

ZHENYU TIAN

Assistant Professor
Chemistry and Chemical Biology
Marine and Environmental Science
Northeastern University

(617) 373-6701
z.tian@northeastern.edu
[Google Scholar](#)
[ORCID: 0000-0002-7491-7028](https://orcid.org/0000-0002-7491-7028)

EDUCATION

Ph.D.	University of North Carolina at Chapel Hill Gillings School of Global Public Health Environmental Sciences and Engineering	2018
M.S.	Chinese Academy of Sciences Research Center for Eco-Environmental Sciences Environmental Science	2014
B.S.	Jilin University Environmental Science	2011

PUBLICATIONS

1. McIntyre, J.K.*, Prat, J., Cameron, J., Wetzel, J., Mudrock, E., Peter, K.T., **Tian, Z.**, Mackenzie, C., Lundin, J., Stark, J.D. and King, K., (2021). Treading Water: Tire Wear Particle Leachate Recreates an Urban Runoff Mortality Syndrome in Coho but Not Chum Salmon. *Environmental Science & Technology*.
2. **Tian, Z.**, Wark, D. A., Bogue, K., & James, C. A.* (2021). Suspect and non-target screening of contaminants of emerging concern in streams in agricultural watersheds. *Science of The Total Environment*, 148826.
3. **Tian, Z.**, Zhao, H., Peter, K.T., Gonzalez, M., Wetzel, J., Wu, C., Hu, X., Prat, J., Mudrock, E., Hettinger, R., Cortina, A. E., Biswas, R.G., Kock, F.V.C., Soong, R., Jenne, A., Du, B., Hou, F., He, H., Lundeen, R., Gabreath, A., Sutton, R., Scholz, N.L., Davis, J., Dodd, M.C., Simpson, A., McIntyre, J.K., Kolodziej, E.P.* (2020). Ubiquitous Tire Rubber-Derived Chemical Induces Acute Mortality in Coho Salmon. *Science*, 371 (6525), 185-189.
4. Du, B.*, **Tian, Z.**, Peter, K.T., Kolodziej, E.P., Wong, C.S. (2020). Identification of Unique Non-Target High Resolution Mass Spectrometry Signatures to Track Contaminant Sources in Urban Waters. *Environmental Science & Technology Letters*, in press, DOI: 10.1021/acs.estlett.0c00749
5. Peter, K.T. *, Hou, F., **Tian, Z.**, Wu, C., Goehring, M., Liu, F., & Kolodziej, E.P. (2020). More Than a First Flush: Urban Creek Storm Hydrographs Demonstrate Broad Contaminant Pollutographs. *Environmental Science & Technology*, 54 (10), 6152–6165.
6. **Tian, Z.***, Peter, K.T., Gipe A.D., Zhao H., Hou F., Wark D.A., Kolodziej E.P., James C.A.* (2019). Suspect and non-target screening for contaminants of emerging concern in an urban estuary. *Environmental Science & Technology*, 54 (2), 889-901.
7. Vila, J.*, **Tian, Z.**, Wang, H., Bodnar, W., & Aitken, M.D. (2019). Isomer-selective

- biodegradation of high-molecular-weight azaarenes in PAH-contaminated environmental samples. *Science of the Total Environment*, 707, 135503.
8. Peter, K.T.*, Wu, C., **Tian, Z.**, Kolodziej, E.P. (2019). Application of Non-Target High Resolution Mass Spectrometry Data to Quantitative Source Apportionment. *Environmental Science & Technology*, 53 (21), 12257-12268.
 9. Hou, F., **Tian, Z.**, Peter, K.T., Wu, C., Gipe A.D., Zhao, H., Alegria, E., Liu, F., Kolodziej E.P.* (2019). Quantification of organic contaminants in urban stormwater by isotope dilution and liquid chromatography-tandem mass spectrometry. *Analytical and Bioanalytical Chemistry*, 411 (29), 7791-7806.
 10. Han, P., Yu, Y., Zhou, L., **Tian, Z.**, Li, Z., Hou, L., Liu, M., Wu, Q., Wagner, M., Men, Y.* (2019). Specific micropollutant biotransformation pattern by the comammox bacterium *Nitrospira inopinata*. *Environmental Science & Technology*, 53 (15), 8695-8705.
 11. Peter, K.T.*, Herzog, S., **Tian, Z.**, Wu, C., McCray, J., Lynch, K., Kolodziej, E.P. (2019). Evaluating Emerging Organic Contaminant Removal in an Engineered Hyporheic Zone using High Resolution Mass Spectrometry. *Water Research*, 150, 140-152.
 12. Peter, K.T.*, **Tian, Z.**, Wu, C., Lin, P., White, S., McIntyre, J.K., Scholz, N.L., & Kolodziej, E.P. (2018). Using High-Resolution Mass Spectrometry to Identify Organic Contaminants Linked to Urban Stormwater Mortality Syndrome in Coho Salmon. *Environmental Science & Technology*, 52 (18), 10317–10327.
 13. **Tian, Z.**, Vila J.*, Yu M., Bodnar, W., & Aitken, M.D. (2018). Tracing the biotransformation of polycyclic aromatic compounds in contaminated soil by stable isotope-assisted metabolomics. *Environmental Science & Technology Letters*, 5 (2), 103–109
 14. **Tian, Z.**, Vila J., Wang, H., Bodnar, W., & Aitken, M.D.* (2017). Diversity and abundance of high-molecular-weight azaarenes in PAH-contaminated environmental samples. *Environmental Science & Technology*, 51 (24), 14047–14054.
 15. **Tian, Z.**, Gold, A., Nakamura, J., Zhang, Z., Vila, J., Singleton, D.R., Collins, L.B. & Aitken, M. D.* (2017). Non-target analysis reveals a bacterial metabolite of pyrene implicated in the genotoxicity of contaminated soil after bioremediation. *Environmental Science & Technology*, 51 (12), 7091–7100.
 16. Han, Y., Liu, W.*, Pan, W., Wang, P., **Tian, Z.**, Zhao, Y., & Zheng, M. (2015). Formation Pathways of Mono-to Octa-Chlorinated Dibenzo-*p*-dioxins and Dibenzofurans in Main Organochemical Industries. *Environmental Science & Technology* 49(18), 10945-10950
 17. **Tian, Z.**, Li, H., Xie, H., Tang, C., Han, Y., & Liu, W.* (2014). Concentration and distribution of PCNs in ambient soil of a municipal solid waste incinerator. *Science of the Total Environment*, 491, 75-79.
 18. **Tian, Z.**, Li, H., Xie, H., Tang, C., Han, Y., Wang, M., & Liu, W.* (2014). Polychlorinated dibenzo-*p*-dioxins and dibenzofurans and polychlorinated biphenyls in surface soil from the Tibetan Plateau. *Journal of Environmental Sciences*, 26(10), 2041-2047.
 19. Xie, H., Li, J., Zhang, C., **Tian, Z.**, Liu, X., Tang, C., & Liu, W.* (2014). Assessment of heavy metal contents in surface soil in the Lhasa–Shigatse–Nam Co area of the Tibetan Plateau, China. *Bulletin of Environmental Contamination and Toxicology*, 93(2), 192-198.
 20. Liu, W.*, **Tian, Z.**, Li, H., Xie, H., Xiao, K., Li, C., Tang, C., & Zheng, M. (2013). Mono-to octa-chlorinated PCDD/Fs in stack gas from typical waste incinerators and their implications

on emission. *Environmental Science & Technology*, 47(17), 9774-9780.

21. Liu, W.*, Li, H., Tao, F., Li, S., **Tian, Z.**, & Xie, H. (2013). Formation and contamination of PCDD/Fs, PCBs, PeCBz, HxCBz and polychlorophenols in the production of 2, 4-D products. *Chemosphere*, 92(3), 304-308.
22. Liu, W.*, Li, H., **Tian, Z.**, Xie, H., & Hu, J. (2013). Spatial distribution of polychlorinated biphenyls in soil around a municipal solid waste incinerator. *Journal of Environmental Sciences*, 25(8), 1636-1642.
23. Liu, W.*, Li, H., **Tian, Z.**, Xie, H., & Li, C. (2013). Spatial distribution of polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans in soil around a municipal solid waste incinerator. *Environmental Geochemistry and Health*, 35(5), 605-611.

PRESENTATION AND POSTERS

1. **Tian Z.**, Zhao H., Peter K.T., Gonzalez M., Rideout C., Hu X., Kolodziej E.P. Occurrence and temporal trends of the coho salmon toxicant 6PPD-quinone in urban creeks. Sept 2021, EMCON: International Conference on Emerging Contaminants (**Keynote presentation**)
2. **Tian Z.** Non-target screening of organic pollutants in marine water and stormwater. May 2021, UWB Bio Seminar, University of Washington Bothell. (**Invited talk**)
3. **Tian Z.** A ubiquitous Tire Rubber-Derived Chemical Induces Acute Mortality in Coho Salmon. Feb. 2021, CEEN Environmental Seminar, Colorado School of Mines. (**Invited talk**)
4. **Tian Z.** A ubiquitous Tire Rubber-Derived Chemical Induces Acute Mortality in Coho Salmon. Jan. 2021, Environmental Assessment Program Seminar, WA Department of Ecology. (**Invited talk**)
5. **Tian Z.** Non-target screening of organic pollutants in marine water and stormwater. Jan. 2021, Environmental Toxicology Seminar, University of California at Riverside. (**Invited talk**)
6. **Tian Z.** A ubiquitous Tire Rubber-Derived Chemical Induces Acute Mortality in Coho Salmon. Nov. 2020, SETAC North America 41st Annual Meeting (**Oral presentation**).
7. **Tian Z.** Suspect and Non-Target Screening for Organic Contaminants in Marine Water and Stormwater. Jan. 2020, Water Seminar, Department of Civil & Environmental Engineering, University of Washington, Seattle, WA. (**Invited talk**)
8. **Tian Z.**, Peter K.T., Gipe A.D., Hou F., Kolodziej E.P., James C.A. Suspect and Non-Target Screening for Contaminants of Emerging Concern in Puget Sound. Oct. 2019, Environmental Assessment Program Seminar, WA Department of Ecology, Olympia, WA. (**Invited talk**)
9. **Tian Z.**, Peter K.T., Gipe A.D., Wark D.W., Zhao H., Hou F., James C.A., Kolodziej. E.P. Suspect and Non-Target Screening of Organic Pollutants in Marine Water and Stormwater. Aug. 2019, 258th ACS National Meeting, San Diego, CA. (**Oral presentation**)
10. **Tian Z.**, Peter K.T., Wu C., Hou F., Kolodziej E.P., James C.A. Suspect and Non-Target Screening for Contaminants of Emerging Concern in Puget Sound. Apr. 2019, Salmon Recovery Conference, Tacoma, WA. (**Oral presentation**)
11. **Tian, Z.**, Peter, K.T., Hou, F., James, C.A., Kolodziej, E.P. Suspect and Non-Target Screening of Organic Pollutants in Marine Water and Stormwater. Mar. 2019, PittCon, Philadelphia, PA. (**Invited talk**)
12. **Tian, Z.** What's in our water? Non-target screening of organic pollutants in water environments. Oct. 2018, Clovers Park Rotary Club, Lakewood, WA. (**Invited talk**)

13. **Tian, Z.**, Peter, K.T., Du, B., Kolodziej, E.P., James, C.A.*, Retention time prediction models using ENTACT standards and machine learning algorithms. ENTACT workshop, Aug. 2018, US EPA at Research Triangle Park, NC. (**poster**)
14. **Tian, Z.** Non-target screening of organic pollutants in soil and water. Jul. 2018. RCEES, Chinese Academy of Sciences, Beijing (**Invited talk**)
15. **Tian, Z.**, Vila J., Yu M., Bodnar, W., & Aitken, M. D. Tracing the biotransformation of polycyclic aromatic compounds in contaminated soil by stable isotope-assisted metabolomics. 255th ACS National Meeting, Mar. 2018, New Orleans, LA. (**Oral presentation**)
16. **Tian, Z.** & Aitken, M. D. Non-target analysis of bioremediated soil. Nov. 2017. US EPA at Research Triangle Park, NC. (**Invited talk**)
17. **Tian, Z.** & Aitken, M. D. Non-target analysis of bioremediated soil. Sept. 2017. Department of Geosciences, Princeton University. (**Invited talk**)
18. **Tian, Z.**, Gold, A., Zhang, Z., Nakamura, J., Vila, J., Singleton, D., Collins, L., & Aitken, M.D. Non-targeted analysis reveals a novel bacterial metabolite of pyrene implicated in genotoxicity of bioremediated soil. 253rd ACS National Meeting, Apr. 2017, San Francisco, CA. (**Oral presentation**)
19. **Tian, Z.**, Adrion, A., Zhang, Z., Gold, A., & Aitken, M.D. Towards identifying unknown genotoxic compounds in bioremediated soil using metabolomics-like methods and effect-directed analysis. NIEHS SRP Annual Meeting, Nov. 2015, San Juan, Puerto Rico. (**Poster**)
20. **Tian, Z.**, Liu, W. Distribution and Comparison of Mono- to Tri-Chlorinated PCDD/Fs in Stack Gas from Different Waste Incinerators. Dioxin 2013, Aug. 2013, Daegu, Korea. (**Oral Presentation**)

HONORS AND AWARDS

Science Communication Fellowship, 2021
 ACS ENVR Graduate Student Award, 2018
 ACS ENVR Certificate of Merit, 2017
 Graduate School Traveling Award, UNC-Chapel Hill, 2016
 Prof. Baozhen Wang Scholarship for Environmental Innovations, 2014
 First Class Scholarship of Chinese Academy of Science, 2013
 Second Class Scholarship of Chinese Academy of Science, 2012
 Second Class Award, 2010 CSTD Competition (academic competition for undergraduates)
 Second Class Scholarship of Jilin University, 2007-2008, 2008-2009

MENTORING EXPERIENCE

2013 Chen Tang (M.S.)
 2016 Zhe Wang (M.S.)
 2017 Elisa Rehak (M.S.E.E.)
 2018 David Wark (B.S.), Diana Vedenova (B.S.)
 2019 Melissa Gonzalez (B.S.), Allan Cortina (B.S.), Rachel Hettinger (B.S.)
 2020 Craig Rideout (B.S.), Ximin Hu (Ph.D.)

JOURNAL AND GRANT REVIEW

Journals: *Environmental Science & Technology, Environmental Science & Technology Letters, Environmental International, Science of the Total Environment, Environmental Pollution, Journal of Hazardous Materials, Environmental Sciences Europe, Environmental Science: Process and Impact, Chemosphere, Journal of Agricultural and Food Chemistry, Journal of Environmental Sciences, Canadian Journal of Chemistry, PeerJ*

Grant proposals: *EPA Science to Achieve Results (STAR) Program, ad hoc reviewer.*

RESEARCH INTERESTS

Environmental chemistry; Emerging contaminants; Non-target screening; Metabolomics; Bioremediation; Advanced mass spectrometry; Effect-directed analysis; Environmental exposure; Exposomics; Aquatic chemistry; Wastewater-based epidemiology.

MEDIA LINKS

Tire toxicant paper

New York Times:

<https://www.nytimes.com/2020/12/03/climate/salmon-kill-washington.html>

Seattle Times:

<https://www.seattletimes.com/seattle-news/environment/tire-dust-is-killing-salmon/>

CNN:

<https://www.cnn.com/2020/12/03/us/microplastics-tire-rubber-chemicals-killing-coho-salmon-scn/index.html>

The Guardian:

<https://www.theguardian.com/environment/2020/dec/03/coho-salmon-pollution-car-tires-die-off>

Marine water paper

UW News:

<https://www.washington.edu/news/2020/01/22/puget-sound-technique-casts-net-for-concerning-chemicals/>

King 5 TV (local television channel):

<https://www.king5.com/article/news/local/whats-in-puget-sound/281-c122de89-af35-41a6-a47a-42f7345b6389>