José A. Cordero

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Profile

Chemist by training, researcher in environmental chemistry with wide experience in analytical chemistry, microbial degradation of micropollutants, and machine learning.

Education

2019-04 — 2022-03	Doctor of Philosophy, Kyoto University, Japan Dissertation: Experimental and <i>in silico</i> evaluation of anthropogenic organic compounds and their biodegradation products as precursors of haloacetic acids
2017-04 — 2019-03	Master of Engineering, Kyoto University, Japan Master in Environmental Engineering, Department of Environmental Engineering, Graduate School of Engineering
2011-03 — 2016-02	Bachelor in Science, Universidad de Costa Rica, Costa Rica Bachelor in Chemistry, Department of Chemistry, Faculty of Science

Research

2023.02 — 2025.01	KlarA Project, funded by the Bundesamt für Umwelt (BAFU), PI: Dr. Kathrin Fenner
	Postdoctoral researcher at Swiss Federal Institute of Aquatic Science (EAWAG)
	Use of high-resolution mass spectrometry data to develop quantitative structure-activity relationship models that predict removals of micropollutants during wastewater treatment.
2022.06 — 2022.12	Total decomposition of phenol, funded by Japan Society for the Promotion of Science (JSPS), grant No. 21H01463, PI: <u>Dr. Shinya</u> <u>Echigo</u>
	Postdoctoral researcher at Graduate School of Global Environmental Studies, Kyoto University
	Develop novel strategies for the elucidation of reaction mechanisms using physical separation techniques and high- resolution mass spectrometry.
2019-04 — 2022-03	Systematic development of evaluation and management methods for chemical substance risks arising from disasters and accidents, funded by Ministry of Environment, Japan, grant No. S-17. PhD candidate at Graduate School of Engineering, Kyoto University Supervisor: <u>Dr. Shinya Echigo</u> .

	Created a machine learning-based model to predict the formation of haloacetic acids during chlorination.
2016-04 — 2019-03	 Study on the Management of Anthropogenic Chemicals with the Consideration of Their Transformation Processes, funded by the Ministry of Environment, Japan, grant No. 5-1653 Research and Master student at Graduate School of Engineering, Kyoto University Supervisors: Dr. Koji Kosaka & Dr. Shinya Echigo Estimated changes in formation of disinfection byproducts after partial biodegradation of anthropogenic compounds. Tested over 150 substances commonly used in industry as suspected precursors of disinfection byproducts.
Supervision	
Master student	Rei Morii , Development of graph convolutional network based models to predict the formation of haloacetic acids during chlorination of anthropogenic compounds and analysis of their characteristics.
Master student	Aoxin Li , Quantitative structure-activity relationship models with chlorine consumption for predicting formation potentials of haloacetic acids based on support vector machine
Master student	Sarah Mayer, Does Additional Data Improve Machine Learning Models? – Systematic Evaluation of a Model Predicting Micropollutant Breakthrough in Wastewater Treatment Plants
Publications	
	Cordero, J. A., He, K., Janya, K., Echigo, S., & Itoh, S. (2021). Predicting formation of haloacetic acids by chlorination of organic

Predicting formation of haloacetic acids by chlorination of organic compounds using machine-learning-assisted quantitative structure-activity relationships. *Journal of Hazardous Materials*, 408, 124466.

Tada, Y., **Cordero, J. A.,** Echigo, S., & Itoh, S. (2021). Effect of coexisting manganese ion on the formation of haloacetic acids during chlorination. *Chemosphere*, *263*, 127862.

Cordero, J. A., He, K., Okuta, E., Echigo, S., & Itoh, S. (2020). Effect of biodegradation on haloacetic acid formation potentials of anthropogenic compounds during chlorination. *Environmental Science and Pollution Research*, *27*(15), 18117-18128

He, K., Okuta, E., **Cordero, J. A.,** Echigo, S., Asada, Y., & Itoh, S. (2018). Formation of chlorinated haloacetic acids by chlorination of low molecular weight compounds listed on pollutant release and transfer registers (PRTRs). *Journal of Hazardous Materials*, *351*, 98-107

Conferences

2024.05	Cordero, J.A., McLachlan, M. S., Fenner, K. E., PEPPER: Machine Learning for Predicting Environmental Persistence of Pollutants under a Unified Framework, SETAC, Seville – May, 2024		
2023.09	Cordero, J.A., McLachlan, M. S., F based QSAR approach to predict b micropollutants during wastewater Society Fall Meeting, Bern – Septe	Fenner, K. E. A machine learning- iological removal of organic treatment, Swiss Chemical mber, 2023	
2021.08	Cordero, J. A., He, K., Janya, K., B Machine Learning Algorithms to Pr Acids from Chlorination of Anthropo Environment Technology Conferen	Echigo, S., & Itoh, S., Exploring edict the Formation of Haloacetic ogenic Compounds. Water and ce, Online - August, 2021	
2019.10	Y. Tada, E. Okuta, J.A. Cordero , K Funaoka, A. Kurata, S. Itoh., Chara precursors originated from raphido fractionations, NOM7 IWA Speciali Matter in Water, Japan - October, 2	K. Kosaka, S. Echigo, K. He, H. acterization of trichloroacetic acid ohytes using HPLC st Conference on Natural Organic 2019	
2018-09	Cordero, J.A., He, K., Okuta, E., E Effect of Biodegradation on Haloac Anthropogenic Compounds During Congress & Exhibition, Tokyo – Se	chigo, S., Asada, Y., & Itoh, S. etic Acid Formation Potential of Chlorination. IWA Water ptember, 2018	
Awards			
2016.04-202	22.03 Scholarship. Japanese Governme	Scholarship. Japanese Government (MEXT) Scholarship	
2022.04	Certification . Human Security Eng Education and Research on Human Megacities	Certification . Human Security Engineering. Global Center for Education and Research on Human Security Engineering for Asian Megacities	
Skills		References	
Modellina	-Proficient in Python.	Prof. Kathrin Fenner	
5	-Machine learning & cheminformatic	University of Zurich	
	packages (i.e., scikit-learn, RDkit)	Kathrin.Fenner@chem.uzh.ch	
	- Modeling fate of micropollutants		
Chemistry	-Cheminformatics: Modeling chemical	Prof. Michael MacLachlan	
	reactivity and properties, QSAR	University of Stockholm	
	 Analytical Chemistry: High Resolution Mass Spectrometry 	michael.mclachlan@aces.su.se	
Others	-Fluent in English and Japanese (certified); Spanish (native);	Prof. Shinya Echigo Kyoto University	
	Excellent understanding of French (oral & written) and intermediate speaking abilities.	echigo.shinya.6u@kyoto- u.ac.jp	
	Basic German		