D.L.; Hemingway, J.D.; Gschwend, P.M. “Black carbon- water sorption coefficients of organic contaminants.” Gordon Research Conference, Environmental Sciences: Water. Holderness, NH. June 27, **2012**. Poster.

20. Plata, D.L.; Meshot, E.R.; Hart, A.J.; Reddy, C.M.; Gschwend, P.M. “Alkyne-assisted carbon nanotube synthesis improves growth rate, yield, and quality while reducing costs and environmental impacts.” Kavil Frontiers of Science Symposium, National Academy of Sciences, **2011.** Poster.

19. Plata, D.L.; Gschwend, P.M. “Black carbon- water sorption coefficients of organic contaminants. Partners in Environmental Technology Technical Symposium and Workshop.” Washington, DC. Nov 28, **2011**. Poster.

18. Plata, D.L. “Nanomanufacturing: Environmental objectives enable and enhance *a priori* design.” SPIE, Optics and Photonics, Green Nanomanufacturing, San Diego, CA. August 22, **2011**. ***Invited lecture.***

17. Plata, D.L. “Nanomanufacturing: Environmental criteria as design objectives.” Gordon Research Conference, Environmental Implications of Nanotechnology, Waterville Valley, NH. June 1, **2011**. ***Invited lecture.***

16. Plata, D.L.; Meshot, E.R.; Reddy, C.M.; Hart, A.J.; Gschwend, P.M. “Alkyne-assisted carbon nanotube synthesis improves growth rate, yield, and quality while reducing cost and environmental impacts.” ACS National Meeting, Boston, MA. Aug 25, **2010**. Talk.

15. Plata, D.L.; Meshot, E.R.; Hart, A.J.; Reddy, C.M.; Gschwend, P.M. “Alkyne-assisted carbon nanotube synthesis improves growth rate, yield, and quality while reducing costs and environmental impacts.” Gordon Research Conference: Environmental Science: Water. Plymouth, NH. June **2010.** Poster.

14. Plata, D.L.; Meshot, E.R.; Hart, A.J.; Reddy, C.M.; Gschwend, P.M. “Carbon nanotube manufacture: Limiting environmental impacts through improved synthetic design.” Center for High-rate Nanomanufacturing, 7th New England International Workshop. Boston, MA. June 18, **2009**. ***Invited lecture.***

13. Plata, D.L.; Reddy, C.M.; Gschwend, P.M. “Thermal stability of carbon nanotubes: Toward detection in environmental matrices.” ACS National Meeting, Philadelphia, PA. Aug 17, **2008**. Talk.

12. Plata, D.L.; Sharpless, C.M.; Reddy, C.M. “Photochemical degradation of polycyclic aromatic hydrocarbons.” Ellen Gonter Award Symposium. ACS National Meeting, Philadelphia, PA. Aug 19, **2008**. Talk.

11. Plata, D.L.; Gschwend, P.M.; Reddy, C.M. “Thermal stability of carbon nanotubes: Toward detection in environmental matrices.” Gordon Research Conference: Environmental Science: Water. Plymouth, NH. June **2008.** Poster.

10. Plata, D.L.; Reddy, C.M.; Gschwend, P.M. “Coproducts of carbon nanotube synthesis: Emerging contaminants associated with the nanomaterial revolution.” ACS National Meeting, Boston, MA. Aug 22, **2007**. Poster.

9. Plata, D.L.; Reddy, C.M.; Gschwend, P.M. “A novel approach to developing novel materials: co-optimization of performance and environmental objectives in carbon nanotubes manufacture.” MIT Students for Global Sustainability EcoExpo. Cambridge, MA. April 25, **2007.** Poster.

8. Plata, D.L.; Gschwend, P.M.; Reddy, C.M. “Detecting carbon nanotubes in environmental matrices.” Gordon Research Conference: Environmental Science: Water. Plymouth, NH. June **2006.** Poster.

7. Plata, D.L.; Reddy, C.M. “Photochemical degradation of select polycyclic aromatic hydrocarbons: First-order disappearance rates and primary degradation mechanisms in oil-contaminated coastal zones.” ACS National Meeting, Wash., DC. Aug **2005.** Poster.

6. Plata, D.L.; Shapiro, A. “Back to the future: Graduate students in an elementary classroom spark interest in science and nature.” Consortium for Oceanographic Research and Education, Ocean Educators Retreat, Woods Hole, MA. Oct **2005.** Talk.

5. Plata, D.L.; Briones, Y.J.; Wolfe, R.L; Carroll, M.K.; Bakrania, S.D.; Anderson, A.M. “Aerogel-platform Optical Sensors for Oxygen Gas." International Symposium on Aerogels, Alexandria, VA. Nov **2003.** Talk. (MKC presented).

4. Plata, D.L.; Wolfe, R.L.; Carroll, M.K. “Sol-gel-platform optical sensors for oxygen gas: Sensor development and investigation of probe partitioning in sol-gel matrices.” Northeast Regional Meeting of the ACS. Saratoga, NY. June **2003.** Poster.

3. Plata, D.L.; Herbst, R.W.; Payeur, A.L.; Wolfe, R.L.; Laubisch, J.E.; Iannacone, J.M.; Lax, E.A.; Hagerman, M.E.; Carroll, M.K. “Are you ready to rock? Another year of fun in professionalism with the Union College Chemistry Club.” 225th ACS National Meeting, New Orleans, LA. March **2003.** Poster.

2. Brown, G.E.; Plata, D.L.; Gershaneck, D.L.; Golub, J.L. “Ontogenetic response to conspecific skin extract and heterospecific alarm pheromones by centrarchid fishes.” ACS National Meeting Orlando, FL. April **2002.** Poster.

1. Plata, D.L.; Golub, J.L.; Brown, G.E. “Attach cone avoidance during predator inspection visits by wild finescale dace: the effects of predator diet.” 38th Animal Behavior Society 2001 Annual Meeting, Corvalis, OR. July **2001.** Poster.

PRESENTATIONS BY TRAINEES (postdocs and grad; Since 2014)

77. Bugher, N.; Reidinger, K.; Plata, D.L. “Trace-level N-nitrosamine analysis in drinking water: Journey to the no-effect level.” NAC-SETAC Annual Meeting 2023. Falmouth, MA. April 11, 2024. Poster.

76. Tantawi, O.; Provenzao, J.; Santizo, K.; Pfohl, P.; Wohlleben, W.; **Plata, D.L.** “Dynamic Evolution of Polymer Hydrolysis Degradation Products Using High-Resolution Mass Spectrometry”, American Chemical Society National Conference, New Orleans, LA. March 20, 2024. Talk.

75. Foster, M. J.; Plata, D. L. “Community dynamics within a marine microbial consortia that can degrade and mineralize aromatic aliphatic co-polyesters”. ACS Spring Meeting. New Orleans, LA. March 20, 2024. Talk

74. Ballmer, E.; De Vera, G.; Tantawi, O.; Martin, E.; **Plata, D.L**. "Elucidating the Relevance of Microplastic Formation in the Degradation of Plastic Materials using a New Analytical Approach". ACS Spring 2024. In-Person. Mar 20, 2024. Talk.

73. Martin, E.; Frankson, A.; Tantawi, O.; **Plata, D.L.** “Rapid data generation for abiotic weathering of plastics to inform material design using novel high-throughput photoweathering method”. ACS Spring Meeting 2024. March 20, 2024. Presentation.

72. Provenzano, J.; Coley, C.W.; Plata, D.L. “Trace analysis of the environmental degradation of pesticides using high resolution LC-MS”. ACS Spring 2024. New Orleans, LA. Mar 19, 2024. Presentation

71. Tantawi, O.; Provenzao, J.; Santizo, K.; Pfohl, P.; Wohlleben, W.; **Plata, D.L.** “Library Development of Polymer Hydrolysis: Identifying Environmental Chemicals Through Log Kow and MS2”. NORA Meets BASF Challenges. BASF Research Triangle Park, Raleigh-Durham, NC. March 14, 2024. Talk.

70. Foster, M. J.; Plata, D. L. “Community dynamics within a marine microbial consortia that can degrade and mineralize aromatic aliphatic co-polyesters”. NORA BASF Annual Meeting. Research Triangle Park, NC. March 14, 2024. Talk

69. Bugher, N.; Reidinger, K.; Plata, D.L. “Analytical tools for trace-level N-nitrosamines in drinking water: Journey to the no-effect level.” NIEHS Superfund Research Program Annual Meeting 2023. Albuquerque, NM. December 4, 2023. Poster. ***Best Poster Winner.***

68. Riedinger, K.A.; Bugher, N.A.; Plata, D.L. “Evaluating the Occurrence of N-Nitrosodimethylamine in Drinking Water: The Search for NDMA-free water”. SRP Annual Meeting 2023, Albuquereque, NM. Dec 4, 2023. Poster.

67. Baskaran, B.; Wang, M.; Martin, E.E.; Vecitis, C.D.; Plata, D.L. “N-nitrosodimethylamine Destruction in Drinking Water: Design of a Small Form-Factor Electrochemical Unit.” National Institute of Environmental Health Sciences Superfund Research Program Annual Meeting. December 4, 2023. Poster

66. Sawyer, W.J.; Plata, D.L. "DAC Beyond Carbon Dioxide: A perspective on the technical feasibility and needed developments for engineered methane oxidation at 2 ppm”. American Geophysical Union 2023 Fall Meeting. San Francisco, CA. Dec 12, 2023. Talk.

65. Tantawi, O.; Olsen, B.; **Plata, D.L.** “High-throughput screening assay to understand the relationship between of polymer chemical structure and enzymatic activity” Association of Environmental Engineering and Science Professors, Northeastern University, Boston, MA. June 20, 2023. Poster.

64. Wasswa, J., and **Plata, D**. "Structural classification, and kinetic analysis of complex chemical systems transformational networks at a molecular level". AEESP Research and Education Conference 2023. Presented on June 22, 2023. Talk

63. Li, Y., Yanez-Laguna, F., Zhang, E.S., Quintero, S.M., Alder, M.I., Sherif, A., McClennen, K.T., Lei, M.J., Lambaric, L.L., Plata, D.L. “Understand and predict oil and gas well integrity issues which lead to fugitive methane emissions”. AEESP Research and Education Conference, Boston, MA. June 21, 2023. Talk

62. Tantawi, O.; Provenzao, J.; Santizo, K.; Pfohl, P.; Wohlleben, W.; **Plata, D.L.** “Degradation Networks to Assess Chemical and Material Fate of Polymers”. NORA Meets BASF Challenges. Massachusetts Institute of Technology, Cambridge, MA. May 23, 2023. Poster.

61. Tantawi, O; Joo, W.; Martin, E.; Av-Ron, S.; Bannister, K.; Olsen, B.; Prather, K.; **Plata, D.L.** “The Importance of Assessing Abiotic and Biotic Degradation to Inform Sustainable Polymer Design” Purdue Environmental and Ecological Engineering Department Seminar, Purdue University, West Lafayette, IN. April 18, 2023. Invited Talk.

60. Foster, M. J.; Plata, D. L. “Engineering of Microbial Consortia to Investigate Degradation Pathways and Recycling of Plastics”. ACS Spring Meeting. Indianapolis, IN. March 2023. Talk

59. Tantawi, O.; **Plata, D.L.** “Designing for degradation: the importance of considering abiotic and biotic degradation”, 1st Microplastics Forum in Hydrographic Basins in Mexico. January 10, 2023. Invited Talk.

58. Li, Y., Siegel, H.G., *Thelemaque, N.A., *Bailey, K.R., *Moncrieffe, P., *Nguyen, T., ... & Plata, D.L. “Groundwater Methane Influenced by Surface Topography and Potential Sulfate-mediated Biogeochemical Processes in Shale Gas Development and Coal Mining Regions across Northern Appalachia”. AGU Fall Meeting 2022, Chicago, IL. December 2022. Poster

57. Bugher, N.; Gentles R.; Johnson, N.; Siegel, H.; Clark, C.; Deziel, N.; Saiers, J.; Plata, D.L.; “Trace-level volatile organic compound occurrence in domestic groundwater wells in areas of extensive horizontal drilling and hydraulic fracturing activity.” AGU 2022. Chicago, IL. December 14, 2022. Poster.

56. Li, Y., Feng, S., Luo, S-X. L., Mueller, A., Swager, T.M., Plata, D.L. “Signal Deconvolution of Novel Chemiresistive Methane Sensors using Machine Learning”. AEESP Research and Education Conference, St. Louis, MO. June 29, 2022. Poster

55. Li, Y., Siegel, H.G., *Thelemaque, N.A., *Bailey, K.R., *Moncrieffe, P., *Nguyen, T., Clark, C.J., Johnson, N.P., Ryan, E., Brenneis, R.J., Gutchess, K.M., Sorianon Jr, M.A., Xiong, B., Deziel, N.C., Saiers, J.E., Plata, D.L. “Source Attribution of Groundwater Methane in Shale Gas Development and Coal Mining Regions across Northern Appalachia”. Environmental Sciences: Water Gordon Research Conference, Holderness, NH. June 21, 2022. Poster

54. Johnson, E.P.; Park, S.J.; Meshot, E.M.; Plata, D.P. “Influence of Precursor Structure on CNT Chiral Selection”. Guadalupe Workshop X. Bandera, TX. May 14, 2022. Poster. ***Best Poster Runner Up.***

53. Tantawi, O.; **Plata, D.L.** “Plastics of the Future: Lessons from the Ocean.” Science Snippets: How Things Work, MIT Libraries. September 13, 2022. Invited talk.

52. Tantawi, O; Joo, W.; Martin, E.; Av-Ron, S.; Bannister, K.; Olsen, B.; Prather, K.; **Plata, D.L.** “Importance of Considering Biotic and Abiotic Natural Degradation Processes in Polymer Degradation Tests”, American Chemical Society National Conference, Chicago, IL. August 23, 2022. Talk.

51. Tantawi, O; Joo, W.; Martin, E.; Av-Ron, S.; Bannister, K.; Olsen, B.; Prather, K.; **Plata, D.L.** “Designing for Degradation: The Importance of Considering Biotic and Abiotic Polymer Degradation” NORA Meets BASF Challenges, University of Massachusetts Amherst, Amherst, MA. June 15, 2022. Talk.

50. Brenneis, R.J.; Johnson, E.P.; Shi, W.; **Plata, D.L.** “Atmospheric- and Low-Level Methane Abatement via Copper Zeolites.” Materials Research Society (MRS) Conference, Boston, MA, Dec 1, **2021**. Talk.

49. Albergamo, V.; Wohlleben, W.; **Plata, D.L**. "Microplastics photodegradation products characterized by non-target screening”. NORA Meets BASF Challenges 2021. Harvard University, Cambridge, MA. Nov 5, 2021. Poster

48. Albergamo, V.; **Plata, D.L.** "Photodegradation of primary microplastics in marine environment”. NORA Meets BASF Challenges 2020. Virtual. Oct 21, 2020. Poster

47. Albergamo, V.; **Plata, D.L.** "Microplastics photodegradation by-products characterized by non-target screening”. International Conference on Non-Target Screening. Erding, Germany. Hybrid. Oct 4—7, 2021. Poster

46. Albergamo, V.; **Plata, D.L.** “Photodegradation of secondary microplastics unravelled by non-target screening”. ACS Fall Meeting 2021. Atlanta, GA. Hybrid. Aug 24, 2021. Talk

45. Albergamo, V.; Wohlleben, W.; **Plata, D.L.** "Photodegradation of secondary microplastics unravelled by non-target screening”. 2021 NORA Collaboration Days. Virtual. May 18, 2021. Poster

44. Li, Y.; Thelemaque, N. A.; Siegel, H. G.; Clark, C. J.; Ryan, E.; Gutchess, K. M.; Soriano, M. A. Jr.; Xiong, B.; Deziel, N. C.; Saiers, J. E.; **Plata, D. L.** “Geochemical Indicators in Northeastern Pennsylvania Groundwater Are Consistent with Natural Methane Sources. ACS Spring 2021 (virtual). April 14, 2021. Talk

43. Li, Y.; **Plata, D.L.** “Groundwater contains thermogenic methane in horizontal drilling with hydraulic fracturing regions in Northeastern Pennsylvania”. Parsons Environmental Science Seminar Series (remote). MIT. Cambridge, MA. May 8, 2020. Talk

42. Albergamo, V.; Plata, D.L. “Photodegradation of Primary Microplastics in Marine Environment”. 2020 NORA Meets BASF Challenges. Virtual. Oct. 21, 2020. Poster.

41. Johnson, E.P.; **Plata, D.L**. "Oxygen-Functionalized Alkynes for CNT Growth: Exploring an In Situ Functionalization Pathway." Yellow Springs CNT Collaborators Workshop. Yellow Springs, OH. October 18, **2019**. Talk.

40. Sumner, A.J.; **Plata, D.L.** “Uncontrolled chemistry in hydraulic fracturing: Oxidative breakers and the formation of hazardous byproducts”. Robert M. Langer Graduate Student Symposium. Yale University. New Haven, CT. Dec. 14, **2018**. Talk.

39. Shi, W.; Zhou, X.; Li, J.; Meshot, E.R.; Taylor, D.A.; Hu, S.; Kim, J.; Elimelech, M.; **Plata, D.L.** “High-performance capacitive deionization via manganese oxide-coated vertically aligned carbon nanotubes.” Materials Research Society Fall Meeting & Exhibit, Boston, MA. November 25-30, **2018**. Poster.

38. Shi, W.; **Plata, D.L.** “High-performance capacitive deionization via manganese oxide-coated, vertically aligned carbon nanotubes.” MIT Materials Day, Cambridge, MA. October 10, **2018**. Poster.

37. Shi, W.; **Plata, D.L.** “High-performance capacitive deionization via manganese oxide-coated, vertically aligned carbon nanotubes.” MIT.nano Launch Event, Cambridge, MA. October 4, **2018**. E-Poster.

36. Sumner, A.J.; **Plata, D.L.** "Halogenation chemistry of hydraulic fracturing additives under simulated subsurface conditions” Gordon Research Seminar, Environmental Sciences: Water. Holderness, NH. June 26, **2018**. Poster

35. Shi, W.; **Plata, D.L.** “Vertically aligned carbon nanotubes: Production and applications for environmental sustainability.” Environmental Sciences: Water (Gordon Research Conference), Holderness, NH. June 24-29, **2018**. Poster.

36. Shi, W.; **Plata, D.L.** “Vertically aligned carbon nanotubes: Production and applications for environmental sustainability.” Environmental Sciences: Water (Gordon Research Seminar). Holderness, NH. June 23-24, **2018**. ***Invited Talk***.

33. Giannetto, M.J.; Johnson, E.P.; Watson, A.; Meshot, E.R., **Plata, D.L.** "Alkynes incorporate into carbon nanotubes during synthesis: Pathways for increased functionalization and increased efficiency." Langer Symposium, Department of Chemical and Environmental Engineering, Yale University, New Haven, CT. December 15, **2017**. Talk.

32. Shi, W., **Plata, D.L.** "Exceptional capacitance in manganese oxide-coated vertically aligned carbon nanotubes: Applications for energy and environment." Yale Institute for Nanoscience and Quantum Engineering Seminar, Yale University, New Haven, CT. December 8, **2017**. Talk.

31. Giannetto, M.J.; Johnson, E.P.; Watson, A.; Meshot, E.R., **Plata, D.L.** "A mechanistic study of the role of alkynes in carbon nanotube synthesis: Improving production efficiency and control." Sustainable Nanotechnology Organization (SNO) Conference, Los Angeles, CA, Nov 7, 2017. Talk.

30. Shi, W. **Plata, D.L.** "Mapping the carbon nanotube formation parameter space: Data mining and mechanistic understanding for efficient resource use." Sustainable Nanotechnology Organization (SNO) Conference, Los Angeles, CA, Nov 7, 2017. Talk.

29. Falinski, M., Gilbertson, L., Chopra, S., Theis, T., **Plata, D.L.**, Zimmerman, J.B., "Navigating Nanomaterial Space for Performance, Hazard, and Cost: Approaching Sustainable Nanomaterial Selection and Design" NEWT Industrial/Practitioner Advisory Board Meeting, El Paso, TX, October 3-4, 2017. Poster Presentation.

28. ***DOE Innovation Crossroads Winner***. O'Connor, M.P.; Plata, D.L. "Electrochemical deposition for the recovery and speciation of metals: A novel approach for reclaiming rare earth and specialty elements from industrial waste and processing streams." United States Army Corp of Engineers. Vicksburg, MS. September **2017**. ***Invited Talk***

27. Drollette, B.D.; Gentner, D.R.; **Plata, D.L.** "Understanding the role of oil sands extraction and wastewater storage on regional air quality in Alberta, CA." Yale University School of Forestry and Environmental Studies Natural Resource Extraction Panel. New Haven, CT. August 21, **2017**. ***Invited Talk.***

26. Falinski, M., Gilbertson, L., Chopra, S., Theis, T., **Plata, D.L.**, Zimmerman, J.B., "Employing Ashby Material Selection Diagrams in Sustainable Nano-enabled Product Design" ISIE-ISSST 2017, Chicago, IL, June 25-29, **2017**. Oral Presentation. (Note: Prepared by M. Falinski, Presentation by S. Chopra)

25. Falinski, M., Gilbertson, L., Chopra, S., Theis, T., **Plata, D.L.**, Zimmerman, J.B., "Simplified Selection: Adapting Traditional Selection Frameworks to Consider Sustainability and Functionality in Emerging Nanomaterials" Gordon Research Seminar: Environmental Nanotechnology, Stowe, VT, June 17-18, **2017**. ***Invited Talk.***

24. Giannetto, M.J.; Johnson, E.P.; Watson, A.; Meshot, E.R., **Plata, D.L.** "Alkyne incorporation mechanism for CNT synthesis: Improving the efficiency, sustainability, and control of production." Association of Environmental Engineering and Science Professors (AEESP) Research and Education Conference, Ann Arbor, MI, June 20-22, **2017**. Poster.

23. ***Best Poster Award***. Shi, W.; Li, J.; Meshot, E.R.; Hart, A.J.; Plata, D.L. "Roles of gas phase compositions at each stage of carbon nanotube (CNT) synthesis: En route toward holistic understanding and efficient CNT manufacturing." Guadalupe Workshop VIII: Workshop on Nucleation and Growth Mechanisms of Single Wall Carbon Nanotubes. San Antonio, TX. April 21-25, **2017**. Poster.

22. O'Connor, M.P.; Coulthard, R.M.; Plata, D.L. " Electrochemical deposition for the recovery and separation of metals: A novel approach for reclaiming rare earth and specialty elements from industrial waste and processing streams." 253rd ACS National Meeting & Exposition, San Francisco, CA. April 2, **2017**. Talk.

21. ***Best Talk Award***. O'Connor, M.P.; Coulthard, R.M.; Plata, D.L. "Closing the loop: A novel approach for reclaiming rare earth and specialty metals from industrial waste and processing streams." Robert M. Langer Graduate Student Symposium. Yale University. New Haven, CT. December 16, **2016**. Talk.

20. Shi, W.; Li, J.; Polsen, E.; Zhao, Y.; Meshot, E.R.; Oliver, C.R.; Fairbrother, D.H.; Hart, A.J.; Plata, D.L. "Modulating carbon nanotube (CNT) morphology using O2: the role of O in catalyst Ostwald ripening for vertically aligned CNT growth." Materials Research Society Fall Meeting & Exhibit. Boston, MA, November 27, **2016**. Talk.

19. Coulthard, R.M.; O'Connor, M.P.; Plata, D.L. "Identification of rare earth elements in electronics waste: Towards advanced-material recycling strategies." 252nd ACS National Meeting & Exposition, Philadelphia, PA. August 21, **2016**. Talk.

18. Giannetto, M.J.; Shi, W.; Meshot, E.; Watson, A.; Plata, D.L. "Role of alkynes in CNT synthesis: Towards improved production quality and environmental sustainability." 252nd ACS National Meeting and Exposition, Philadelphia, PA. August 22, **2016**. Talk.

17. Karatum O. and Plata, D.L. "Flexible, switchable aerogel composites as reusable sorbents for oil capture and recovery."252nd ACS National Meeting & Exposition, Philadelphia, PA, August 22, **2016**. Talk.

16. Sumner, A.J.; Plata, D.L. " Hydraulic fracturing fluid reactivity: Detection, Investigation, and Simulation of Halogenation in the Shale Rock Parameter Space." 252nd National Meeting & Exposition, Philadelphia, PA. August 21, **2016**. Talk.

15. Drollette, B.D.; Gentner, D.R.; Plata, D.L. "What goes in must come out: organic compounds in oil sands, their extraction products, and environmental implications". 252nd American Chemical Society National Meeting & Exposition. Philadelphia, PA. August 21, **2016**. Talk.

14. ***Honorable Mention- Best Poster.*** Drollette, B.D.; Gentner, D.R.; Plata, D.L. "What goes in must come out: organic compounds in oil sands, their extraction

products, and environmental implications". Gordon Research Conferences, Environmental Sciences: Water. Holderness, NH. June **2016**. Poster.

13. Drollette, B.D.; Gentner, D.R.; Plata, D.L. "What goes in must come out: organic compounds in oil sands, their extraction products, and environmental implications". Gordon Research Seminar, Environmental Sciences: Water. Holderness, NH. June 26, **2016**. ***Invited Talk.***

12. Karatum, O.; Steiner III, S.A.; **Plata, D.L.** "Mechanically strong aerogel fabrics for oil capture and recovery." 249th ACS National Meeting & Exposition, Denver, CO. March 24, **2015**. Talk.

11. Sumner, A.J.; Drollette, B.D.; Schreglmann, K.; Elsner, M.; **Plata, D.L.** "Exploring the Relevant Parameter Space in Shale Rock Geochemistry: Organic Transformations at Temperature and Pressure." 249th ACS National Meeting & Exposition, Denver, CO. March 25, **2015**. Poster.

10. Shi, W.; Peng, Y.; **Plata, D.L.** "Role of CO_2 in the equimolar C_2H_2-CO_2 reaction to synthesize carbon nanotubes: mechanistic and environmental implications." 249th ACS National Meeting & Exposition, Denver, CO. Mar 25, **2015**. Poster.

9. O'Connor, M. P. and **Plata, D. L.** "The race for the gold metal: A novel approach for reclaiming specialty metals from industrial waste and processing streams." 249th ACS National Meeting & Exposition, Denver, CO. March **2015**. Poster.

8. Drollette, B.D.; Schreglman, K.; Elsner, M.; Warner, N.R.; Darrah, T.H.; O'Connor, M.P.; Karatum, O.; D'Ambro, E.; Vengosh, A.; Jackson, R.B.; **Plata, D.L**. "Trace levels of diesel range organic compounds in shallow groundwater wells in northeastern Pennsylvania elevated near Marcellus shale gas wells." 249th American Chemical Society National Meeting & Exposition. Denver, CO. March 23, **2015**. Talk.

7. Karatum, O.; Steiner III, S.A.; **Plata, D.L.** "Mechanically strong aerogel fabrics for oil capture and recovery." Gulf of Mexico Oil Spill and Ecosystem Science Conference. Feb 18, 2015. Poster.

6. Drollette, B.D.; Schreglman, K.; Elsner, M.; Warner, N.R.; Darrah, T.H.; O'Connor, M.P.; Karatum, O.; D'Ambro, E.; Vengosh, A.; Jackson, R.B.; **Plata, D.L.** "Hydrophobic organic compounds in Pennsylvania groundwater do not show influence of deep shale brines." American Geophysical Union National Meeting. San Francisco, CA. December 18, **2014**. Talk.

5. ***Best Talk Award.*** Drollette, B.D.; Schreglman, K.; Elsner, M.; Warner, N.R.; Darrah, T.H.; O'Connor, M.P.; Karatum, O.; D'Ambro, E.; Vengosh, A.; Jackson, R.B.; **Plata, D.L**. "Organic compounds in shallow groundwater near shale gas wells of Northeastern Pennsylvania." Robert M. Langer Graduate Student Symposium. Yale University. New Haven, CT. December 5, **2014**. Talk.

4. O'Connor, M. P. and **Plata, D. L.** "Nano-enabled material efficiency: Reclaiming specialty metals from industrial waste and processing streams." Sustainable Nanotechnology Organization Conference. Boston, MA. November **2014**. Poster.

3. O'Connor, M. P. and **Plata, D. L.** "The race for the gold metal: A novel approach for reclaiming specialty metals from industrial waste and processing streams." Gordon Research Seminar: Environmental Sciences: Water. Holderness, NH. June **2014**. ***Invited Talk.***

2. O'Connor, M. P. and **Plata, D. L.** "The race for the gold metal: A novel approach for reclaiming specialty metals from industrial waste and processing streams." Gordon Research Conference: Environmental Sciences: Water. Holderness, NH. June **2014**. Poster.

1. O'Connor, M. P., Warner, N. R., Schreglmann, K., Elsner, M., Vengosh, A., Deshusses, M. A., **Plata, D. L**. "Identifying needs for novel water treatment technologies for flowback water from natural gas extraction." ACS National Meeting, Dallas, TX, March **2014**. Poster.

CURRENT RESEARCH GRANTS AND CONTRACTS

BASF High-throughput Assessment of Photochemical Weathering in Polymers, PI; $220k; $250k

National Institute of Health and Environmental Sciences Superfund Research Program, MIT Superfund Research Program, co-PI, $16M (total)

Gerstner Family Foundation; Scaling Methane Abatement for Climate Change, PI; $750,000.

United States Department of Energy, ARPA-E REMEDY, Ventilation Air Methane Abatement via Catalytic Oxidation with Machine-Learning Enhanced Sensing, PI; $3.7M

Gerstner Family Foundation; OneSource: Sustainable Plastics, co-PI; $350,000.

Winward Fund; Methane Action Workshop; $100k

PAST RESEARCH GRANTS AND CONTRACTS

MIT Research Support Committee, Bioinspired Methane Catalysis, PI: $75k

Vanguard Charitable Trust; Climate Change Mitigation: Ambient Methane Conversion, PI; $50,000.

Daedelus Software Inc.-MIT Food Histories: Chemical Characterization for Healthy Farms. PI; $250,329

DIC: Coloring the Future with Biodegradable Plastics, co-PI; $2M total.

MIT Alumni Class Fund (for Course Development); Tools for Environmentally Sustainable Design." PI; $22,989

BASF Assessing the Physicochemical Weathering of Plastics; PI; approx. $210,000.

MIT Environmental Solutions Initiative Microplastics in the Marine Environment: Materials Thrust; PI; $50k

Gordon and Betty Moore Foundation; Biomimetic methane conversion on flexible materials for diffuse methane capture and subsequent utilization; PI; $25k

Environmental Protection Agency, Drinking water vulnerability and neonatal health outcomes in relation to oil and gas production in the Appalachian Basin; co-PI. Total budget: $2M. (central budget)

National Science Foundation (CBET; Environmental Engineering): CAREER: Precision control for sustainable carbon nanotube manufacturing: Enabling next generation materials and defining the next generation engineer. PI; total Plata budget $500,000.

MIT Energy Initiative; Eni; Ethanolamine Quantification in Formation and Produced Fluids; PI; $623,736.46. 01/01/2019-06/30/2020.

Environmental Protection Agency (Networks for Characterizing Chemical Life Cycle); NCCLCS: Life Cycle of Nanomaterials (LCNano); co-PI; total Plata-led Duke budget: $520,000; 10/01/13-09/30/17

Department of Energy National Energy Technology Laboratory (NETL) Novel Membrane and Electrodeposition-Based Separation and Recovery of Rare Earth Elements from Coal Combustion Residues. Co-PI; Plata budget $212,196. 3/1/16-2/28/18

National Science Foundation (CBET; EHS Nano); Metal Fingerprinting and Chemothermal Isolation Methods to Quantify Natural and Engineered Carbon Nanoparticles; PI; total Plata budget: $326,180; 09/01/13-08/31/16

National Science Foundation (OISE; Partnerships for International Research and Education 4); PIRE: Water and Commerce: Technologies to Enable Environmental Sustainability in Global Markets; co-PI; total Plata budget: $208,101; 01/01/13-12/31/17
National Science Foundation (CBET; Environmental Engineering): Collaborative Research: Characterizing Biodegradable and Recalcitrant Distillates used during Hydraulic Fracturing: Rates, Risks, and Microbial Metabolic Processes, PI; total Plata budget $159,868; 1/1/2014-8/31/3015

National Science Foundation (CBET): Nanotechnology and Public Health Track at ASME's Nanoengineering in Medicine and Biology 2nd Annual Global Congress to be held February 3-6, 2013 in Boston, MA; PI, total Plata budget $14,295

Water Resources Research Institute (North Carolina State University); Establishing a Pre-Drilling Baseline of Water-Quality Measurements in North Carolina Before Shale-Gas Extraction; co-PI; total budget: $49,947

National Science Foundation (ENG; Scalable Nanomanufacturing): Continuous and Large Scale Nanomanufacturing of Graphene and Carbon Nanotube Materials; Subcontract*, total budget $1,299,999; 9/1/11-8/31/15
*Awarded during Mt. Holyoke-to-Duke transition; necessitated subcontract status (rather than co-PI status).

TEACHING EXPERIENCE

Courses Taught

MIT Climate and Sustainability Scholars Program Undergraduate Advanced Research (1.UAR, MIT)
Experiential Sustainability (1.005, MIT)
Sustainable Polymer Systems (1.096/10.496, MIT)
Tools for Sustainable Design (1.006; MIT)
Aquatic Chemistry (1.76; MIT)
Environmental Chemistry and Biology Laboratory (1.107; MIT)
Environmental Engineering Practice (Yale)
Chemical and Environmental Engineering Senior Design (Yale)
Water Chemistry (Yale)
Introduction to Environmental Engineering and Sciences (Yale, Duke)
Isotope Geochemistry (Duke)
Industrial Ecology (Duke)
Graduate Colloquium/The PhD Research Process (Duke)
Introductory Chemistry and Laboratory (Mount Holyoke College)

Postdoctoral Students (Current and Past)

Joseph Wasswa, PhD, Sept 2022-present
MIT SoE Postdoctoral Fellow for Engineering Excellence

Vittorio Albergamo, PhD, Jan 2020-Jan 2022.

Wenbo Shi, PhD, July 2018- Dec 2020.

Glen de Vera, PhD, February 2019-May 2020.

Boya Xiong, PhD, July 2018- July 2020.

Megan P. O'Connor, PhD, Oct 2017-May 2018.

Leanne Gilbertson, PhD (Jointly advised with Julie B. Zimmerman), 2014-2015.

Current Doctoral Students

Audrey Parker; August 2022-present
Research area: Methane oxidation in ventilation air
NSF GRFP Fellow

Elijah Martin; August 2021-present
Research area: High-throughput environmental weathering
NSF GRFP Fellow

Kristen Reidinger; August 2020-present
Research area: NDMA in water supply

Marc Foster, Aug 2020-present
Research area: Biodegradation of polymers in marine systems

Joules Provenzano; Jan 2022-present
Research area: Cheminformatics in pesticide degradation networks

Barathkumar Baskaran; Jan 2021-present
Research area: Electrochemical destruction of organic molecules in drinking water

Omar Tantawi; August 2020-present
Research area: Coloring the future with sustainable polymers

Nicolette Bugher; June 2020-present
Research area: Superfund research program
NSF GRFP Fellow

Rebecca Brenneis; Sept 2018-present;
Research Area: Methane conversion materials

Past Doctoral Students

10. Yunpo Li; Sept 2018-Nov 2023 (MIT)
9. Eric P. Johnson; Jan 2017-June 2022. (Yale)
8. Nina Jankovic; Sept 2015-May 2022 (Yale)
   NSF GRFP Fellow
7. Mark Falinski; Sept 2014-July 2020 (Jointly with Julie B. Zimmerman; Yale)
6. Andrew Sumner; Sept 2015-May 2019. (Yale)

NSF GRFP Fellow

5. Michael Giannetto; January 2015-December 2018. (Yale)
4. Brian Drollette; Sept 2013-Februrary 2018. (Yale)
3. Wenbo Shi; Sept 2014-February 2018. (Yale)
   C. Ellen Gonter Environmental Chemistry Award
2. Megan O'Connor; Sept 2012-July 2017. (Duke)
   DOE Innovation Crossroads;
   Forbes 30 Under 30
1. Osman Karatum; Sept 2012-July 2016. (Duke)
   Utku Award for Best Doctoral Paper (as part of thesis)

Current Masters Students

Rebecca Cohen, LGO, Sep 2022-present
Theo Rosensweig, LGO, Sep 2022-present

Past Masters Students

Mollie Wilkinson, MEng, Sep 2022-June 2023
Alexis Frankson, MEng, Sep 2022- June 2023
Kristen Riedinger; Master of Science, Sept 2020-August 2022
Mariko Ogawa; LGO MBA; Master of Science, Sept 2020-August 2022
Riley Coulthard; Master of Science, Master of Engineering, Jan 2016-Sept 2020;
EREF (Environmental Research Education Fund) Fellow; NSF GRFP Fellow
Rebecca Brenneis; Masters of Science, Masters of Engineering, Jan 2017-August 2018;
Brian Drollette; Masters of Science, May 2014
Wenbo Shi; Masters of Science, May 2014
Ke "Kirk" Xue; Master of Science, May 2014
Yikun Zhao; Masters of Engineering, Duke University, December 2012

Thesis Committees Served (Current and Past)

Gina Han, MIT, Mechanical Engineering
Alexis Frankson, MIT, Chemical Engineering
Alex Zappi, MIT, Chemical Engineering
Emily Andrews, University of New Hampshire, Chemistry
Anna Walsh, MIT-WHOI, Chemical Oceanography
Lina Taenzer, MIT-WHOI, Chemical Oceanography
Noah Germolus, MIT-WHOI, Chemical Oceanography
Danielle Haas-Freeman, MIT-WHOI, Chemical Oceanography
William Sawyer, MIT, Mechanical Engineering, PhD 2023
Hui Sun, MIT, Civil and Environmental Engineering, PhD 2022
Solomon Chen, MIT-WHOI, Chemical Oceanography, Masters 2022

Peeyush Khare, Yale University, Chemical and Environmental Eng, PhD 2020
Jenna Ditto, Yale University, Chemical and Environmental Eng, PhD 2020
Eric Ryberg, Yale University, Chemical and Environmental Eng, PhD 2020
Mark Falinski, Yale University, Chemical and Environmental Eng, PhD 2020
Roger Sheu, Yale University, Chemical and Environmental Eng, PhD 2020
Nick Dee, MIT, Mechanical Engineering, PhD Dec 2019
Keira Liu, Duke University, Department of Chemistry, PhD 2017
David Bowman, McMaster University, PhD 2017 (Reader)
Gordon Getzinger, Duke University, Nicholas School of the Environment, PhD 2016
Kathrin Schreglmann, Helmoltz Zentrum Munich, Environmental Chemistry and Ecology, PhD 2016
Jinghua Lee, Duke University, Department of Chemistry, PhD 2016
Adrian Down, Duke University, Nicholas School of the Environment, PhD 2014
Thomas Morse, Duke University, Civil and Environmental Engineering, PhD 2014
Stephen Steiner III, Massachusetts Institute of Technology, Aeronautics and Astronautics, PhD 2012 (Reader)
Eric Meshot, University of Michigan, Mechanical Engineering, PhD 2011

Past and Current Undergraduate Researchers (n=49)

**Pursued or enrolled in post-graduate study.

Wacuka Ngata; MIT UROP; IAP 2024-present
Gozel Dovranova; MIT UROP; IAP 2023-present
Michelle Wang; MIT UROP; Spring 2023-present
Ethan D Nguyen; MIT UROP; Spring 2023
Lara Bernard; MIT UROP; Spring 2023
Lindsay McBridge; Spring-Summer 2022; High School Volunteer
Jennifer Zhang; Spring-Summer 2023; MIT UROP
Ellie J Lei; MIT UROP; IAP 2023
Lesley L Lambaric; MITEI UROP; IAP 2023
Kai T McClennen; MIT UROP; IAP 2023
Maria I Alder; MITEI UROP; Fall 2022
Abdurahman Sherif; MIT UROP; Fall 2022
Fabian Yanez-Laguna; MIT UROP, MITEI UROP; Summer 2022 – Fall 2022
Sebastian M Quintero; MITEI UROP; Summer 2022
Emily S Zhang; MITEI UROP; Summer 2022
Runako Gentiles, MIT Summer UROP; Summer 2021-Fall 2021
Lai Wa Chu, MIT UROP; Spring 2021-Fall 2021
Audrey Parker, Boise State, MIT Summer Research Program; Summer 2021
Chantaly Villalona, Wellesley, MIT Summer Research Program; Summer 2021; Fall 2021-Spring 2022
Amber Williams, MIT UROP; Spring 2021
Timothy Nguyen, MIT UROP; Spring 2021
Zoe Kuhlken, MIT UROP; Spring 2021

Priya Montcrieffe, MIT UROP; Spring 2021
Kathleen Bailey, MIT UROP; Spring 2021
Stacy Godfreey-Igwe, MIT SuperUROP, September 2019-June 2021
Juliet Liao, MIT, January 2019-August 2020
Winner, MIT UROP Poster presentation
Haley Nakamura, MIT, January 2019-August 2020
Winner, MIT UROP Poster presentation
Samantha Burnell, MIT, SuperUROP, September 2019-June 2020
**Nicolette Bugher, UDelaware, MIT Summer Research Program; Summer 2019;
**Nathalie Thelemaque, University of Florida, MIT Summer Research Program; Summer 2019;
Winner, NSBE Technical Research Poster Competition
**Anna Mahoney, Union College, Summer 2019;
AJ Cox, MIT, September 2018-December 2018; September 2019- Present
**Madison Shankle, Yale University, January 2018-May 2018
**Lane To, Yale University, Yale STARS Program, Summer 2017-May 2018
Gustavo Cano Arcos, Yale University, Research Experience for Peruvian Undergraduates, January 2017-August 2017
**Adam Watson, Yale University, Yale STARS Program, Summer '16 - June '18
Mairead Brennan, Yale University, Summer 2016
**Thomas Wright, Salem State University, Summer 2016
Rei Ukita, Brown University, Summer 2012
**Emma D'Ambro, LeMoyne College; Summer 2012
Mya Steadman, Mount Holyoke College, 2009-2010, Senior Thesis
**Michelle Coutu, Mount Holyoke College, 2009-2010, Senior Thesis
Jiaxi Song, Mount Holyoke College, 2009-2010, Independent Research
Megan Gregory, Mount Holyoke College, 2009-1010, Independent Research
Abigail Licht, Mount Holyoke College, 2009-2010, Independent Research
**Marie Ozann, Mount Holyoke College, 2010-2011, Independent Research
Zoe Henrot, Mount Holyoke College, 2010-2011, Independent Research
**Martha Streng, Mount Holyoke College, 2010-2011, Independent Research
**Melissa White, Mount Holyoke College, 2009-2011, Independent Research

PROFESSIONAL AFFILIATIONS AND SERVICE

Professional Societies

Sustainable Nanotechnology Organization, 2014-present
ASME (founded as American Society for Mechanical Engineers), 2013-present
Association of Environmental Engineering and Science Professors (AEESP), 2012-present
International Society for Optics and Photonics, 2011-present
American Chemical Society, 2001-present

Government & NGO

National Academies of Science, Engineering, and Medicine, Atmospheric Methane Removal Study; April 2023-July 2023 (recused due to Moxair)
Spark Climate, Scientific Advisory Board, 2022-present
XPrize, Global Visioneering Brain Trust, Climate and Energy, 2024-present
Anonymous Prize Recommender and Evaluator for Various Foundations and Professional Societies, June 2020-present
Academic Advisory Group, Mass 80x50 Decarbonization Roadmap, 2019-2020

Session Chair and Symposia Organizer

Co-organizer, NT24, June 2024
Co-organizer, American Chemical Society, Environmental Division, "Plastics in the Environment"; March 2024
Co-organizer, Association of Environmental Engineering and Science Professors National Meeting, Northeastern University, June 2023
Co-organizer, Guadalupe Nanotube Workshop, June 2022
Session Chair, Gordon Research Conference Environmental Science: Water, June 2022
Co-organizer, Carbon nanotube synthesis advances, Materials Research Society, May 2022
Founder and Organizer, MIT Methane Action Workshop, April, May 2021
Session Moderator, MIT Energy Initiative Low Carbon Fuels Session, December 2021
Session Moderator, MIT Environmental Solutions Initiative Plastics and Policy Panel, June 2020
Session Chair, Gordon Research Conference Environmental Science: Water, June 2020 [*Postponed*]
Co-organizer, MIT Civil and Environmental Engineering Education Frontiers Forum (CEE-EFF), October, 2019
Organizer, Royal Society of Chemistry's Editors Symposium, Environmental Science: Processes and Impacts, June 23-25, 2019
Workshop Session Leader, TISED (Trottier Institute for Sustainability in Engineering and Design at McGill University), June 12, 2019
Advisory Panel and Session Chair, Gordon Research Conference Environmental Nanotechnology, June 2019
Session Organizer, Sustainable Nanotechnology Organization Fall Meeting, November 2019
Session Chair, Gordon Research Conference Environmental Nanotechnology, June 2019
Session Organizer, Sustainable Nanotechnology Organization Fall Meeting, November 2018
Session Organizer, Sustainable Nanotechnology Organization Fall Meeting, November 2017
Advisory Panel and Session Chair, Gordon Research Conference Environmental Nanotechnology, June 2017

Co-Organizer, American Chemical Society, Environmental Division, "Energy Systems and Water Treatment"; August 2016. (Organized with Kelly Good, Jeanne VanBriessen, and Paula Mouser).
Session Chair, Gordon Research Conference Environmental Nanotechnology, June 2015
Organizer, Sustainable Nanotechnology Organization Fall Meeting, November 2015
Program Chair, Association of Environmental Science and Engineering Professors (AEESP) Research and Education Conference, New Haven, CT, June 13-16,2015
Organizer, ASME's NanoEngineering in Medicine and Biology (NEMB) 2nd Global Congress, "Nanomaterials and Public Health", February 2014
Organizer, National Academy of Sciences US-Korean Kavli Frontiers of Sciences, "Nanomaterials that can save the world"; August 2013.
Session Chair, International Symposium on Sustainable Systems and Technologies; May 2013.
Co-Organizer, American Chemical Society, Environmental Division, "Transformative Nanotechnologies: Energy and Environment, Solutions and Challenges"; April 2013. (Organized with John Fortner)
Organizer, ASME's NanoEngineering in Medicine and Biology (NEMB) 2nd Global Congress, "Nanomaterials and Public Health", February 2013.

University Service

Member, Faculty Steering Committee, Solve@MIT, Sept 2023- present
Member, Postdoctoral Fellowship Program for Engineering Excellence Faculty Steering Committee; Academic Track Lead (2022 co-lead; 2023 lead); Entrepreneurship Track Lead (2023); Admissions Team Lead (2024)
Member, Faculty Steering Committee, Materials Research Lab, Sept 2023-present
Member, AdHoc Faculty Committee, Materials Research Lab, Aug 2022-Jan 2023
Member, Faculty Steering Committee, MIT Energy Initiative, Future Energy Systems, Nov 2021-present
Member, MIT SoE Diversity, Equity, and Inclusion Committee, Jan 2021-present
Chair, MIT CEE Diversity, Equity, and Inclusion Committee, Jan 2021-Jan 2024
Co-chair, MIT CEE Diversity, Equity, and Inclusion Taskforce, September 2020-Dec 2020
Member, Safe and Sustainable Labs Committee, MIT Office of Sustainability, June 2021-June 2022
Member, Faculty Advisory Committee, MIT Materials Research Lab, Dec 2021-Sept 2021
Member, Faculty Steering Committee, MIT Climate and Sustainability Consortium, September 2020-present
Mentor, MIT School of Engineering, Postdoctoral Mentor Association; July 2020-present

Member, MIT Environmental Solutions Initiative Faculty Advisory Board, Oct 2018-present
Freshmen Advisor (Terrascope); Fall 2019-Sept 2020
Co-organizer, MIT Parsons Environmental Science Seminar Series, Sept 2018-present
Presenter: MITEI EAC (Oct 21, 2021); SoE Dean's Advisory Council (Sept 17, 2020); HackRD (April 10, 2019); Corporation Development Committee (September 27, 2019), Campaign Leadership Council (December 6, 2019)
MIT CEE Search Committee; Dec 2019-June 2020
MIT CEE Search Committee; Dec 2018-June 2019
Member, Yale University Committee on Honors and Academic Standing, Spring 2016-Spring 2017
Interim Member, Duke University Radiation Safety Committee, 2013-2014
Director, Civil and Environmental Engineering Graduate Colloquium, 2012-2014
Member, Duke University Pratt School of Engineering Diversity Committee, 2012-2014
Member, Duke University Pratt School of Engineering Culture Survey Response Team, 2012-2013
Instructor, Duke University Pratt School of Engineering Summer Research Experience for Undergraduates (REU), 2012-2014
Union College Chemistry Alumni Advisory Council. May 2012- present.

Peer Review and Editorial Service

Reviews Editor, *Environmental Science: Processes and Impacts*, Jan 2018-January 2023.

Special Issue Co-Editor, Horizontal Drilling and Hydraulic Fracturing Special Issue, *Environmental Science: Processes and Impacts*, Jan 2018-Jan 2019

Series Editor, Emerging Investigator Series, *Environmental Science: Processes and Impacts*, Aug 2016-Jan 2018

Editorial Board Member, *Environmental Science: Processes and Impacts*, March 2015-present

Reviewer for *Environmental Science and Technology, Journal of the American Chemical Society, ACS Nano, ACS Environment Au, ACS Nano Au, ACS Applied Materials & Interfaces, Annals of Occupational Hygiene, Journal of Nanoparticle Research, Environmental Science: Nano*, *Carbon, Diamond, Environmental Science: Processes and Impacts, Small, Energy & Fuels.*

Reviewer, National Science Foundation, Programs: CBET (Chemical, Bioengineering, Environmental, and Transport Systems; Environmental Engineering and Environmental Science: Nano), CMMI (Civil Mechanical and Manufacturing Innovation), Chemistry (Environmental Chemical Sciences).

Reviewer, EPA STAR Graduate Fellowship Program; NSF Graduate Research Fellowship Program

Outreach

Interviewer, An interview with Tom Steyer, MIT, March 13 2024

MIT Environmental Solutions Initiative, Ask MIT Climate, Sept 2023

Panelist, Boston Globe, Globe Summit Session "Climate Innovations: Game Changing or Hype"? September 2023

Workshop organizer; *Equity in the job search: Tools for navigating bias in the academic job search.* Association for Environmental Engineering and Science Professors (AEESP) Biannual National Meeting; Northeastern University, June 2023.

Graduation Speaker, Gould Academy 186th Commencement, June 2022

Bendheim Lecture, Middlesex School, May 3, 2022

Workshop organizer; *Equity in the job search: Tools for navigating bias in the academic job search.* Association for Environmental Engineering and Science Professors (AEESP) Biannual National Meeting; Washington University in St. Louis; July 13, 2021

Organizer and Moderator, *Picture A Scientist* Screening, MIT School of Engineering Showing, October 1, 2020

Invited Presenter; MIT School of Engineering Staff DEI Seminar; December 11, 2020

Invited Presenter; MIT Leaders and Laureates Program; December 2, 2020

Speaker/Panelist, Meet the Faculty, MIT MSRP, Summer 2020.

Graduation Speaker and Mentor, Monhegan Island School, June 2020.

Invited Presenter; Faculty Lunch, Terrascope Program; December 5, 2019.

Invited Presenter; CEE New Research and Alumni Dinner; November 14, 2019.

Invited Panelist; Path to Professorship; Massachusetts Institute of Technology. November 16, 2018

Invited Panelist; Work-Life Balance; MIT Rising Stars Workshop. October 25, 2019.

MIT Civil and Environmental Engineering Kids Camp; Demonstrator; August 2019.

Supervisor, High School Student Lukas Glist, Groundwater impacts of hydraulic fracturing; Summer 2019.

Faculty Advisor, Gordon Research Seminar affiliated with Gordon Research Conference: Environmental Nanotechnology, Newry, ME June 2019

Workshop organizer; *Equity in the job search: Tools for navigating gender bias in the academic job search.* Association for Environmental Engineering and Science Professors (AEESP) Biannual National Meeting; Arizona State University; May 14, 2019

Butte High School, Honors Mathematics Lecture. “How to do the most good with your brains.” March 26, 2019

Undergraduate “Fireside Chat”: I Want to Save the World but Don’t Know How. Willamette University. February 4, 2019.

Postdoctoral Mentoring Session; Academic Job Search Lecturer & Discussion Leader; Oak Ridge National Laboratory; Earth Sciences Division; Nov 28, 2018

Invited Panelist; Path to Professorship; Massachusetts Institute of Technology. November 16, 2018

MIT Civil and Environmental Engineering Kids Camp; Demonstrator; August 2018.

Yale Young Global Scholars Program; Lecturer; June 2018.

Equity in the STEM Job Search; Academic Job Search Lecturer & Discussion Leader; Faculty Liaison; Yale University; Feb 2, 2018

Invited Panelist; Path to Professorship; Massachusetts Institute of Technology. November 17, 2017.

Yale Young Global Scholars Program; Lecturer; July 2017.

Supervisor, High School Student Andrew Kurth, Recycling effluents in catalytic chemical vapor deposition: Materials efficiency; June 2017-June 2018.

Equity in the STEM Job Search; Academic Job Search Lecturer & Discussion Leader; Faculty Liaison; Yale University; May 8, 2017

Invited Panelist; Path to Professorship; Massachusetts Institute of Technology. November 18, 2016.

Mystic Aquarium Women in Science (in collaboration with the Center for Green Chemistry and Green Engineering at Yale), August 2016

Yale Young Global Scholars Program; Lecturer and Lab tours; June 2016.

Invited Panelist; Academic Jobs Panel; Yale University School of Engineering and Applied Sciences; December 4, 2014. (Seminar for all graduate students).

Invited Panelist; Path to Professorship; Massachusetts Institute of Technology. November 12, 2014. (Short course catered to women in science and engineering with the ultimate goal of increasing recruitment to and retention of women faculty in STEM fields);

Tapping Chemistry: The Chemistry of Beer. Portland Beer Week 2014, Portland, ME. November 7, 2014. (Adult education interactive demonstration of beer chemistry and yeast biochemistry).

Faculty Advisor, Gordon Research Seminar affiliated with Gordon Research Conference: Environmental Sciences: Water, Holderness, NH 2014

Founding Director/Instructor, Duke Research Integration Voyage for Engineers (DRIVE); 2013 (NYC/Key Largo); 2014 (Puerto Rico). Hands-on field excursion for first and second-year students with an interest in civil and environmental engineering.

Supervisor, High School Student Allison Vu, North Carolina Math and Science High School; Hydraulic Fracturing Fluid Quantification, 2012-2013.

Lecturer, The Forest at Duke Retirement Community, “Hydraulic Fracturing in North Carolina,” April 2013.

Demonstrator, ACS Festival for the Eno River, July 2012.

Demonstrator, Duke University FEMMES (Females Excelling More in Math Engineering and Science), 2011.

Lecturer, North Shore Community College, “Environmental Chemistry: Evolving to Meet Challenge.” Oct 2008

Supervisor, Undergraduate Senior Design Project, MIT Civil and Environmental Engineering, Black Carbon Sorption for Water Filtration, 2006-2008.

Director/Instructor, Environmental Enrichment Program, Fletcher-Maynard Academy (K-8), Cambridge, MA, 2004-2006.

Supervisor, High School Student Philip Logan, Oil Spill Characterization; 2004-2005.

PUBLICATIONS RELATED TO EDUCATIONAL OUTREACH PROGRAMS

Reviewed, Online K-12 Lesson and Activity Published in: *TeachEngineering Digital Library- Science and Technology,* Nov 2014. The Amazing Aerogel (Lesson&Activity); L. K. Redfern, O. Karatum, C.K. Gunsch, D.L. Plata (https://www.teachengineering.org/view_lesson.php?url=collection/duk_/lessons/duk_aerogel/duk_aerogel_lesson01.xml; https://www.teachengineering.org/view_activity.php?url=collection/duk_/activities/duk_aerogel/duk_aerogel_lesson01_activity1.xml).

FIELD EXPERIENCE AND SHORT COURSES

R/V Cape Hatteras, Black Carbon in the Gulf of Maine Part I, August 2004*

R/V Oceanus, Black Carbon in the Gulf of Maine Part II, April 2004*

*Applied uranium-thorium disequilibria as a tool to measure total organic and black carbon flux through the water column.

UC Irvine Keck Carbon Cycle Accelerated Mass Spectrometry course, summer 2005

Union College/ Smithsonian Tropical Research Institute Mini-Term, summer 2001

Animal behavior in acidified streams, Upstate New York, summers 2000, 2001

MEDIA COVERAGE

C&ENews; It's time to talk about methane removal; 2024

Science for the Public, 2024

MIT *TIL Climate Podcast*, Part I and Part II, 2023

WBUR Boston, 2023

Smithsonian, 2023

CuriosityUnbounded, Interview with MIT President Sally Kornbluth, 2023

Wired, 2022

Fast Company, 2022

Gizmoto, The Engineer, etc. 2022.

Wall Street Journal, 2022

PBS Nova, "This Explosive Gas is Heating our Planet: Can We Capture It?" Molecules Series. 2021

MIT Spectrum, 2021

GA Gazette, 2020

Union College Magazine, 2020

Lab Manager Magazine, 2016

National Public Radio, *State Impact*, 2016

Journal of Petroleum Technology, 2015

WSIL TV News, 2015

National Public Radio, Morning Edition, 2015

Environment & Energy, 2015

Inside Climate News, 2015

Science News, 2015

ASME Podcast, 2013
ASME News, 2013
Chemical and Engineering News, 2012
Technology Review, January 2010
Nature Nanotechnology, 2009, Vol 4, p.792-793
Discovery Channel Canada, *The Daily Planet*, 2009
Chemical Heritage Foundation, *Distillations* Podcast, 2009
J. of the National Cancer Institute, 2008
Johns Hopkins University Center for Talented Youth, Cogito.org, 2008
Oceanus Magazine, 2008
Chemical and Engineering News, August 27, 2007, p. 12
Science News, Sept 1, 2007, Vol 172, p. 142
Nanotechnology News, 2007