Dr. GE YAN

Department of Marine and Environmental Sciences

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EDUCATION

2015 **Ph.D. in Earth and Environmental Sciences, Seoul National University,** South Korea

2007 **B.Sc. in Environmental Science and Chemistry, University of Toronto**, Canada

EMPLOYMENT HISTORY

04/2022-present Assistant Research Scientist, Department of Marine and Environmental Sciences, Texas A&M University at Galveston

11/2019-12/2021 Associate Researcher, Institute of Deep-sea Science and Engineering, Chinese Academy of Sciences

11/2015-04/2019 Post-Doctoral Research Associate, Department of Marine Sciences and Oceanography, Texas A&M University at Galveston

03/2015-10/2015 Post-Doctoral Researcher, School of Earth and Environmental Sciences, Seoul National University

RESEARCH EXPERIENCE

- Investigated the distribution and fate of terrigenous dissolved organic carbon in the South China Sea
- Investigated the impact of Hurricane Harvey on ecosystem of the Galveston Bay in Texas with focuses on cycling and removal of terrestrial dissolved organic matter and microbial community changes
- Investigated the transport and removal of terrigenous dissolved organic carbon in the central Arctic ocean using lignin as a tracer
- Developed a rapid and sensitive method for analysis of dissolved lignin in ultra-low volume natural water samples including a novel oxidation method and measurement of monomeric lignin phenols using liquid chromatography tandem mass spectrometry

- Understood the roles of dissolved organic matter and nutrients in biogeochemical cycling in atmospheric and coastal ecosystems by

  – estimating magnitudes (field observation based)
  – identifying sources (using atmospheric tracers, biomarkers, and carbon isotopes)
  – characterizing chemical composition (at the molecular level)
  – assessing bioavailability (using qualitative indicators and incubation experiments)

RESEARCH ANALYTICAL TECHNIQUES

- Extensive experience with molecular-level analyses of lignin (UHPLC-MS/MS, GC-MS/MS) and enantiomeric amino acids (HPLC-fluorescence) in natural organic matter

- Hands on experience with analyses of chromophoric dissolved organic matter (UV-VIS, EEMS-PARAFAC), total and organic carbon and nitrogen (high temperature combustion), nutrients (N, P, Si) (colorimetric), and Air mass backward trajectory analysis using Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) model

- Experience in analyses of photosynthetic pigments (HPLC), major ions (HPLC), and ^{210}Po (alpha spectroscopy)

SELECTED PUBLICATIONS

Yan, G., Labonte, J., Quigg, A. and Kaiser, K.: Hurricanes accelerate dissolved organic carbon cycling in coastal ecosystems, *Frontiers in Marine Science* 7: 248, 2020.

Yan, G. and Kaiser, K.: Ultralow sample volume cupric sulfate oxidation method for the analysis of dissolved lignin, *Analytical Chemistry* 90 (15), 9289–9295, 2018.

Yan, G. and Kaiser, K.: A rapid and sensitive method for the analysis of lignin phenols in environmental samples using ultra-high performance liquid chromatography-electrospray ionization-tandem mass spectrometry with multiple reaction monitoring, *Analytica Chimica Acta* 1023, 74–80, 2018.

Yan, G. and Kim, G.: Speciation and sources of brown carbon in precipitation at seoul, korea: insights from excitation-emission matrix spectroscopy and carbon isotopic analysis, *Environmental Science and Technology* 51(20), 11580–11587, 2017.

Yan, G., Kim, G., Kim, J., Jeong, Y. and Kim, Y. I.: Dissolved total hydrolyzable enantiomeric amino acids in precipitation: Implications on bacterial contributions to atmospheric organic matter, *Geochimica et Cosmochimica Acta* 153, 1–14, 2015.

Yan, G. and Kim, G.: Sources and fluxes of organic nitrogen in precipitation over the southern East Sea/Sea of Japan, *Atmospheric Chemistry and Physics* 15, 2761–2774, 2015.

Yan, G. and Kim, G.: Dissolved organic carbon in the precipitation of Seoul, Korea: Implications for global wet depositional flux of fossil-fuel derived organic carbon, *Atmospheric Environment* 59, 117–124, 2012.

Yan, G., Cho, H.-M., Lee, I. and Kim, G.: Significant emissions of ^{210}Po by coal burning into the urban atmosphere of Seoul, Korea, *Atmospheric Environment* 54, 80–85, 2012.

Steichen, J.L. , Labonte, J. M., Windham, R., Hala, D., Kaiser, K., Setta, S., Faulkner, P., Bacosa, H., **Yan, G.**, Kamalanathan, M., and Quigg, A.: Microbial, physical, and chemical changes in Galveston Bay following an extreme flooding event, Hurricane Harvey, *Frontiers in Marine Science* 7: 186, 2020.

Xu, C., Zhang, S., Beaver, M., Lin, P., Sun, L., Doyle, S. M., Sylvan, J. B., Wozniak, A., Hatcher, P. G., Kaiser, K., **Yan, G.**, Schwehra, K. A., Lin, Y., Wade, T. L., Chin, W-C., Chiu, M-H., Quigg, A. and Santschi, P. H.: The role of microbially-mediated exopolymeric substances (EPS) in regulating Macondo oil transport in a mesocosm experiment, *Marine Chemistry* 206, 52–61, 2018.

Williford, T., Amon, R. M. W., Benner, R., Kaiser, K., Bauch, D., Stedmon, C., **Yan, G.**, Walker, S. A., van der Loeff, M. R., Klunder, M. B.: Insights into the origins, molecular characteristics and distribution of iron-binding ligands in the Arctic Ocean, *Marine Chemistry* 231, 103936, 2021.

PRESENTATIONS

Yan, G., Labonte, J., Quigg, A., and Kaiser, K., Hurricanes accelerate dissolved organic carbon cycling in coastal ecosystems, European Geosciences Union General Assembly, Online, May 2020.

Kaiser, K., Labonte, J., Quigg, A., and **Yan, G.**, Extreme weather events accelerate carbon cycling in coastal ecosystems, Ocean Sciences Meeting, San Diego, Feb 2020.

Molodtsova, T., Amon, R., Ronald, B., Kaiser, K., Bauch, D., Stedmon, C., Walker, S. A., van der Loeff, M. R., Klunder, M. B., and **Yan, G.**, Insights into the origins, molecular characteristics and distribution of iron-binding ligands in the Arctic Ocean, American Geophysical Union Fall Meeting, Online, Dec 2020.

Kazmiruk, Z., **Yan, G.**, and Kaiser, K., Investigating the sources and transformations of dissolved organic carbon in a heavily urbanized coastal watershed following a hurricane-induced extreme flood event, American Geophysical Union Fall Meeting, Online, Dec 2020.

Yan, G., Kaiser, K., and Amon, R., Application of a novel ultra-low-volume lignin analysis method to study the removal and transport of terrigenous dissolved organic carbon in the Arctic Ocean, Ocean Sciences Meeting, Portland, Feb 2018.

Kaiser, K., Benner, R., **Yan, G.**, and Amon, R., Pan-Arctic distribution and reactivity of terrigenous dissolved organic carbon in Arctic watersheds and the Arctic Ocean, Ocean Sciences Meeting, Portland, Feb 2018.

Molodtsova, T., Amon, R., Benner, R., Kaiser, K., Bauch, D., and **Yan, G.**, Relationships between dissolved organic matter, hydrography, and trace elements in the Makarov and Canada Basin of the Arctic Ocean, Ocean Sciences Meeting, Portland, Feb 2018.

Yan, G. and Kim, G., Dissolved organic nitrogen in precipitation at two contrasting sites in Korea: urban versus rural, American Geophysical Union Fall Meeting, San Francisco, Dec 2013.

Yan, G. and Kim, G., Wet precipitation of major ions, polonium-210, and organic carbon in a metropolitan city, Seoul, Korea, American Geophysical Union Fall Meeting, San Francisco, Dec 2011.

HONORS AND AWARDS

Post-doctoral Fellowship 2016-2017, Texas A&M University at Galveston
Best Ph.D. Dissertation Award 2014, Seoul National University

REVIEWER ACTIVITIES

Limnology and Oceanography
Environmental Science and Technology
Geochimica et Cosmochimica Acta
Journal of Marine System
Environmental Science: Processes & Impacts
Science of the Total Environment
Environmental Science and Technology Letters
Scientific Reports
Marine Chemistry
Journal of Sea Research
Biogeosciences
Atmospheric Environment
Water Research