HUAN CHEN, PhD

Research Assistant Professor
Department of Environmental Engineering & Earth Sciences
Clemson University, Anderson, SC 29625
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RESEARCH INTERESTS

Dr. Chen's primary research focuses on understanding and enhancing water resilience in response to land use and cover changes (e.g., wildfire and hurricanes). He is particularly interested in integrating disciplines such as biogeochemistry, environmental engineering, process engineering, and computing to develop innovative and sustainable technological solutions aimed at addressing environmental challenges and achieving efficient resource recovery. Dr. Chen's interested research areas are a) soil and water quality; b) water reuse, c) resource recovery, and d) data analysis. Within these general areas, he specializes in:

(a) **Investigating the influence of disturbances across the aquatic-terrestrial interface on water quality** - Dr. Chen examines how terrestrial biogeochemical processes (e.g., throughfall, litter decomposition, wildland fire, and extreme rainfall events) affect water quality. He characterizes the compositional changes in dissolved organic matter and examines the distribution and sources of emerging contaminants (e.g., PFAS, antibiotics, pesticides, and resistance genes) using advanced analytic techniques (e.g., pyrolysis GC/MS, FT-IR, ^{13}C-NMR, ^{1}H-NMR, FT-ICR MS, LC-QqQ, and LC-Orbitrap). Five Representative publications are listed below.

a.5 **Huan Chen** [1], Mahmut Selim Ersan [1], Nikola Tolić, Rosalie K. Chu, Tanju Karanfil, Alex T. Chow [‡] (2022), Chemical characterization of dissolved organic matter as disinfection byproduct precursors by UV/fluorescence and ESI FT-ICR MS after smoldering combustion of leaf needles and woody trunks of pine (*Pinus jeffreyi*). *Water Research* 209: 117962

a.4 Jing-Run Hu, Yi-Tao Lyu, **Huan Chen** [‡], Si Li, Wei-Ling Sun [‡] (2023), Suspect and nontarget screening reveal the underestimated risks of antibiotic transformation products in wastewater treatment plant effluents. *Environmental Science & Technology* 57(45): 17439–17451

a.3 **Huan Chen**, Kuo-Pei Tsai, Yi-Na Liu, Nikola Tolić, Sarah D. Burton, Rosalie K. Chu, Tanju Karanfil, Alex T. Chow [‡] (2021), Characterization of dissolved organic matter from wildfire-induced *Microcystis aeruginosa* blooms controlled by copper sulfate as disinfection byproduct precursors using APPI(-) and ESI(-) FT-ICR MS. *Water Research* 189: 116640

a.2 **Huan Chen** [1], Habibullah Uzun [1], Alex T. Chow, Tanju Karanfil [‡] (2020), Low water treatability efficiency of wildfire-induced dissolved organic matter and disinfection by-product precursors. *Water Research* 184: 116111

a.1 **Huan Chen** [‡], Alexander Martin Rücker, Qiong Su, Gavin D. Blosser, Xi-Jun Liu, William H. Conner, Alex T. Chow (2020), Dynamics of dissolved organic matter and disinfection byproduct precursors along a low elevation gradient in woody wetlands - An implication of hydrologic impacts of climate change on source water quality. *Water Research* 181:115908

(b) **Developing innovative and sustainable technological solutions for water reuse and resource recovery** - Dr. Chen explores water reuse such as in hydraulic fracturing, irrigation, and hydroponics and assesses the transport and fate of emerging contaminants [e.g., heavy metal(loid)s and PAHs]. He also investigates nutrient recovery by cultivating microalgae (as biofuel feedstock) with livestock wastewater and producing biochar (as adsorbents/soil amendments/slow-release fertilizers) from agricultural residues. Five Representative publications are listed below.

b.5 Chun Cao, Yu-Yao Wu, Zhen-Ying Lv, Ji-Wei Wang, Chen-Wen Wang, Hui Zhang, Jun-Jian Wang, **Huan Chen** [‡] (2024), Uptake of polycyclic aromatic hydrocarbons (PAHs) from PAH–contaminated soils to carrots and Chinese cabbages under the greenhouse and field conditions. *Chemosphere* 360: 142405

b.4 Chun Cao, Peng Zhang, Zhen-Ping Ma, Zhen-Bang Ma, Jun-Jian Wang, Yuan-Yuan Tang, **Huan Chen** [‡] (2021), Coupling sprinkler freshwater irrigation with vegetable species selection as a sustainable approach for agricultural production in farmlands with a history of 50-year wastewater irrigation. *Journal of Hazardous Materials* 414: 125576

b.3 Yun-Long Yang [‡], Peng Xu, Si-Jia Dong, Yang Yu, **Huan Chen** [‡], Ji-Bo Xiao (2021), Using watermelon rind and nitrite-containing wastewater for electricity production in a membraneless biocathode microbial fuel cell. *Journal of Cleaner Production* 307: 127306

b.2 Chun Cao, Qiang Zhang, Zhen-Bang Ma, Xue-Mei Wang, **Huan Chen** [‡], Jun-Jian Wang [‡] (2018), Fractionation and mobility risks of heavy metals and metalloids in wastewater-irrigated agricultural soils from greenhouses and fields in Gansu, China. *Geoderma* 328: 1-9

b.1 **Huan Chen** and Kimberly E. Carter [‡] (2016), Water usage for natural gas production through hydraulic fracturing in the United States from 2008 to 2014. *Journal of Environmental Management* 170: 152-159

(c) **Using advanced statistical methodologies and data science approaches for environmental process** - Dr. Chen employs computing tools such as MATLAB, R, and Python to process large datasets generated by instruments (e.g., pyrolysis GC/MS) and in-situ sensors (e.g., DOC sensors). He integrates machine learning algorithms with hyperspectral imaging (e.g., VNIR and SWIR sensors) to identify microplastics in soils. Five Representative publications are listed below.

c.5 **Huan Chen** [1], Taesung Shin [1], Bosoon Park [‡], Kyoung Ro, Changyoon Jeong, Hwang-Ju Jeon, Pei-Lin Tan (2024), Coupling hyperspectral imaging with machine learning algorithms for detecting polyethylene (PE) and polyamide (PA) in soils. *Journal of Hazardous Materials* 471: 134346

c.4 **Huan Chen**, Alexander Martin Rücker, Yi-Na Liu, David Miller, Jia-Ning Dai, Jun-Jian Wang, Dennis O. Suhre, Li-Jung Kuo, William H. Conner, Barbara J. Campbell, Robert C. Rhew, Alex T. Chow [‡] (2023), Unique biogeochemical characteristics in coastal ghost forests – The transition from freshwater forested wetland to salt marsh under the influences of sea level rise. *Soil & Environmental Health* 1: 100005 [*highlighted in Zinke, L. (2023). "Ghost forests stand apart." Nature Reviews Earth & Environment; "Excellent Papers of 2023" by the editorial board*]

c.3 **Huan Chen**, Jun-Jian Wang, Pei-Jia Ku, Martin Tsz-Ki Tsui, Rebecca B. Abney, Asmeret Asefaw Berhe, Qiang Zhang, Sarah D. Burton, Randy A. Dahlgren, Alex T. Chow [‡] (2022), Burn intensity drives the alteration of phenolic lignin to (poly) aromatic hydrocarbons as revealed by pyrolysis-Gas chromatography-mass spectrometry (Py-GC/MS). *Environmental Science & Technology* 56(17): 12678-12687

c.2 **Huan Chen**, Charles C. Rhoades, Alex T. Chow [‡] (2020), Characteristics of soil organic matter 14 years after a wildfire: A pyrolysis-gas-chromatography mass spectrometry (Py-GC-MS) study. *Journal of Analytical and Applied Pyrolysis* 152: 104922

c.1 **Huan Chen** [‡], Gavin D. Blosser, Hamed Majidzadeh, Xi-Jun Liu, William H. Conner, Alex T. Chow (2018), Integration of an automated identification-quantification pipeline and statistical techniques for pyrolysis GC/MS tracking of the molecular fingerprints of natural organic matter. *Journal of Analytical and Applied Pyrolysis* 134: 371-380

Table of Contents

1. EDUCATION & EXPERIENCE

EDUCATION

Ph.D. in Civil Engineering, *University of Tennessee, Knoxville*, US.   2013–2016
   Dissertation: *Potential Emissions and Exposures of Toxic Organics from Storage Tanks for Chemical Additives in Hydraulic Fracturing: A Modeling Approach*. Advisor: Dr. Kimberly E. Carter

M.S. in Statistics, *University of Tennessee, Knoxville*, US. Advisor: Dr. Wen-Jun Zhou   2013–2016

M.S. in Environmental Engineering, *Peking University*, Beijing, China.   2006–2009
   Thesis: *Impact and Mechanisms of Extracellular Polymeric Substances on the Settlement Ability of Aerobic Granular Sludge*. Advisor: Dr. Tian-Hong Li

B.E. in Environmental Engineering, *Southwest Jiaotong University*, Chengdu, China.   2002–2006
   Thesis: *The Technological Design of Household Waste Sanitary Landfill Field in Nan Bu City in Sichuan Province*. Advisor: Dr. Dan Liu

PROFESSIONAL EXPERIENCE

2021-present	Research Assistant Professor; Department of Environmental Engineering & Earth Sciences, Clemson University, US.
2017-2021	Postdoctoral Fellow; Baruch Institute of Coastal Ecology and Forest Science, Clemson University, US. Advisors: Dr. Alex T. Chow
2012–2013	Junior Researcher; Shenzhen Huawei Construction and Demolition Waste Recycling Technology Company, China.
2009–2012	Staff Research Assistant; Department of Environment & Energy, Peking University, Shenzhen Campus, China. Mentors: Dr. Shu Geng & Dr. Qi-Yong Xu

PROFESSIONAL AFFILIATIONS & OUTREACH

Membership

   Member of American Chemical Society, 2016–Present

   Member of Association of Environmental Engineering & Science Professors, 2018–Present

   Member of International Water Association, 2018–Present

   Member of Soil Science Society of America, 2019–Present

   Member of American Society for Mass Spectrometry, 2022–Present

Editor

   Early career editorial board in *Journal of Hazardous Materials* (2024-2027)

   Guest editor for a joint virtual special issue entitled "Emerging Contaminants in Agroecosystems" in *ACS Journal Agricultural and Food Chemistry*, *ACS Agricultural Science and Technology*, and *ACS ES&T Water* (submission deadline: 1 December 2023).

Reviewer for Journals (reviewed 357 articles for 48 journals as of 22 September 2024)

   ACS ES&T Water (2); Applied Energy (3); Applied Geography (1); Atmospheric Environment (2); Bioresource Technology (26); Chemosphere (3); Critical Reviews in Environmental Science and Technology (3); Ecotoxicology and Environmental Safety (2); Emerging Contaminants (1); Energy (21); Environment International (1); Environmental Engineering Science (4); Environmental Geochemistry and Health (4); Environmental Monitoring and Assessment (1); Environmental Research (4); Environmental Science & Technology (6); Environmental Science and Pollution Research (4); Environmental Science: Processes & Impacts (3); Frontiers of Environmental Science

& Engineering (1); Gas Science and Engineering (29); Geoderma (1); Habitat International (1); Journal of Agricultural and Food Chemistry (1); Journal of Analytical and Applied Pyrolysis (2); Journal of Biotechnology (1); Journal of Cleaner Production (99); Journal of Earth Science (3); Journal of Environmental Chemical Engineering (2); Journal of Environmental Engineering (4); Journal of Environmental Management (10); Journal of Environmental Quality (6); Journal of Environmental Sciences (2); Journal of Hazardous Materials (37); Journal of Hydrology (6); Journal of Integrative Agriculture (1); Journal of Soil Science and Plant Nutrition (1); Journal of South Carolina Water Resources (1); Journal of Water Process Engineering (1); Microchemical Journal (2); Organic Geochemistry (1); Process Safety and Environmental Protection (1); Science of the Total Environment (35); Sensors and Actuators B: Chemical (1); Soil & Environmental Health (7); Sustainability (1); Sustainable Chemistry for the Environment (1); Total Environment Engineering (1); Water Research (7).

Reviewer for Research Proposals

Graduate Research Innovation, Joint Fire Science Program, USGS (2023); Division of Earth Sciences, US NSF (2022).

Organizer for Conferences and Symposiums

4. Oral (in-person & virtual sessions) and poster symposiums of 'Occurrence, transport, and fate of contaminants of emerging concern (CECs) in Agroecosystems' in 2023 ACS Spring National Meeting, Indianapolis, IN, US, 26-30 March 2023, Organizers: **Huan Chen**, Alex T. Chow, Clinton F. Williams, Jun-Jian Wang, Wei-Ling Sun.

3. "Low-Carbon Business Development Forum: Green Z^3 Roadmap Design Charrette", Shenzhen, China, 22-24 April 2011.

2. "International Low-Carbon Development Forum: Shenzhen – California", Shenzhen, China, 16-18 April 2010.

1. "School of Environment and Energy Inaugural Ceremony and Environment and Energy Conference", Shenzhen, China, 10-11 Oct 2009.

Volunteer for Mentoring Activities

3. Volunteer Judge in Poster Competition: Judged 16 posters in 2019 Graduate Research and Discovery Symposium (GRADS) by Clemson University, SC, 3 April 2019

2. Mentor in Stockholm Junior Water Prize (SJWP; Jan–April 2018): Advised high-school students on the project of "Designing a Smart Floating Wetland to Enhance Pollutant Removal Efficiency in Storm Water Ponds" for the entry to 2018 U.S. Stockholm Junior Water Prize [video1]

1. Volunteer in STEM Summer Camp (23–27 May 2016): Help seventh- to ninth-grade students at Lenoir City and Loudon County Schools, Knoxville, TN, US to create water filters to clean dirty water and then measure water quality [news1, news2]

2. PUBLICATIONS & PROCEEDINGS

PEER-REVIEWED JOURNAL PUBLICATIONS

‡ Corresponding author; [1] Equal contribution.
Google Citations: 1515; h-index: 24; i10-index: 43; Total 63 publications.
I have presented my research results and conclusions in 63 peer-reviewed papers (including 8 papers published in Water Research, 6 papers published in ES&T, 2 papers selected as journal cover pages, and 1 paper highlighted by Nature Reviews Earth & Environment). I am serving as a first or corresponding author on 35 out of these 63 papers.

2024

[63/35] **Huan Chen** [1], Taesung Shin [1], Bosoon Park [‡], Kyoung Ro, Changyoon Jeong, Hwang-Ju Jeon, Pei-Lin Tan (2024), Coupling hyperspectral imaging with machine learning algorithms for detecting polyethylene (PE) and polyamide (PA) in soils. *Journal of Hazardous Materials* 471: 134346

[62/34] Xu-Ming Xu [1], **Huan Chen** [1], Lei Du, Chun-Fang Deng, Rou-Qi Ma, Bin Li, Jia-Rui Li, Shu-Feng Liu, Raghupathy Karthikeyan, Qian Chen [‡], Wei-Ling Sun (2024), Distribution and drivers of co-hosts of antibiotic and metal(loid) resistance genes in the fresh-brackish-saline groundwater. *Chemosphere* 365: 143332

[61/33] Yu-Hua Zheng, Erika D. Carter, Shi-Qiang Zou, Clinton F. Williams, Alex T. Chow, **Huan Chen** [‡] (2024), Using syringe filtration after lab-scale adsorption processes potentially overestimates PFAS adsorption removal efficiency from non-conventional irrigation water. *Journal of Environmental Quality* 1-11

[60/32] Chun Cao, Yu-Yao Wu, Zhen-Ying Lv, Ji-Wei Wang, Chen-Wen Wang, Hui Zhang, Jun-Jian Wang, **Huan Chen** [‡] (2024), Uptake of polycyclic aromatic hydrocarbons (PAHs) from PAH–contaminated soils to carrots and Chinese cabbages under the greenhouse and field conditions. *Chemosphere* 360: 142405

[59] Hwang-Ju Jeon, Donghyeon Kim, Fabiano B. Scheufele, Kyoung S. Ro, Judy A. Libra, Nader Marzban, **Huan Chen**, Caroline Ribeiro, Changyoon Jeong [‡] (2024), Occurrence of polycyclic aromatic hydrocarbons (PAHs) in pyrochar and hydrochar during thermal and hydrothermal processes. *Agronomy* 14(9): 2040

[58] Livia V. C. Charamba [‡], Tobias Houska, Klaus Kaiser, Klaus-Holger Knorr, Stephan Krüger, Tobias Krause, **Huan Chen**, Pavel Krám, Jakub Hruška, Karsten Kalbitz (2024), Tracing sources of dissolved organic matter along the terrestrial-aquatic continuum in the Ore Mountains, Germany. *Science of the Total Environment* 943: 173807

[57] Ming-Zhen Li, Jing-Run Hu, Xiao-Qiang Cao, **Huan Chen**, Yi-Tao Lyu, Wei-Ling Sun [‡] (2024), Nontarget analysis combined with TOP assay reveals a significant portion of unknown PFAS precursors in firefighting foams currently used in China. *Environmental Science & Technology* 58(38): 17104–17113

[56] Xiu-Qi You, Xi-Min Chen, Yi Jiang, **Huan Chen**, Juan Liu, Zhen Wu, Wei-Ling Sun [‡], Jin-Ren Ni (2024), 6PPD-quinone affects the photosynthetic carbon fixation in cyanobacteria by extracting photosynthetic electrons. *The Innovation* 5(4): 100630

[55] Si-Ran Feng, Fen Liu, Shun-Ni Zhu [‡], Zhong-Bin Xu, Lei Qin, Ping-Zhong Feng, Zhong-Ming Wang, **Huan Chen**, Wen-Shan Guo, Huu Hao Ngo [‡] (2024), Role of hydraulic retention time in integration of microalgae and activated sludge process for nutrient recycle from dairy liquid digestate. *Chemical Engineering Journal* 484: 149538

[54] Wei Hu, Xi-Zhi Niu, **Huan Chen**, Bei Ye, Jun-Kun Liang, Yun-Tao Guan, Qian-Yuan Wu [‡] (2024), Molecular insight of dissolved organic matter and chlorinated disinfection by-products in reclaimed water during chlorination with permanganate peroxidation. *Chemosphere* 349: 140807

[53] Yu-Lu Tian [1], Xiao-Ying Huang [1], Hang-Zhou Li, Qiu-Meng Chen, Xin-Ying Gong, **Huan Chen**, Mei-Kun Fan, Zheng-Jun Gong [‡] (2024), Highly sensitive and selective off-on fluorescent platform for tricresyl phosphate flame retardant based on twisted intramolecular charge transfer probe. *Analytica Chimica Acta* 1285: 342009

2023

[52/31] **Huan Chen**, Habibullah Uzun, Nikola Tolić, Rosalie K. Chu, Tanju Karanfil, Alex T. Chow [‡] (2023), Molecular insights into wildfire-induced dissolved organic matter during the processes of alum coagulation and disinfection using ESI(-) and ESI(+) FT-ICR MS. *ACS ES&T Water* 3(8): 2571–2580

[51/30] **Huan Chen**, Alexander Martin Rücker, Yi-Na Liu, David Miller, Jia-Ning Dai, Jun-Jian Wang, Dennis O. Suhre, Li-Jung Kuo, William H. Conner, Barbara J. Campbell, Robert C. Rhew, Alex T. Chow [‡] (2023), Unique biogeochemical characteristics in coastal ghost forests – The transition from freshwater forested wetland to salt marsh under the influences of sea level rise. *Soil & Environmental Health* 1: 100005 [*highlighted in Zinke, L. (2023). "Ghost forests stand apart." Nature Reviews Earth & Environment; "Excellent Papers of 2023" by the editorial board*]

[50/29] Wen-Jun Wang [1], **Huan Chen** [1], Wei Zhu, Zheng-Jun Gong [‡], Hui Yin, Chao Gao, An-Ni Zhu, Dong-Mei Wang (2023), A two-staged adsorption/thermal desorption GC/MS on-line system for monitoring volatile organic compounds. *Environmental Monitoring & Assessment* 195: 869

[49/28] Jing-Run Hu, Yi-Tao Lyu, **Huan Chen** [‡], Lei-Lei Cai, Jie Li, Xiao-Qiang Cao, Wei-Ling Sun [‡] (2023), Integration of target, suspect, and nontarget screening with risk modeling for per- and polyfluoroalkyl substances prioritization in surface waters. *Water Research* 233: 119735

[48/27] Jing-Run Hu, Yi-Tao Lyu, **Huan Chen** [‡], Si Li, Wei-Ling Sun [‡] (2023), Suspect and nontarget screening reveal the underestimated risks of antibiotic transformation products in wastewater treatment plant effluents. *Environmental Science & Technology* 57(45): 17439–17451

[47] Hong-Jun Zhao, Yi-Tao Lyu, Jing-Run Hu, Min Li, **Huan Chen**, Yi Jiang, Mo-Ran Tang, Yang Wu, Wei-Ling Sun [‡] (2023), Reveal the major factors controlling quinolone adsorption on mesoporous carbon: Batch experiment, DFT calculation, MD simulation, and machine learning modeling. *Chemical Engineering Journal* 463: 142486

[46] Yuan-Yi Zhao, Hong-Chao Min, Kong-Yan, Luo, **Huan Chen**, Qian Chen [‡], Wei-Ling Sun (2023), Insight into sulfamethoxazole effects on aerobic denitrification by strain *Pseudomonas aeruginosa* PCN-2: From simultaneous degradation performance to transcriptome analysis. *Chemosphere* 313(2): 137471

[45] Xin-Ying Gong [1], Ya-Yun Ji [1], Fan-Qiang Meng, Yu-Lu Tian, Dong-Mei Wang, **Huan Chen**, Zheng-Jun Gong [‡] (2023), Dual-emitting N-doped carbon dots/AuNCs nanohybrids as an efficient ratiometric fluorescent probe and a paper sensor for Pb^{2+} sensing. *Microchemical Journal* 195: 109535

[44] Hang-Zhou Lia [1], Qiu-Meng Chen [1], Yuan-Yuan Wang, Zhi-Xiao Zhang, **Huan Chen**, Zhao-Li Wang, Zheng-Jun Gong [‡] (2023), A dual-mode pH sensor film based on the pyrene-based Zr-MOF self-destruction with fluorescence turn-on effect. *Microchemical Journal* 187(39): 108450

[43] Xiao-Ying Huang, Li-Ping Shen, Huan-Huan Zhu, **Huan Chen**, Zheng-Jun Gong [‡] (2023), Highly efficient sensor for triphenyl phosphate based on UV-induced chemiluminescence. *Microchemical Journal* 186: 108327+

[42] Huang-Huan Zhu [1], Xiao-Ying Huang [1], Yi Deng, **Huan Chen**, Mei-Kun Fan, Zheng-Jun Gong [‡] (2023), Applications of nanomaterial-based chemiluminescence sensors in environmental analysis. *Trends in Analytical Chemistry* 158(1): 116879

[41] Raza Ullah, Martin Tsz-Ki Tsui, Alex T. Chow, **Huan Chen**, Clinton F. Williams, Ayalew Ligaba-Osena [‡] (2023), Micro(nano)plastic pollution in terrestrial ecosystem: Emphasis on impacts of polystyrene on soil biota, plants, animals, and humans. *Environmental Modeling & Assessment* 195(1): 252

2022

[40/26] **Huan Chen**, Jun-Jian Wang, Pei-Jia Ku, Martin Tsz-Ki Tsui, Rebecca B. Abney, Asmeret Asefaw Berhe, Qiang Zhang, Sarah D. Burton, Randy A. Dahlgren, Alex T. Chow [‡] (2022), Burn intensity drives the alteration of phenolic lignin to (poly) aromatic hydrocarbons as revealed by pyrolysis-Gas chromatography-mass spectrometry (Py-GC/MS). *Environmental Science & Technology* 56(17): 12678-12687

[39/25] **Huan Chen** [1], Mahmut Selim Ersan [1], Nikola Tolić, Rosalie K. Chu, Tanju Karanfil, Alex T. Chow [‡] (2022), Chemical characterization of dissolved organic matter as disinfection byproduct precursors by UV/fluorescence and ESI FT-ICR MS after smoldering combustion of leaf needles and woody trunks of pine (*Pinus jeffreyi*). *Water Research* 209: 117962

[38/24] Xu-Ming Xu [1], **Huan Chen** [1], Jin-Yun Hu, Tong Zheng, Rui-Jie Zhang, Hao-Hui Zhong, Qiang Gao, Wei-Ling Sun, Qian Chen [‡], Jin-Ren Ni (2022), Unveil the role of dissolved and sedimentary metal(loid)s on bacterial communities and metal resistance genes (MRGs) in an urban river of the Qinghai-Tibet Plateau. *Water Research* 211: 118050

[37/23] Jin-Yun Hu, Qian Chen [‡], Si-Ning Zhong, Ya-Ping Liu, Qiang Gao, Emily B. Graham, **Huan Chen** [‡], Wei-Ling Sun (2022), Insight into co-hosts of nitrate reduction genes and antibiotic resistance genes in an urban river of the Qinghai-Tibet Plateau. *Water Research* 225(D1): 119189

[36/22] Wei-Yue Xu, J. Alex Thomasson, Qiong Su, Chang-Ying Ji, Ye-Yin Shi, Jun Zhou, **Huan Chen** [‡] (2022), A segmentation algorithm incorporating superpixel block and holistically nested edge for sugarcane aphids images under natural light conditions. *Biosystem Engineering* 216: 241-255

[35/21] Chun Cao, Ying Yang, Mei-Po Kwan, Zhen-Bang Ma, Raghupathy Karthikeyan, Jun-Jian Wang [‡], **Huan Chen** [‡] (2022), Crop selection reduces potential heavy metal(loid)s health risk in wastewater contaminated agricultural soils. *Science of the Total Environment* 819: 152502

[34/20] Xiao-Hong Ma, **Huan Chen** [‡], Rui-Huan Chen, Xiao-Jun Hu [‡] (2022), Direct and activated chlorine dioxide oxidation for micropollutant abatement: A review on kinetics, reactive sites, and degradation pathway. *Water* 14(13): 2028

[33] Han-Han Li, Martin Tsz-Ki Tsui [‡], Pei-Jia Ku, **Huan Chen**, Zi-Yu Yin, Randy A. Dahlgren, Sanjai J. Parikh, Jianjun Wei, Tham C. Hoang, Alex T. Chow, Zhang Cheng [‡], Xue-Mei Zhu [‡] (2022), Impacts of forest fire ash on aquatic mercury cycling. *Environmental Science & Technology* 56(16): 11835–11844

[32] Gang-Hui Tong, Xue-Ling Yang, Yun Li, Xu-Biao Yu [‡], Ying Huang, Jun-Jian Wang, **Huan Chen**, Rong-Yue Zheng, Meng Jin (2022), Impacts of haze on the photobleaching of chromophoric dissolved organic matter in surface water in southeastern China. *Environmental Research* 212B: 113305

2021

[31/19] **Huan Chen**, Kuo-Pei Tsai, Yi-Na Liu, Nikola Tolić, Sarah D. Burton, Rosalie K. Chu, Tanju Karanfil, Alex T. Chow [‡] (2021), Characterization of dissolved organic matter from wildfire-induced *Microcystis aeruginosa* blooms controlled by copper sulfate as disinfection byproduct precursors using APPI(-) and ESI(-) FT-ICR MS. *Water Research* 189: 116640

[30/18] Yun-Long Yang [‡], Peng Xu, Si-Jia Dong, Yang Yu, **Huan Chen** [‡], Ji-Bo Xiao (2021), Using watermelon rind and nitrite-containing wastewater for electricity production in a membraneless biocathode microbial fuel cell. *Journal of Cleaner Production* 307: 127306

[29/17] Chun Cao, Peng Zhang, Zhen-Ping Ma, Zhen-Bang Ma, Jun-Jian Wang, Yuan-Yuan Tang, **Huan Chen** [‡] (2021), Coupling sprinkler freshwater irrigation with vegetable species selection as a sustainable approach for agricultural production in farmlands with a history of 50-year wastewater irrigation. *Journal of Hazardous Materials* 414: 125576

[28] Raza Ullah, Martin Tsz-Ki Tsui, **Huan Chen**, Alex T. Chow, Clinton F. Williams, Ayalew Ligaba-Osena [‡] (2021), Microplastics interaction with terrestrial plants and its impacts on agriculture. *Journal of Environmental Quality* 50 (5): 1024-1041

2020

[27/16] **Huan Chen** [1], Habibullah Uzun [1], Alex T. Chow, Tanju Karanfil [‡] (2020), Low water treatability efficiency of wildfire-induced dissolved organic matter and disinfection by-product precursors. *Water Research* 184: 116111

[26/15] **Huan Chen** [‡], Alexander Martin Rücker, Qiong Su, Gavin D. Blosser, Xi-Jun Liu, William H. Conner, Alex T. Chow (2020), Dynamics of dissolved organic matter and disinfection byproduct precursors along a low elevation gradient in woody wetlands - An implication of hydrologic impacts of climate change on source water quality. *Water Research* 181:115908

[25/14] **Huan Chen**, Charles C. Rhoades, Alex T. Chow [‡] (2020), Characteristics of soil organic matter 14 years after a wildfire: A pyrolysis-gas-chromatography mass spectrometry (Py-GC-MS) study. *Journal of Analytical and Applied Pyrolysis* 152: 104922

[24/13] **Huan Chen** [1], Xi-Jun Liu [1], Gavin D. Blosser, Alexander Martin Rücker, William H. Conner, Alex T. Chow [‡] (2020), Molecular dynamics of foliar litter and dissolved organic matter during the decomposition process. *Biogeochemistry* 150: 17–30

[23/12] **Huan Chen** and Kimberly E. Carter [‡] (2020), Hazardous substances as the dominant non-methane volatile organic compounds with potential emissions from liquid storage tanks during well fracturing: A modeling approach. *Journal of Environmental Management* 268: 110715

[22] Ying-Hui Wang, Ya-Meng Shi, Guo-Dong Sun, Jin-Tao Li, **Huan Chen**, Alex T. Chow, Zhi-Bing Yang, B. Graeme Lockaby, Hamed Majidzadeh [‡], Jun-Jian Wang [‡] (2020), Soil organic matter signature under impervious surfaces. *ACS Earth and Space Chemistry* 4 (10): 1785–1792

[21] Guo-Cheng Huang, Tsz-Wai Ng, **Huan Chen**, Alex, T. Chow [‡], Sheng-Wei Liu [‡], Po-Keung Wong [‡] (2020), Formation of assimilable organic carbon (AOC) during drinking water disinfection: A new prospect of disinfection byproducts. *Environment International* 135: 105389

[20] Hamed Majidzadeh [1, ‡], Habibullah Uzun [1], **Huan Chen**, Shao-Wu Bao, Martin Tsz-Ki Tsui, Tanju Karanfil, Alex T. Chow (2020), Hurricane resulted in releasing more nitrogenous than carbonaceous disinfection byproduct precursors in coastal watersheds. *Science of the Total Environment* 705: 135785

2019

[19/11] **Huan Chen**, Kuo-Pei Tsai, Qiong Su, Alex T. Chow, Jun-Jian Wang [‡] (2019), Throughfall dissolved organic matter as a terrestrial disinfection byproduct precursor. *ACS Earth and Space Chemistry* 3 (8): 1603-1613 [*selected as Journal cover page*]

[18/10] Hamed Majidzadeh [1], **Huan Chen** [1], T. Adam Coates [1], Kuo-Pei Tsai, Christopher I. Olivares, Carl Trettin, Habibullah Uzun, Tanju Karanfil, Alex T. Chow [‡] (2019), Long-term watershed management is an effective strategy to reduce organic matter export and disinfection byproduct precursors in source water. *International Journal of Wildland Fire* 28: 804-813

[17] Qiong Su, Han-Cheng Dai [‡], **Huan Chen**, Yun Lin, Yang Xie, Raghupathy Karthikeyan (2019), General equilibrium analysis of the co-benefits and trade-offs of carbon mitigation on local industrial water use and pollutants discharge in China. _Environmental Science & Technology_ 53 (3): 1715–1724

[16] Kuo-Pei Tsai, Habibullah Uzun, **Huan Chen**, Tanju Karanfil, Alex T. Chow [‡] (2019), Control wildfire-induced _Microcystis aeruginosa_ blooms by copper sulfate: Trade-offs between reducing algal organic matter and promoting disinfection byproduct formation. _Water Research_ 158: 227-236

[15] Yun-Long Yang [‡], Er-Shu Lin, Shu-Qian Sun, **Huan Chen**, Alex T. Chow [‡] (2019), Direct electricity production from subaqueous wetland sediments and banana peels using membrane-less microbial fuel cells. _Industrial Crops & Products_ 128: 70-79

[14] Wei-Yue Xu, **Huan Chen**, Qiong Su, Chang-Ying Ji [‡], Wei-Di Xu, Muhammad-Sohail Memon, Jun Zhou (2019), Shadow detection and removal in apple image segmentation under natural light conditions using an ultrametric contour map. _Biosystem Engineering_ 184: 142-154

2018

[13/9] **Huan Chen**, Alex T. Chow, Xiu-Wen Li, Hong-Gang Ni, Randy A. Dahlgren, Hui Zeng [‡], Jun-Jian Wang [‡] (2018), Wildfire burn intensity affects the quantity and speciation of polycyclic aromatic hydrocarbons in soils. _ACS Earth and Space Chemistry_ 2 (12): 1262–1270 [_selected as Journal cover page_]

[12/8] **Huan Chen** [‡], Gavin D. Blosser, Hamed Majidzadeh, Xi-Jun Liu, William H. Conner, Alex T. Chow (2018), Integration of an automated identification-quantification pipeline and statistical techniques for pyrolysis GC/MS tracking of the molecular fingerprints of natural organic matter. _Journal of Analytical and Applied Pyrolysis_ 134: 371-380

[11/7] Chun Cao, Qiang Zhang, Zhen-Bang Ma, Xue-Mei Wang, **Huan Chen** [‡], Jun-Jian Wang [‡] (2018), Fractionation and mobility risks of heavy metals and metalloids in wastewater-irrigated agricultural soils from greenhouses and fields in Gansu, China. _Geoderma_ 328: 1-9

[10/6] Chun Cao, Si-Qi Liu, Zhen-Bang Ma, Yun Lin, Qiong Su, **Huan Chen** [‡], Jun-Jian Wang [‡] (2018), Dynamics of multiple elements in fast decomposing vegetable residues. _Science of the Total Environment_ 616-617: 614-621

[9] Pei-Jia Ku, Martin Tsz-Ki Tsui [‡], Xiang-Ping Nie [‡], **Huan Chen**, Tham C. Hoang, Joel D. Blum, Randy A. Dahlgren, Alex T. Chow (2018), Origin, reactivity, and bioavailability of mercury in wildfire ash. _Environmental Science & Technology_ 52 (24): 14149-14157 [_highlighted in "Wildfire ash could trap mercury" by ACS press release_]

[8] Qiong Su, Han-Cheng Dai [‡], Yun Lin, **Huan Chen**, Raghupathy Karthikeyan (2018), Modeling the carbon-energy-water nexus in a rapidly urbanizing catchment: A general equilibrium assessment. _Journal of Environmental Management_ 225: 93-103 [_cited by the IPCC AR6 report (Working Group III, 2022) to illustrate the cost and benefit of carbon mitigation_]

[7] Yun-Long Yang [‡], **Huan Chen**, Hamed Majidzadeh, Alex T. Chow (2018), Electricity generation from different wetlands: mechanisms based on dissolved organic matters in membrane-less microbial fuel cells. _Chemical Engineering Journal_ 351: 1006-1012

[6] Zhen-Bang Ma [‡], Xing-Peng Chen, **Huan Chen** (2018), Multi-scale spatial patterns and influencing factors of rural poverty: a case study in the LiuPan Mountain Region, China. _Chinese Geographical Science_ 28:2, 296–312

2017

[5/5] **Huan Chen** [1, ‡], Yun Lin [1, ‡], Qiong Su, Li-Qiu Cheng (2017), Spatial variation of multiple air pollutants and their potential contributions to all-cause, respiratory, and cardiovascular mortality across China in 2015-2016. _Atmospheric Environment_ 168: 23-35

[4/4] **Huan Chen** and Kimberly E. Carter ‡ (2017), Characterization of the chemicals used hydraulic fracturing fluids for wells located in the Marcellus shale play. *Journal of Environmental Management* 200: 312-324

[3/3] **Huan Chen** and Kimberly E. Carter ‡ (2017), Modeling potential occupational inhalation exposures and associated risks of toxic organics from chemical storage tanks used in hydraulic fracturing using AERMOD. *Environmental Pollution* 224: 300-309

2016

[2/2] **Huan Chen** and Kimberly E. Carter ‡ (2016), Water usage for natural gas production through hydraulic fracturing in the United States from 2008 to 2014. *Journal of Environmental Management* 170: 152-159

2010

[1/1] **Huan Chen**, Shun-Gui Zhou, Tian-Hong Li ‡ (2010), Impact of extracellular polymeric substances on the settlement ability of aerobic granular sludge. *Environmental Technology* 31(14): 1601-1612

CHAPTERS & BOOKS

‡ Corresponding author.
I have illustrated my research results and conclusions in 2 book chapters.

[2] Monica B. Emelko ‡, Alex T. Chow, Fariba Amiri, **Huan Chen**, Micheal Stone (2024), "Chapter 14. Climate change implications for DBP occurrence in municipal drinking water". In: Chao Chen, Susan Andrews, Yue-Feng Xie (Editors), *Disinfection By-Products in Water*. Springer.

[1] **Huan Chen**, Alex T. Chow ‡ (2024), "Chapter 4. Prescribed fire as an effective fuel reduction technique with minimal impact on dissolved organic matter quantity and optical properties". In Mark A. Benvenuto, Lawrence Kolopajlo (Editors), *Green Chemical Processes: Developments in Science, Math, Engineering and Technology*. De Gruyter.

PEER-REVIEWED CONFERENCE PROCEEDINGS

‡ Corresponding author.

[1] Pei-jia Ku, Martin Tsz-Ki Tsui ‡, Troy Farmer, **Huan Chen**, Devendra Amatya, Carl C. Trettin, Alex T. Chow (2022), "Effects of forest management practice (prescribed burning) on mercury transport: a case study in a paired experimental watershed in the lower Coastal Plain of South Carolina". In: John L. Willis, Andrew B. Self, Courtney M. Siegert (Editors), *Proceedings of the 21st Biennial Southern Silvicultural Research Conference*. Gen. Tech. Rep. SRS-268. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station: 147–149.

ORAL/POSTER PRESENTATIONS

‡ Presenter; p - poster presentations; o - oral presentations; i - invited oral presentations.
My research results and conclusions have been publicly presented during the conferences/seminars through 25 oral presentations (including 6 invited oral presentations) and 12 poster presentations.

2025

[p12] Yu-Hua Zheng ‡, Kyoung S. Ro, Hwang-Ju Jeon, Changyoon Jeong, **Huan Chen**, "Characterizing water extracts of hydrochars and biochars for their potential application as agricultural soil amendments", *poster presentation at the 4th International Symposium on Hydrothermal Carbonization*, New Orleans, LA, US. 21-24 January 2025

2024

[p11] Gavin Gleasman [‡], Alex T. Chow, Jeff Atkins, Donald L. Hagan, Barbara J. Campbell, Scott Brooks, Scott Painter, **Huan Chen**, Pei-Jia Ku, Fernanda Santos, Jesus Gomez Velez, Russell Hardee, Carl Trettin, Dinuka Lakmali Jayasuriya Patabandige, Yu-Hua Zheng, Michael Langley, "Developing watershed-scale wildfire experimentation: Wildfire severity and post-fire precipitation influence on fate and transport of pyrogenic organic matter in terrestrial-aquatic interfaces", *poster presentation at The Geological Society of America Connects 2024*, Anaheim, CA, US. 22-25 September 2024

[o25/i6] **Huan Chen** [‡], "Water reuse in agroecosystems: Irrigation and microalgae cultivation", *invited oral presentation at School of Civil Engineering and Environment at Ningbo University (hosted by Dr. Xu-Biao Yu)*, Ningbo, China, 16 January 2024

2023

[o24] Rui Xiao [‡], **Huan Chen**, Pei-Lin Tan, Erika Carter, Austin Allen, Clinton F. Williams, Alex T. Chow [‡], "Using dairy livestock wastewater to cultivate the microalgae for nutrient recovery", *oral presentation at International Conference on Earth, Energy & Environmental Sciences for Carbon Neutrality*, Shatin, Hong Kong, China. 1-5 December 2023

[o23] **Huan Chen**, Changyoon Jeong, Kyoung S. Ro [‡], "Significant underestimation of broiler house emission rates with static chamber-based methods", *oral presentation at Air & Waste Management Association's Air Quality Measurement Methods and Technology Conference*, Durham, NC, US. 14-16 November 2023

[p10] Rui Xiao [‡], **Huan Chen**, Pei-Lin Tan, Erika Carter, Austin Allen, Clinton F. Williams, Alex T. Chow, "Recover nutrients from livestock wastewater *via* microalgae cultivation", *poster presentation at 5th IWA Resource Recovery Conference*, Shenzhen, China, 1-3 Nov 2023

[o22] Rui Xiao [‡], **Huan Chen**, Pei-Lin Tan, Erika Carter, Austin Allen, Clinton F. Williams, Alex T. Chow, "Using dairy livestock wastewater to cultivate the microalgae for nutrient recovery", *oral presentation at 2nd International Online Conference on Agriculture*, 1-15 Nov 2023

[o21] Raza Ullah [‡], Martin Tsz-Ki Tsui, Alex T. Chow, **Huan Chen**, Clinton F. Williams, Ayalew Osena, "Combined effects of polyamide microplastics and sulfamethoxazole on physiological, biochemical, and antioxidant response of hydroponically grown Kitaake rice (Oryza sativa, cv. Japonica)", *oral presentation at Occurrence, Transport, & Fate of Contaminants of Emerging Concern (CECs) in Agroecosystems at ACS 2023 Spring - "Crossroads of Chemistry",* Indianapolis, IN, US, 26-30 March 2023

[o20] Yu-Yao Wu [‡], Chun Cao, Zhen-Ying Lv, **Huan Chen**, Jun-Jian Wang, "Uptake of polycyclic aromatic hydrocarbons during the growing period of carrots and Chinese cabbages in the treated wastewater contaminated soils", *oral presentation at Occurrence, Transport, & Fate of Contaminants of Emerging Concern (CECs) in Agroecosystems at ACS 2023 Spring - "Crossroads of Chemistry",* Indianapolis, IN, US, 26-30 March 2023

[o19] Jing-Run Hu [‡], Yi-Tao Lyu, **Huan Chen**, Lei-Lei Cai, Jie Li, Xiao-Qiang Cao, Wei-Ling Sun, "Integration of target, suspect, and nontarget screening with risk modeling for per- and polyfluoroalkyl substances prioritization in surface waters", *oral presentation at Occurrence, Transport, & Fate of Contaminants of Emerging Concern (CECs) in Agroecosystems at ACS 2023 Spring - "Crossroads of Chemistry",* Indianapolis, IN, US, 26-30 March 2023

2022

[o18] Alex T. Chow [‡], **Huan Chen**, "Wildfire severity controls chemical properties of pyrogenic dissolved organic matter", *oral presentation at 2022 ASA-CSSA-SSSA International Annual Meeting - "Communication & Public Engagement for Healthy People & a Healthy Planet",* Baltimore, MD, US, 6-9 November 2022

[o17/i5] **Huan Chen** ‡, "Water reuse in agroecosystems: Challenges and opportunities", *invited oral presentation at Newman Seminar of "Resilient Agroecosystems" at Department of Agricultural Sciences at Clemson University (hosted by Dr. Raghupathy Karthikeyan),* Clemson, SC, US, 7 October 2022

[o16] Chun Cao, Ying Yang, Qian-Hui Tang ‡, **Huan Chen**, "Combination of irrigation methods and vegetable variety selection can be used as a way to achieve the sustainable development of agriculture", *oral presentation at Environmental Fate, Transport, & Modeling of Agriculturally-related Chemicals at ACS Fall 2022 - "Sustainability in A Changing World",* Chicago, IL, US, 21-25 August 2022

[o15] **Huan Chen** ‡, Mahmut Selim Ersan, Nikola Tolić, Rosalie K. Chu, Tanju Karanfil, Alex T. Chow, "Using UV/fluorescence and ESI FT-ICR MS to characterize dissolved organic matter as disinfection byproduct precursors after smoldering combustion of leaf needles and woody trunks of pine (*pinus jeffreyi*)", *oral presentation at Disinfection & Oxidation Byproducts in Water Treatment at ACS Fall 2022 - "Sustainability in A Changing World",* Chicago, IL, US, 21-25 August 2022

[o14] **Huan Chen** ‡, Meryem Soyluoglu, Hatice Yildirim, Alex T. Chow, Tanju Karanfil, "Occurrence of per- and polyfluoroalkyl substances in surface water in South Carolina", *oral presentation at 2022 Clemson University Water Research Symposium*, Clemson, SC, US, 9 May 2022

[o13/i4] **Huan Chen** ‡, Alexander Martin Rücker, Yi-Na Liu, David Miller, Jia-Ning Dai, Jun-Jian Wang, Dennis O. Suhre, Li-Jung Kuo, William H. Conner, Barbara J. Campbell, Robert C. Rhew, Alex T. Chow, "Unique biogeochemical characteristics of a ghost forest - the transition from freshwater forest wetland to salt marsh under the influences of sea level rise", *invited oral presentation at Department of Coastal & Marine Systems Science at Coastal Carolina University (hosted by Dr. Shaowu Bao)*, Conway, SC, US, 3 March 2022

2021

[o12] **Huan Chen** ‡, Kuo-Pei Tsai, Yi-Na Liu, Nikola Tolić, Sarah D. Burton, Rosalie K. Chu, Tanju Karanfil, Alex T. Chow, "Using APPI(-) and ESI(-) FT-ICR MS to characterize disinfection byproduct precursors from wildfire-induced *Microcystis aeruginosa* blooms controlled by copper sulfate", *oral presentation at Disinfection Byproducts in Drinking Water and Wastewater: Detection, Formation and Control at ACS Fall 2021 - "Resilience of Chemistry",* Atlanta, GA, US, 22-26 August 2021

[p9] Alex T. Chow ‡, Patrick Schleppi, Habibullah Uzun, **Huan Chen**, "Nitrogen deposition effects on dissolved organic matter in forested watersheds: Implication on source water quality & water treatability", *poster presentation at Disinfection Byproducts in Drinking Water and Wastewater: Detection, Formation and Control at ACS Fall 2021 - "Resilience of Chemistry",* Atlanta, GA, US, 22-26 August 2021

[o11] Pei-jia Ku ‡, Martin Tsz-Ki Tsui, Troy Farmer, **Huan Chen**, Devendra Amatya, Carl Trettin, Alex T. Chow, "Effects of long-term forest management on mercury bioaccumulation in aquatic food webs", *oral presentation at 21st Biennial Southern Silvicultural Research Conference*, 16-18 March 2021

2020

[o10] Ying-Hui Wang ‡, Ya-Meng Shi, Guo-Dong Sun, Jin-Tao Li, **Huan Chen**, Alex T. Chow, Zhi-Bing Yang, B. Graeme Lockaby, Hamed Majidzadeh, Jun-Jian Wang, "Soil organic matter signature under impervious surfaces", *oral presentation at Goldschmidt Virtual 2020,* 21-26 June 2020

[o9/i3] **Huan Chen** ‡, "Nexus approach - Governing water and soil sources under climate change and growing demands", *invited oral presentation at College of Earth and Environmental Sciences at Lanzhou University (hosted by Dr. Tao Huang)*, Lanzhou, China, 9 Jan 2020

[o8/i2] **Huan Chen** ‡, "A data-driven approach for environmental sustainability", *invited oral presentation at College of Computer Sciences and Engineering at Northwest Normal University (hosted by Dr. Qiang Zhang)*, Lanzhou, China, 7 Jan 2020

2019

[o7] **Huan Chen** ‡, Hamed Majidzadeh, Alexander Martin Rücker, Habibullah Uzun, Tanju Karanfil, Alex T. Chow, "Influence of hurricane events on dissolved organic matter export and disinfection byproduct formations in coastal blackwater rivers", *oral presentation at IWA Specialist Conference on Natural Organic Matter in Water 2019,* Tokyo, Japan, 7-10 Oct 2019

[p8] Chun Cao ‡, Mei-Po Kwan, **Huan Chen**, Jun-Jian Wang, "Impacts of greenhouse cultivation on vegetable metal pollution at wastewater-irrigated area", *poster presentation at 2019 American Association of Geographers Annual Meeting*, Washington D.C., US, 3-7 Apr 2019

[p7] Martin Tsz-Ki Tsui ‡, Pei-Jia Ku, **Huan Chen**, Randy A. Dahlgren, Alex T. Chow, "Biogeochemical interactions between mercury and dissolved organic matter derived from wildfire ash", *poster presentation at 257th ACS National Meeting*, Orlando, FL, 31 March-4 April 2019

2018

[o6] Qiong Su ‡, Han-Cheng Dai, Yun Lin, **Huan Chen**, Raghupathy Karthikeyan, "An integrated model for carbon-energy-water management in a rapidly urbanizing catchment", *oral presentation at 2018 AGU Fall Meeting*, Washington, D.C., US, 10-14 Dec 2018

[p6] Pei-Jia Ku ‡, Martin Tsz-Ki Tsui, Hunter Robinson, **Huan Chen**, Troy Farmer, Devendra Amatya, Carl Trettin, Alex T. Chow, "Effects of long-term forest management on total mercury and methylmercury in streamwater and stream biota in a paired watershed (unmanaged vs. managed) at Santee Experimental Forest", *poster presentation at 2018 AGU Fall Meeting*, Washington, D.C., US, 10-14 Dec 2018

[p5] **Huan Chen** ‡, Kuo-Pei Tsai, Charles C. Rhoades, Timothy S. Fegel, Derek Pierson, Alex T. Chow, "Effects of wildfire on soil organic matter and source water after 14 Years", *poster presentation at Fire Continuum Conference: Preparing for the Future of Wildland Fire*, The University of Montana, Missoula, MT, US, 21-24 May 2018

[o5] Hamed Majidzadeh ‡, **Huan Chen**, Alex T. Chow, "Forest management improves water quality by altering detrital chemical composition", *oral presentation at Fire Continuum Conference: Preparing for the Future of Wildland Fire*, The University of Montana, Missoula, MT, US, 21-24 May 2018

[o4] **Huan Chen** ‡, Hamed Majidzadeh, Alex T. Chow, "Impact of land use on the formation potential of disinfection by-products along the Yadkin-Pee Dee River basin under 2016 Hurricane Matthew", *oral presentation at Symposium of Hurricane Impacts on Coastal Freshwater Systems at 79th Annual Meeting of Association of Southeastern Biologists*, Myrtle Beach, SC, US, 28-31 Mar 2018

[o3] **Huan Chen** ‡, Pei-Jia Ku, Christopher Olivares, Hamed Majidzadeh, Martin Tsz-Ki Tsui, Alex T. Chow, "Using in-situ sensors to study the effects of prescribed fire on water quality in Santee Forest", *oral presentation at Center for Forested Wetlands Research at Santee Experimental Forest*, Cordesville, SC, US, 22 Mar 2018

[p4] **Huan Chen** ‡, Xi-Jun Liu, Hamed Majidzadeh, William H. Conner, Alex T. Chow, "Unveil the molecular fingerprint of single- and mix-species litter decomposition using pyrolysis GC/MS", *poster presentation at 2018 Hobcaw Research Symposium,* Georgetown, SC, US, 9 Feb 2018

2017

[o2/i1] **Huan Chen** ‡, "A data-driven approach for environmental sustainability", *invited oral presentation at Family Meeting of Belle W. Baruch Institute of Coastal Ecology and Forest Science,* Georgetown, SC, US, 13 Nov 2017

[o1] Alex T. Chow ‡, Dennis O Suhre, Alexander Ruecker, David Miller, William H Conner, **Huan Chen**, Yi-Na Liu, Li-Jung Kuo, Nikola Tolic, "Dissolved organic matter and nutrient dynamics in forest-marsh transition zones - implications of sea level rise on coastal ecosystems in southeastern

US", *oral presentation at ASA, CSSA, SSSA International Annual Meeting - "Managing Global Resources for A Secure Future"*, Tampa, FL, US, 22-25 Oct 2017

[p3] Chun Cao, Xing-Peng Chen, Zhen-Bang Ma, **Huan Chen**, Jun-Jian Wang ‡, "Impacts of greenhouse cultivation on vegetable metal pollution at wastewater-irrigated area", *poster presentation at 9th National Conference on Environmental Chemistry*, Hangzhou, China, 19-22 Oct 2017

2016

[p2] **Huan Chen** ‡ and Kimberly E. Carter, "Usage of freshwater and recycled wastewater in hydraulic fracturing", *poster presentation at Student Poster Competition at 2016 Water Professionals Conference*, Knoxville, TN, US, 19 Jul 2016

[p1] **Huan Chen** ‡ and Kimberly E. Carter, "Potential emissions of organics from storage tanks for chemical additives in hydraulic fracturing in the Marcellus Shale Play: A modeling approach", *poster presentation at 3rd Annual Southeastern Biogeochemistry Symposium*, Knoxville, TN, US, 11-13 Mar 2016

3. STUDENT ADVISING & TEACHING

STUDENT ADVISING

p - PhD students; m - Maste students.
I have been the committee member for one Ph.D. student and one Master student.

2022

[p1] Yu-Hua Zheng – PhD in Forest Resources (2022-2026), Clemson University, US; Committee members: Drs. Donald L. Hagan (chair), Barbara J. Campbell, Alan Johnson, **Huan Chen**.

2019

[m1] Lydia Winn – Thesis: "Develop rapid indicators to detect micropollutants in coastal blackwater rivers in South Carolina"; MS in Forest Resources (2019-2023), Clemson University, US; Committee members: Drs. Alex T. Chow (chair), Bo Song, **Huan Chen**.

TEACHING

I have served as an invited guest instructor on 2 courses and as a teaching assistant on 3 courses for 5 semesters.

Invited Guest Instructor

2. *"Microbial Fuel Cells"* (50 min x 3) in BE 4400/4401 - Sustainable Energy Engineering, Clemson University, US (2021 Spring; Dr. Rui Xiao)

1. *"Marine Pollutants: Source, Transport, and Fate"* (3 hr x 1) in CMSS 650-01 - Topics in Environmental Fluids, Coastal Carolina University, US (2018 Spring; Dr. Shaowu Bao)

Teaching Assistant

3. *CE 481 Environmental Engineering II*, University of Tennessee, Knoxville, US (2014 Spring, Dr. Joseph KO Amoah)

2. *CE 381 Environmental Engineering I*, University of Tennessee, Knoxville, US (2014 Fall, Dr. Qiang He; 2015 Spring, Dr. Joseph KO Amoah; 2015 Fall, Dr. Kimberly E. Carter)

1. *Environmental Statistics*, Peking University, China (2010 Spring, Dr. Shu Geng)

4. SPONSORED RESEARCH

RESEARCH GRANTS

e - extramural projects as (co)PI; ep - extramural projects as a participant; i - intramural projects as (co)PI.

I have served as a (co)PI in 7 external projects with a total budget of approximately $2.8 M and 6 internal projects with a total budget of approximately $0.7 M

2023

[e7] "Characteristics and treatability of pyrogenic organic carbon and nitrogen", *granted by National High Magnetic Field Laboratory User Program*, 2023-2025, PI: Chow AT; Co-PIs: McKenna A, Brooks S, Atkins JW, **Chen H**, Painter S, Trettin CC, Ku PJ, Chen H.

[e6] "How do wildfire severity and post-fire precipitation influence fate and transport of pyrogenic organic carbon and nitrogen in terrestrial-aquatic interfaces?", *granted by PNNL EMSL User Program – Large-Scale Research*, 2023-2025, PI: Chow AT; Co-PIs: **Chen H**, Ku PJ, Gavin G.

2022

[e5] "Growing microalgae in livestock wastewater - Benefits in nutrient recycle, antibiotic removal, and potential biofuel production", *granted by USDA NIFA – Agriculture and Food Research Initiative Competitive Grants*, $749,612, 2022-2026, 2022-67019-37177, PI: **Chen H**; Co-PIs: Chow AT, Karanfil T, Xiao R, Walker T, Williams CF.

[e4] "How do wildfire severity and post-fire precipitation influence fate and transport of pyrogenic organic carbon and nitrogen in terrestrial-aquatic interfaces?", *granted by US DOE – Office of Science*, $999,802, 2022-2025, DE-SC0023311, PI: Chow A; Co-PIs: **Chen H**, Campbell B, Brooks S, Painter S, Ku PJ, Trettin CC, Atkins JW.

[e3] "High resolution mass spectrometry for target, suspect, and nontarget screening of micropollutants in agroecosystems", *granted by USDA NIFA – Equipment Grants Program*, $421,000, 2022-2026, 2022-70410-38474, PI: Chow AT; Co-PIs: **Chen H**, Karthikeyan R, Payero J, Darby D.

[i6] "Using adsorption as an efficient and cost-effective approach to remove trace elements from rendered animal and poultry fats and used cooking oils", *granted by Agribusiness Center for Research & Entrepreneurship Competitive Grant Program*, $43,520, 2022-2023, PI: **Chen H**.

2021

[e2] "Identifying effective farming practices to reduce risks of per- and polyfluoroalkyl substances (PFAS) in food crop productions", *granted by USDA NIFA – Agriculture and Food Research Initiative Competitive Grants*, $499,946, 2021-2025, 2021-67019-33682, PI: Chow AT; Co-PIs: Karanfil T, **Chen H**, Payero J, Williams CF.

[i5] "CU-MRI: A low field, benchtop nuclear magnetic resonance spectrometer for characterization of natural organic matter and per-and polufluoroalkyl substances in agroecosystems – A rapid analytical tool at an experimental station", *granted by Clemson R-Initiatives – Major Research Instrumentation*, $150,000, 2021-2022, PI: Chow AT; Co-PIs: Petty T, Ye RZ, Farmaha BS, Payero JO, Trettin C, **Chen H**.

[i4] "CU-Fellows: Advancing research in coastal ecology and sustainable agroecosystems", *granted by Clemson R-Initiatives – Clemson Research Fellows*, $140,949, 2021-2023, PI: Halloran TO; Co-PIs: Chow AT, Scaroni A, Ward B, Ye RZ, Karthikeyan R, **Chen H**, Campbell B.

[i3] "Occurrence of per- and polyfluoroalkyl substances along with their potential discharge sources in drinking water sources in South Carolina (Phase II)", *granted by Clemson Public Service and Agriculture – Water Resource Research, Management and Technology*, $136,135, 2021-2022, PI: Karanfil T; Co-PIs: Chow AT, **Chen H**.

[ep11] "Mechanistic investigation on the role of root exudates-bacteria interactions in crop cadmium uptake", *granted by National Natural Science Foundation of China*, General Program, ¥570,000, 2021-2024, 42077298, PI: Chen XW. (provide inputs to proposal designs and concepts)

2020

[e1] "Roles of microplastics in reclaimed water – Altering persistence and bioavailability of antimicrobials in agricultural soils", *granted by USDA NIFA – Agriculture and Food Research Initiative Competitive Grants*, $499,885, 2020-2024, 2020-67019-31022, PI: Chow AT; Co-PIs: Karanfil T, **Chen H**, Tsui MTK, Osena AL, Williams CF.

[i2] "Occurrence of per- and polyfluoroalkyl substances along with their potential discharge sources in drinking water sources in South Carolina", *granted by Clemson Public Service and Agriculture – Water Resource Research, Management and Technology*, $131,120, 2020-2021, 10-5701-131-100429, PI: Karanfil T; Co-PIs: Chow AT, **Chen H**.

[ep10] "A source tracking study of environmental pollutants in surface waters based on the technique of fluorescence excitation-emission matrix and PARAFAC", *granted by National Natural Science Foundation of China*, General Program, ¥620,000, 2020-2023, 41977152, PI: Yu XB. (provide inputs to proposal designs and concepts)

2019

[i1] "Develop rapid indicators to detect micropollutants in coastal blackwater rivers in South Carolina", *granted by Clemson Public Service and Agriculture – Water Resource Research, Management and Technology*, $100,000, 2019-2021, PI: Chow AT; Co-PIs: **Chen H**, Karanfil T, Majidzadeh H.

[ep9] "Molecular-level characteristics of forest-derived dissolved organic matter and their responses to nitrogen deposition", *granted by National Natural Science Foundation of China*, Young Scientists of China, ¥260,000, 2019-2021, 41807360, PI: Wang JJ. (provide inputs to proposal designs and concepts)

2015

[ep8] "Fuel reduction techniques as effective forested watershed management practices against wildfire: drinking water quality aspects", *granted by US Environmental Protection Agency*, National Priorities: Systems-Based Strategies to Improve the Nation's Ability to Plan and Respond to Water Scarcity and Drought Due to Climate Change, $1,260,408, 2015-2019, R835864, PIs: Karanfil T and Chow AT. (conduct the tasks of proposal)

[ep7] "Collaborative Research: Halocarbon biogeochemistry in coastal wetland ecosystems – Exploring the transition between forested wetland to salt marsh", *granted by National Science Foundation*, Low temperature Geobiology and Geochemistry Program, $487,464, 2015-2018, 1529927, PIs: Chow AT, Conner WH, Rhew R, Myneni S. (conduct the tasks of proposal)

2014

[ep6] "Impacts of prescribed fire on polycyclic aromatic hydrocarbon production and contaminant phototransforamtion reactions in coastal plain", *granted by US Department of Agriculture – National Institute of Food and Agriculture*, Agriculture and Food Research Initiative Competitive Grants, $499,000, 2014-2018, 2014-67019-21615, PIs: Chow AT, Wang GG, Trettin C, Dahlgren RA. (conduct the tasks of proposal)

[ep5] "Forest fire alters disinfection byproduct precursor exports from forested watersheds", *granted by Joint Fire Science Program*, Effects of Wildfire on Water (14-1-06), $273,426, 2014-2018, 14-1-06-19, PIs: Chow AT, Dahlgren RA, Wang GG, Trettin C. [final report] (conduct the tasks of proposal)

[ep4] "Retreat of tidally influenced freshwater forested wetlands in the Southeast: Biogeochemical Investigations and Field Support", *granted by USGS / US Department of the Interior*, Biogeochemical Investigations and Field Support, $199,995, 2014-2019, G14AC00132, PIs: Conner WH and Chow AT. (conduct the tasks of proposal)

[ep3] "Long term legacy of the 2002 Hayman Fire on water quality and treatability", *granted by Joint Fire Science Program*, Effects of Wildfire on Water (14-1-06), $174,065, 2014-2017, 14-1-06-11, PIs: Rhoades CC and Chow AT. [final report] (conduct the tasks of proposal)

2012

[ep2] "Key technologies and industrialization of new environmentally friendly dry mortar produced by recycled red brick sand", *granted by Shenzhen Development and Reform Commission*, 2012 Shenzhen Science and Technology Plan, 2012-2014, PI: Kou SC. (write the proposal)

2006

[ep1] "Research on the key technology of the new process of ginger processing in the Danjiangkou water source area of the South-to-North Water Diversion Middle Route Project", *granted by National Natural Science Foundation of China*, National Eleventh Five-Year Technology Support Program, 2006-2009, 2006BAB04A14, PI: Ni JR. (conduct the tasks of proposal)

5. HONORS & AWARDS

HONORS AND AWARDS

"Excellent Papers of 2023" by the editorial board of *Soil & Environmental Health*

Excellent Undergraduate Thesis (5%), 2006

6. EXPERTISE & DEVELOPMENT

TECHNIQUE EXPERTISE

Treatment Techniques

Aerobic granular sludge in SBR; Persulfate oxidation; Dual-chamber MFCs; adsorption and desorption processes

Analytic Techniques

- TOC/TN on solid/water samples
- Fluorescence EEM on water samples
- X-ray fluorescence or Analytik Jena Multi-X for halogens in solid samples
- IC for negative ions (F^-, Cl^-, Br^-, I^-, NO_2^-, NO_3^-, SO_4^{2-}, and PO_4^{3-}) in water samples
- Analytic Jena Multi-X coupled with off-line IC for TOX in water samples
- ICP-OES for trace element such as heavy metal(loid)s in aqueous samples
- GC-FID for H_2S in gas samples
- GC-TCD/FID/ECD for greenhouse gas (CH_4, N_2O, and CO_2)
- Pyrolysis-GC-MS on soil/litter samples or freezing dried water samples
- Manual SPE or LLE following with UHPLC-UV/MS^2 or GC-MS for NPEOs in water samples
- Online-SPE-LC-QqQ or UHPLC-UV-FLD for antibiotics and PFAS in water samples

Programming/Software/Modeling

MATLAB; RStudio; Python; Linux; AP42; ArcGIS; ArcSWAT

Field Sampling

7. River sediment and water collection at two sites of MP-103021 and MP-103034 in South Carolina for the WHONDRS ICON-ModEx campaign by Pacific Northeast National Laboratory, 30 May 2023

6. State-wide collection of surface river water and groundwater in South Carolina for two year, Nov 2020 – Sep 2022

5. Raw and finished water collection from 12 drinking water plants in South Carolina together with staffs from South Carolina Department of Health and Environmental Control (SC DEHEC), Sep 14 – Sep 23 2020

4. Water, wood, and ash collection before and after the prescribed fire (pile burning) at the University of California, Berkeley - Sagehen Creek Field Station (Truckee, CA), 1st trip: Apr 30 – May 1, 2018, 2nd trip: Oct 31 – Nov 2, 2018

3. Vegetation and fuel loading surveys before the prescribed fire at the Santee Experimental Forest (Cordesville, SC), 20 Mar 2018

2. Monthly water sample collection from unmanaged and managed (by regular prescribed fire) watersheds at the Santee Experimental Forest (Cordesville, SC), Aug 2017 – Jan 2018

1. Monthly greenhouse gas sample collection from two sites at the wetlands along a salinity gradient at a coastal estuary of Winyah Bay in South Carolina, Aug 2017 – Jan 2018

PROFESSIONAL DEVELOPMENT

Training

3. Using ^{13}C NMR, ^1H NMR, and FT-ICR MS to characterize the natural organic matter (black and white ash from prescribed fire and wildfire and litter samples from the field decomposition),

Environmental Molecular Sciences Laboratory at Pacific Northeast National Laboratory, Richland, WA, 2-18 May 2018 (hosted by Dr. Nancy Washton).

2. Using X-ray fluorescence to analysis the halogens in the decomposed litters, *Molecular Environmental Geochemistry Group at Princeton University*, Princeton, NJ, 23-28 Feb 2018 (hosted by Dr. Satish Myneni).

1. Using pyrolysis GC/MS to characterize the composition of natural organic matter, *Belle W. Baruch Institute of Coastal Ecology and Forest Science at Clemson University*, Georgetown, SC, 17-24 April 2017 (hosted by Dr. Alex T. Chow)

Workshops

8. "The 2024 ESS Data Infrastructure for a Virtual Ecosystem (ESS-DIVE) Community Data Workshop", *Biological and Environmental Research Program, Earth and Environmental Systems Sciences Division, US DOE*, DC, 14-15 Nov 2024 (10 h)

7. "The enhanced CUGBF present: Wet lab genomics with Illumina", *Clemson University Genomics and Bioinformatics Facility*, SC, 14-15 Oct 2024 (7 h)

6. "Geospatial data science & machine learning in GIS" using ArcGIS Pro and R-ArcGIS bridge, *Clemson Computing and Information Technology*, SC, 20 Mar 2019 (8 h)

5. "SWAT for beginners" (by Dr. Raghavan Srinivasan), *Auburn University Water Resources Center*, AL, 5-6 Feb 2019 (17 h)

4. Introduction to Linux (Feb 25, 4 h); Introduction to research computing on the palmetto cluster (Feb 27, 2.5 h); Introduction to data science using R – Part 1 (Apr 2, 3 h) and Part 2 (Apr 4, 3 h); Introduction to machine learning using R – Part 1 (Apr 9, 3 h), Part 2 (Apr 11, 3 h), and Part 3 (Apr 11, 3 h), *Clemson Computing and Information Technology*, SC, Spring 2019.

3. "GIS fundamentals workshop series", *Clemson Center for Geospatial Technologies*, SC, Spring 2019 (10 workshops x 3 h): Introduction to GIS (Jan 17); GIS data creation and management (Jan 24); Working with tabular data in GIS (Jan 31); Basic spatial analysis (Feb 7); Intermediate spatial analysis (Feb 14); Introduction to cloud mapping and story maps (Feb 21); Efficient field data collection with GIS (Feb 28); Using and visualizing LiDAR in GIS (Mar 8); Basic spatial statistics (Mar 24); Data visualization & analytics with tableau (Mar 29); Unmanned aerial vehicles (UAVs) and LiDAR for mapping (Apr 5).

2. "Modeling microbial dynamic and processes from cells to ecosystems" on KBase, FREDA, PFLOTRAN, *2018 AGU Fall Meeting*, Washington, D.C., 9 Dec 2018

1. "An in-depth introduction on using R for high-performance computing", *National Institute for Mathematical and Biological Synthesis at the University of Tennessee, Knoxville*, TN, 27 Feb 2015 (4 hours)

Webinars

20. HPLC Made for Tomorrow: Introducing the new Agilent Infinity III LC Series (9 Dec 2024; Drs. Jens Meixner & Florian Rieck; *Agilent*)

19. Single-use versus reusable packaging for perishable liquid foods (21 Nov 2024; Dr. Fredrik Nilsson; *Resources, Conservation and Recycling*)

18. A simple, effective solution for characterization and quantification of microplastics by pyrolysis-GC/MS (6 Nov 2024; Mr. Alan Owens & Ms. Rojin Belganeh; *LCGC*)

17. Can compostable packaging recovery help states reduce food waste and advance zero waste goals? (17 Oct 2024; Caroline Barry & Dr. Andrew Hurley; *Clemson FRESH*)

16. Integrating R and ArcGIS for spatial data science using R-ArcGIS bridge (10 Oct 2024; *ESRI*)

15. Unlocking the power of nanobubbles: Innovations and applications in agriculture (26 Sep 2024; Dr. Li-Kun Hua & Ms. Julie Y. Chen; *Pure Nanotech & Horiba*)

14. Proposal development for a successful academic career (23 Sep 2024; Dr. Yong Huang; *AIM*)

13. Wildfire impacts on water infrastructure (11 Sep 2024; Drs. Bill Platten, Samantha Bishop, Levi Haupert; *US EPA*)

12. Leveraging extension and university engagement: Developing and implementing novel projects using transdisciplinary approaches (9 Sep 2024; Drs. Marshall Stewart, Robert Jones, Wendy Powers; *USDA*)

11. Use of agro-based materials to reduce plastic pollution (24 July 2024; Dr. H. N. Cheng; *ACS*)

10. Analysis of trace volatile organic compounds (VOCs) and odor in post-consumer recycled resins by thermal desorption and GC×GC–TOF MS (14 May 2024; Drs. Shayne Green & Peter Shimeall; *LCGC*)

9. Standardizing environmental microplastics measurement for compliance monitoring: A case study of the California program (7 May 2024; Dr. Charles Wong; *C&EN & Agilent*)

8. Non-target screening webinar series: What's in the water? Uncovering unknown disinfection by-products using GCXGC and high resolution mass spectrometry (5 Apr 2024; Dr. Susan D. Richardson; *LECO*)

7. Pioneering new solutions for VOCs and SVOCs analysis (30 Aug 2023; Alan Owens; *Shimadzu*)

6. Becoming a better chromatographer (*Agilent*): Peak shape and why it matters: How to get good peak shape (10 Aug 2023); Overwhelmed with too many GC column options? Let us help (30 Aug 2023); Glycan analysis overview, method optimization, and analysis by HPLC (13 Sep 2023); Tips and tricks: Best practices for column installation and care of GC columns (28 Sep 2023); Reversed-phase for biomolecules: From column selection to troubleshooting (5 Oct 2023); Techniques for avoiding unexpected problems in LC and GC analysis (18 Oct 2023).

5. In deep water with PFAS (13 Oct 2022; *Thermo Fisher*): Development of new, robust total organic fluorine methods to detect per- and polyfluoroalkyl substances in industrial wastewater, river water, and air (by Dr. Susan D. Richardson); How much PFAS is in your water? Measuring per- & polyfluoroalkyl substances at low to sub ng/L levels (by Dr. Kevin J. McHale); Extraction of long-chain PFAS from soil using accelerated solvent extraction (by Dr. Carl Fisher).

4. Wildfires and resulting impacts to water bodies used as drinking water sources (29 Sept 2020; Drs. Alex T Chow, Tanju Karanfil, Joseph Kasprzyk, Fernando Rosario-Ortiz; *US EPA*)

3. Meet the experts (*Waters*): Approaches to polar retention; Strategies for solid phase extraction of per- and poly- fluoroalkyl substances (PFAS) from water; Overcoming the challenges of anionic polar pesticides analysis in food; Understanding the fundamentals of solid phase extraction.

2. Data science, deep learning and machine learning with python (12 h; Frank Kane; *Udemy*)

1. Learning python for data analysis and visualization (21 h; Jose Portilla; *Udemy*)