

YUKAKO KOMAKI

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EDUCATION

Ph.D.	Environmental Engineering, University of Illinois, Urbana, IL, USA	2013
M.S.	Urban and Environmental Engineering, Kyoto University, Japan (Honor admission)	2007
B.S.	Global Engineering, Kyoto University, Japan	2005

PROFESSIONAL & RESEARCH EXPERIENCES

Research Assistant Professor, University of Shizuoka, Shizuoka, Japan
Department of Environmental and Life Sciences 7/1/2017-

Postdoctoral Scholar/JSPS Overseas Research Fellow, 6/18/2016-
Stanford University, Stanford, CA, USA 6/17/2017
Department of Civil and Environmental Engineering
(PI: William A. Mitch)

Project: Protein degradation by reactive halogen species

Description: The objective of this project is to evaluate the contribution of blood plasma halide to oxidative damage in proteins resulting in 1) amino acid residue degradation and 2) enzymatic activity destruction, via exposure to free radicals (e.g., OH^* , CO_3^{*-} , Cl^* , Cl_2^{*-} , Br_2^{*-} , ClBr^{*-}).

Project: Characterizing the formation of vegetable-derived disinfection byproducts

Description: The objective of this project is to investigate the formation of volatile disinfection byproducts and oxidized amino acid residues during chlorination in food processing.

Postdoctoral Research Associate, University of Illinois, Urbana, IL, USA 12/1/2013-
Department of Civil and Environmental Engineering 6/17//2016

Project: Molecular mechanism for wavelength-specific UV inactivation of bacteriophage PR772, potential surrogate for waterborne human adenovirus
(PI: Benito J. Mariñas)

Project: Investigating nuclear enzyme topoisomerase II as a putative molecular target of haloacetonitriles in mammalian cell toxicity (PI: Michael J. Plewa)

Project: Comparative cell toxicity of disinfection byproduct mixture
(PIs: Benito J. Mariñas, Michael J. Plewa)

Graduate Research Assistant, University of Illinois, Urbana, IL, USA 8/16/2007-
Department of Civil and Environmental Engineering 11/30/2013

Project: Mode of toxic action of DBPs: Genomic DNA damage induction, DNA damage repair and cell cycle alterations induced by haloacetonitriles and haloacetic acids (PIs: Benito J. Mariñas, Michael J. Plewa)

Project: Development of a point-of-care platform for cytotoxicity assessment of DBPs
(PIs: Benito J. Mariñas, Michael J. Plewa, Logan G. Liu)

Project: Bone char fixed-bed reactor for fluoride removal (PI: Benito J. Mariñas)

Post-master Research Assistant, Kyoto University, Kyoto, Japan 4/1/2007-
Department of Urban and Environmental Engineering 7/31/2007

Project: Elemental analysis of mineral scale from the remains of water towers in
Pompeii, Italy, using X-ray fluorescence (PI: Yoshihisa Shimizu)

M.S. Research, Kyoto University, Kyoto, Japan 4/2005-
Department of Urban and Environmental Engineering 3/2007

Project: Microbial community analysis in bioremediation of oil contaminated soil under
sulfate reducing conditions (PI: Yoshihisa Shimizu)

Study Abroad, University of Illinois, Urbana, IL, USA 9/2005-
Department of Civil and Environmental Engineering 12/2005

Project: Trichloroethylene biodegradation using *Dehalococcoides ethenogenes* strain
FL2 with varied amendments (PI: Kevin T. Finneran)

Senior Research, Kyoto University, Kyoto, Japan 4/2004-
Department of Global Engineering 3/2005

Project: Microbial community analysis in polycyclic aromatic hydrocarbon degradation
experiment for oil contaminated soil (PI: Yoshihisa Shimizu)

AWARDS & HONORS

Selected for 20 Oral Presenters at RIKEN Sakura Symposium, RIKEN	2017
Japan Science for the Promotion of Science Postdoctoral Fellowships for Research Abroad (189 out of 977, ~\$100,000)	2016-2018
Elected Co-Chair of the 5 th Disinfection Byproducts Gordon Research Seminar	2017
Selected for Civil and Environmental Engineering Rising Stars workshop (20 out of 122), Massachusetts Institute of Technology	2015
“Outstanding” in the List of Teachers Ranked as Excellent by Their Students (CEE 449: Environmental Engineering Laboratory), Center for Innovation in Teaching and Learning, University of Illinois at Urbana-Champaign	2013
Gordon Conference Young Researcher Fellowship	2012
Best poster award, Environmental Engineering and Science Annual Symposium, University of Illinois at Urbana-Champaign	2012
Racheff Graduate Student Travel Award, Environmental Engineering Science, University of Illinois at Urbana-Champaign	2009, 2011 & 2012
WaterCAMPWS Student Leadership Council Conference Travel Grant	2009
Student Travel Award, Environmental Mutagen Society	2009
Graduate College Conference Travel Award (declined)	2009
Invited to the Phi Kappa Phi Honor Society	2009
Heiwa Nakajima Foundation Scholarship (24 out of 227, ~\$48,000)	2007-2009
Exempt from repayment (~\$9,000), Japanese Student Services Organization scholarship loan program	2007
Honor admission to the graduate college of Kyoto University	2005

TEACHING EXPERIENCES

- Primary Instructor**, University of Illinois, Urbana, IL, USA
Water Quality Control Process I (CEE 537) Fall 2013, 2014
- Co-Instructor**, University of Illinois, Urbana, IL, USA
Environmental Engineering Laboratory (CEE 449) Spring 2016
Water Quality Control Process I (CEE 537) Fall 2015
- Head Teaching Assistant**, University of Illinois, Urbana, IL, USA
Environmental Engineering Laboratory (CEE 449) Spring 2013
Instructor: Professor Benito J. Mariñas
Duty: Tanzania field trip; Course material and assignment preparation; Student advising for the team reports and presentations
- Guest Lectures**, University of Illinois, Urbana, IL, USA
Environmental Engineering Laboratory (CEE 449) Spring 2014
Environmental Engineering Laboratory (CEE 449) Spring 2013
Water Quality Control Process I (CEE 537) Fall 2011
- Certificate in Foundation of Teaching**, Center for Innovation in Teaching & Learning, University of Illinois, Urbana, IL, USA April 2013

RESEARCH MENTORSHIP

- Adam Michael-Anthony Simpson (Stanford M.S. student) 2017
Project: Formation of volatile disinfection byproducts and chlorinated tyrosine during chlorination in food processing
- Wen Cong (Illinois/ Zhejiang 3+2 B.S.+ M.S. student) 2015-2016
Project: Wavelength-specific UV light inactivation of bacteriophage PR772 as a potential surrogate for adenovirus
- Chenxi Jiang (Illinois undergraduate) 2016
Project: UV inactivation on PR772 under different temperatures
- Bryan Smith (Illinois M.S. student) 2012-2014
Project: Development of a reverse osmosis/electrodialysis process to concentrate natural organic matter
- Marika Nell (Illinois undergraduate) 2013
Project: The influence of calcium, chlorine, and the bone char production process on defluoridation using bone char
- Phillip Grabacki (Illinois undergraduate) 2013
Project: The influence of calcium, chlorine, and the bone char production process on defluoridation using bone char
- Rachel Beck (Illinois undergraduate) 2012
Project: CHO cell chronic cytotoxicity of dissolved inorganic salts
- Aimee Tu (Illinois M.S. student) 2010-2012
Project: Optimizing a hybrid reverse osmosis/electrodialysis system for natural organic matter concentration

PUBLICATIONS

Peer-Reviewed Journal Articles

1. **Komaki, Y.**, Plewa, M. J. Investigation of nuclear enzyme topoisomerase as a putative molecular target of monohaloacetonitrile disinfection by-products. *Journal of Environmental Sciences*. **2017**. DOI: 10.1016/j.jes.2017.04.024
2. Kimura, S. Y., Vu, T. N., **Komaki, Y.**, Plewa, M. J., Mariñas, B. J. Acetonitrile and *N*-chloroacetamide formation from the reaction of acetaldehyde and monochloramine. *Environ. Sci. Technol.* **2015**, 49(16), 9954-9963.
3. Yang, Y.*, **Komaki, Y.***, Kimura, S. Y.*, Hu, H.-Y., Wagner, E. D., Mariñas, B. J., Plewa, M. J. Toxic impact of bromide and iodide on drinking water disinfected with chlorine or chloramines. *Environ. Sci. Technol.* **2014**, 48(20), 12362-12369. (*These authors contributed equally to this work)
4. **Komaki, Y.**, Mariñas, B. J., Plewa, M. J. Toxicity of drinking water disinfection byproducts: Cell cycle alterations induced by the monohaloacetonitriles. *Environ. Sci. Technol.* **2014**, 48(19), 11662-11669.
5. Kimura, S. Y., **Komaki, Y.**, Plewa, M. J., Mariñas, B. J. Chloroacetonitrile and *N*,2-dichloroacetamide formation from the reaction of chloroacetaldehyde and monochloramine in water. *Environ. Sci. Technol.* **2013**, 47(21), 12382-12390.
6. Saenz de Jubera, A. M., Herbison, J. H., **Komaki, Y.**, Plewa, M. J., Moore, J. S., Cahill, D. G., Mariñas, B. J. Development and performance characterization of a polyamide nanofiltration membrane modified with covalently bonded amide dendrimers. *Environ. Sci. Technol.* **2013**, 47(15), 8642-8649.
7. Hsiao, A.*, **Komaki, Y.***, Imaad, S. M., Mariñas, B. J., Plewa, M. J., Liu, G. L. Cytotoxicity analysis of water disinfection byproducts with a micro-pillar microfluidic device. *Lab Chip* **2012**, 12(20), 3891-3900. (*These authors contributed equally to this work)
8. **Komaki, Y.**, Pals, J., Wagner, E. D., Mariñas, B. J., Plewa, M. J. Mammalian cell DNA damage and repair kinetics of monohaloacetic acid drinking water disinfection by-products. *Environ. Sci. Technol.* **2009**, 43(21), 8437-8442.
9. **Kumada, Y.**, Kisa, T., Ohkuma, T., Kuwano, Y., Tanaka, H., Shimizu, Y. Effects of surfactant addition on PAHs degradation and microbial community. *Journal of EICA* **2007**, 12(2/3), 45-52. (in Japanese)

PRESENTATIONS

Conference Oral Presentations

1. **Komaki, Y.**, Choe, J. K., Mitch, W. Formation of vegetable-derived disinfection byproducts. American Chemical Society, San Francisco, CA, April 2-6, 2017.
2. **Komaki, Y.**, Choe, J. K., Mitch, W. Impact of halides on the degradation of amino acid residues in biomolecules. American Chemical Society, San Francisco, CA, April 2-6, 2017.
3. **Komaki, Y.**, Mariñas, B. J., Plewa, M. J. Cell cycle alterations induced by haloacetonitrile disinfection byproducts. American Chemical Society, San Francisco, CA, August 10-14, 2014.
4. **Komaki, Y.**, Kimura, S. Y., Yang, Y., Mariñas, B. J., Wagner, E. D., Plewa, M. J. Comparative toxicity of free and combined chlorination with different levels of halide ions. American Chemical Society, San Francisco, CA, August 10-14, 2014.
5. **Komaki, Y.**, Mariñas, B. J., Plewa, M. J. Analyses of cell cycle alteration induced by haloacetonitriles: Toxicity of drinking water disinfection by-products. Annual Postdoctoral Research Symposium. University of Illinois, Urbana, IL, January 31, 2014.

6. **Komaki, Y.**, Mariñas, B. J., Plewa, M. J. Measurement of genotoxicity induction and subsequent repair efficiency rate of monohaloacetonitriles using mammalian cells. The 4th International Water Association Asia-Pacific Region Conference, Tokyo, Japan, October 2-6, 2011.
7. **Kumada, Y.**, Kisa, T., Ohkuma, T., Kuwano, Y., Shimizu, Y. Surfactant enhanced bioremediation of oil contaminated soil. International Conference on Environmental Science and Technology, Houston, TX, August 2006.
8. **Kumada, Y.**, Kisa, T., Ohkuma, T., Kuwano, Y., Tanaka, H., Shimizu, Y. Evaluation on the effect of surfactants for bioremediation of oil contaminated soil. Symposium of the Association of Environmental and Sanitary Engineering Research, Kyoto, Japan, July 2006 (*in Japanese*).
9. **Kumada, Y.**, Kisa, T., Kuwano, Y., Koshikawa, H., Tashiro, E., Yasukagawa, T., Shimizu, Y. Microbial community analysis of PAHs degradation in soil. Korea-Japan Joint Seminar on Geoenvironmental Engineering, Seoul, South Korea, June 2005.

Conference Poster Presentations

10. **Komaki, Y.**, Choe, J. K., Mitch, W. A. Application of disinfection chemistry to biochemistry: Reactive halogen species as a potential culprit of oxidative stress in biological systems. Gordon Research Conference on DBPs. South Hadley, MA, July 30-August 4, 2017.
11. **Komaki, Y.**, Mariñas, B. J., Plewa, M. J. Inhibition of topoisomerase enzyme by haloacetonitrile disinfection byproducts. Gordon Research Seminar & Conference on DBPs. South Hadley, MA, August 8-14, 2015.
12. **Komaki, Y.**, Mariñas, B. J., Plewa, M. J. Biological mechanism of the toxicity of haloacetonitrile disinfection byproducts. Association of Environmental Engineering and Science Professors, New Haven, CT, June 13-16, 2015.
13. **Komaki, Y.**, Mariñas, B. J., Plewa, M. J. DNA damage induction, DNA repair, and cell cycle alterations by monohalogenated disinfection byproducts: Haloacetic acids and haloacetonitriles. American Chemical Society, San Francisco, CA, August 10-14, 2014.
14. **Komaki, Y.**, Mariñas, B. J., Plewa, M. J. Cell cycle blockage effect induced by haloacetonitriles in Chinese hamster ovary cells. Association of Environmental Engineering and Science Professors, Golden, CO, July 14-16, 2013.
15. **Komaki, Y.**, Mariñas, B. J., Plewa, M. J. Toxicity of haloacetonitrile DBPs. Gordon Research Conference on DBPs. South Hadley, MA, August 5-10, 2012.
16. **Komaki, Y.**, Mariñas, B. J., Plewa, M. J. Elucidating DNA repair kinetics of haloacetonitriles in Chinese hamster ovary cells and effect on cell cycle arrest. Environmental Mutagen Society, Montréal, Québec, October 15-19, 2011.
17. **Komaki, Y.**, Pals, J., Wagner, E. D., Mariñas, B. J., Plewa, M. J. Comparative DNA damage and repair kinetics study of monohaloacetonitriles in mammalian cells. Environmental Mutagen Society, Fort Worth, TX, October 23-27, 2010.
18. **Komaki, Y.**, Kimura, S., Pals, J., Wagner, E. D., Plewa, M. J., Mariñas, B. J. DNA repair kinetics study of monohaloacetonitriles in mammalian cells. American Chemical Society, San Francisco, CA, March 21-25, 2010.
19. **Komaki, Y.**, Pals, J., Wagner, E. D., Mariñas, B. J., Plewa, M. J. Comparative DNA damage and repair kinetics study in mammalian cells by chloro-, bromo-, and iodoacetic acid. Environmental Mutagen Society, St. Louis, MO, October 24-28, 2009.
20. **Komaki, Y.**, Pals, J., Wagner, E. D., Mariñas, B. J., Plewa, M. J. Comparative DNA damage and repair kinetics study in mammalian cells by chloro-, bromo-, and iodoacetic acid. Gordon Research Conference on DBPs. South Hadley, MA, August 9-14, 2009.

21. Pals, J., **Komaki, Y.**, Wagner, E. D., Mariñas, B. J., Plewa, M. J. Comparative DNA damage and repair kinetics study in mammalian cells by chloro-, bromo-, and iodoacetic acid. Material Research Society, San Francisco, CA, April 13-17, 2009.
22. **Kumada, Y.**, Kimura, S., Mariñas, B. J., Pals, J., Wagner, E. D., Plewa M. J. DNA damage and repair kinetics in mammalian cells by reactants, intermediates and products associated with the reaction of combined chlorine and formaldehyde in drinking water. American Chemical Society, New Orleans, LA, April 6-10, 2008.
23. **Kumada, Y.**, Kisa T., Kuwano, Y., Koshikawa, H., Tashiro, E., Yasukagawa, T., Shimizu, Y. Microbial community analysis in PAHs degradation experiment for oil contaminated soil. Workshop on Groundwater and Soil Contamination and Prevention Measures against those Contamination, Chiba, Japan, June 2005 (*in Japanese*).

PROFESSIONAL SERVICES & ACTIVITIES

Academic Service	Co-chair, Gordon Research Seminar on DBPs (elected)	July 2017
	Member, WASH-Toxics Interdisciplinary Working Group	Since 2016
	Discussion Leader, Gordon Research Seminar on DBPs	August 2015
	Seminar Coordinator, Environmental Engineering Program Seminar (CEE 595AG), UIUC	2014-2015
	Advisor to Student CEE 595AG Seminar Committee, UIUC	2014- 2015
	Graduate Student Organizer, Water for Life: Addressing a 21st Century Crisis, Graduate College Focal Point Project, UIUC	2010-2011
	Student Officer, Phi Kappa Phi Honor Society, UIUC	2009
Departmental Activity	Member, Cultural Awareness and Speech Enhancement, UIUC	2007-2012
	Coordinator, Mariñas research group meeting, UIUC	2008
Journal Review	<i>Chemosphere</i>	
	<i>Environmental and Molecular Mutagenesis</i>	
	<i>Journal - American Water Works Association</i>	
	<i>Journal of Environmental Sciences</i>	
	<i>Journal of Hazardous Materials</i>	
	<i>Journal of Water and Health</i>	
Membership	Association of Environmental Engineering and Science Professors	
	Environmental Mutagenesis and Genomics Society	
	American Chemical Society	
Community Service & Activity	Volunteer for Japan Bio Community forum	2016
	Volunteer for Community and Campus Day of Service	2014
	Volunteer for Boneyard Creek Community Day litter clean up event	2012
	Engineering open house, exhibition of “Drinking Water Treatment,” 2nd place in the real-world division	2009