

## BIOGRAPHICAL SKETCH

NAME Wen-Yee Lee	POSITION TITLE Associate Professor		
eRA COMMONS USER NAME (credential, e.g., agency login) WENYLEE			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
National Taiwan Normal University, Taipei, Taiwan	B.S.	07/1985	Chemistry
University of Texas at El Paso, El Paso, Texas	M.S.	12/1995	Organic Chemistry
University of Texas at El Paso, El Paso, Texas	Ph. D.	12/2000	Environmental Science and Engineering
Connecticut Agricultural Experiment Station	Post Doc. Training	2001-2002	Environmental Science

### A. Personal Statement

My major tasks in this proposal are to analyze volatile organic compounds (VOCs) in urine samples. I have years of experience in the study of organic pollutants in air, soil, and water, as well as environmental issues related to human health. This project allows me to apply analytical chemistry to biomedical research. I will provide my expertise in environmental and analytical chemistry to this project.

My research has been focusing on developing methods to analyze organic compounds in various environmental compartments (such as air, water, soil, and plants) and biological fluids (such as urine and saliva) using a green sample preparation technique- Stir Bar Sorptive Extraction- coupled with Gas Chromatography/Mass Spectrometry. The projects in my research lab have involved (1) studies of environmental endocrine disrupting compounds (EDCs), such as pharmaceuticals and estrogens, glucocorticoids, and polybrominated diphenol ethers, in wastewater and sludge samples, (2) monitoring water quality in the Rio Grande and other water systems, (3) investigating estrogenic activities of EDCs in wastewater, and (4) developing techniques to remove EDCs in drinking water and wastewater. Based on the occurrence and concentrations of EDCs in the surface and other water sources, we are able to assess their impacts on human health and aquatic life. Other projects in my group include chemical analysis of polycyclic aromatic hydrocarbons in air, analysis of water soluble fraction of biofuel using environment friendly methods, passive sampler for detection of VOCs, and study of chemical markers in urine for breast cancer diagnosis.

I have 13 years of experience in providing research experience for undergraduate and graduate students especially under-represented minority (URM) students in STEM fields. I will assume the responsibility to mentor the graduate research assistant in successfully conducting research as well as developing professional skills.

### B. Positions and Honors

#### Positions and Employment

<u>Institution</u>	<u>Position</u>	<u>Dates</u>
Municipal Chien-Chen Senior High School	Chemistry Teacher	1985 - 1993
University of Texas at El Paso	Assistant Instructor, Chemistry	1998 - 2000
Connecticut Agricultural Experiment Station	Postdoctoral Scientist	2001 - 2002
University of Texas at El Paso	Assistant Professor, Chemistry	2003 - 2009
University of Texas at El Paso	Associate Professor, Chemistry	2009 - present

## Professional Memberships

- Member, Society of Environmental Toxicology and Chemistry
- Member, American Chemical Society
- Member, Sigma Xi, the Scientific Research Society
- Member, Society for Advancement of Chicanos and Native Americans in Science

## Honors

- UTEP Interdisciplinary Research (IDR) Fellow to the UTEP Office of Research and Sponsored Projects and the Office of the Provost, January 2016.
- Distinguished Achievement Award for Teaching, College of Science, UTEP, May 2009
- Outstanding Graduate Research Award, **2000**, Environmental Science and Engineering Program, UTEP.
- Outstanding Assistant Instructor, Department of Chemistry, **1999**, UTEP.

## **C. Contribution to Science**

1. My research focus on the analysis of endocrine disrupting compounds (EDCs) in water and wastewater. In recent years the presence of EDCs in drinking water treatment and wastewater treatment plants (WWTPs) has been reported around the world. WWTPs are not designed to completely remove EDCs during the treatment processes, and as a result, EDCs often released into the environment via wastewater effluents. Our research not only investigates the presence of EDCs in wastewater, but also focuses on studying the removal efficiency of EDCs by various treatment processes. In addition, very few studies have compared EDCs in WWTPs in a transboundary environment. El Paso, TX is located along the US and Mexico border and therefore is ideal to study the potential impact of EDCs in wastewater on the environment directly shared by two countries. I have served as the primary investigator in all these studies.
  - a. Rocha-Gutiérrez, B.A., **Lee, W.-Y.**, Walker, W.S. "Mass balance and mass loading of Polybrominated Diphenyl Ethers (PBDEs) in a tertiary wastewater treatment plant using SBSE-TD-GC/MS", *Water Science and Technology*, 2016; 73(2): 302-8. doi: 10.2166/wst.2015.492..
  - b. Rocha-Gutierrez, B.; **Lee, W.-Y.** "Investigation of Polybrominated Diphenyl Ethers in Wastewater Treatment Plants Along The US And Mexico Border: A Trans-Boundary Study" *Water, Air, & Soil Pollution*, 2013, 224 (1), 1398, DOI: 10.1007/s11270-012-1398-8.
  - c. Rocha-Gutierrez, B.; **Lee, W.-Y.** "Determination And Comparison Of Polybrominated Diphenyl Ethers In Primary, Secondary, And Tertiary Wastewater Treatment Plants", *International Journal of Environmental Analytical Chemistry*, 2012, 92(13), 1518-1531, DOI:10.1080/03067319.2011.585713.
  - d. De La Torre-Roche, R.J. (Graduate Student); **Lee, W.-Y.**; Campos-Díaz, S.I. (Undergraduate Student) "Soil-borne polycyclic aromatic hydrocarbons in El Paso, Texas: Analysis of a potential problem in the United States/Mexico border region, *Journal of Hazardous Materials*, 2009, 163(2-3), 946 – 958.
2. In addition to the study of EDCs in wastewater, my research group also studies the removal of EDCs by natural setting or other absorbing materials. The goal is to provide remediation strategies for complete removal of EDCs in wastewater effluent before getting into the environment or in drinking water. I have served as the primary investigator and co-investigator in all these studies.
  - a. Toro-Vélez, A.F., Madera-Parra, C.A., Peña-Varón, M.R., **Lee, W.Y.**, Bezares-Cruz, J.C., Walker, W.S., Cárdenas-Henao, H., Quesada-Calderón, S., García-Hernández, H., Lens, P.N.L. "BPA and NP removal from municipal wastewater by tropical horizontal subsurface constructed wetlands", *Science of the Total Environment*, Volume 542, Part A, 15 January 2016, 93–101.

- b. Teoh, W.-T., **Lee, W.-Y.**, Sato, K. "Bisphenol A Removal from Aqueous Solution by Alginate-Bentonite Composite Sorbent", *International Journal of Environmental Science & Technology*, under review.
3. In environmental research, samples often require lengthy preparation process which requires intensive man power as well as solvent consumption. We developed green analytical methods using solvent-less extraction methods and also collaborated with biologist to study semi-volatile compounds and EDCs in water and soil. I have served as the primary investigator and co-investigator in all these studies.
  - a. Yamaguchi, C.\*, **Lee, W.-Y.**, "A cost effective, sensitive, and environmentally friendly sample preparation method for determination of Polycyclic Aromatic Hydrocarbons in solid samples", *Journal of Chromatography A*, 2010, 1217(44):6816-23.
  - b. Balsiger, H.A. de la Torre, R., **Lee, W.-Y.**, Cox, M.B. "A Four-Hour Yeast Bioassay for the Direct Measure of Estrogenic Activity in Wastewater without Sample Extraction, Concentration, or Sterilization" *Science of the Total Environment*, 2010, 408(6):1422-9, doi:10.1016/j.scitotenv.2009.12.027.
4. I am actively participated in interdisciplinary collaboration. With my collaborators, we have studied various organic compounds in plants and air to study the impact of organic compounds on plant physiology and on human health. I have served as the primary investigator and co-investigator in all these studies.
  - a. Rico, C., Morales, M., McCreary, R., Castillo-Michel, H., Barrios, A., Jong, J., Tafoya, A., **Lee, W.-Y.**, Varela-Ramirez, A., Peralta-Videa, J.R., Gardea-Torresdey, J.L, "Cerium Oxide Nanoparticles Modify The Antioxidative Stress Enzyme Activities And Macromolecule Composition In Rice Seedlings", *Environ. Sci. Technol.*, 2013, 47 (24), 14110–14118, DOI: 10.1021/es4033887.
  - b. Rico, C., Morales, M., Barrios, A., McCreary, R., Jong, J., **Lee, W.-Y.**, Nunez, J., Peralta-Videa, J.R., Gardea-Torresdey, J.L, "Effect of Cerium Oxide Nanoparticles on the Quality of Rice (*Oryza sativa* L.) Grains" *J. Agric. Food Chem.*, 2013, 61 (47), 11278–11285, DOI: 10.1021/jf404046v.
  - c. Lauer, F.T., Mitchell, L.A., Bedrick, E., McDonald, J.D., **Lee, W.-Y.**, Li, W.W., Olivera, H., Amaya, M.A., Berwick, M., Gonzales, M., Currey, R., Pingitore, N.E., and Burchiel, S.W. "Temporal-Spatial Analysis of U.S.- Mexico Border Environmental Fine and Coarse PM Air Sample Extract Activity in Human Bronchial Epithelial Cells", *Toxicology and Applied Pharmacology*, 2009, 238(1), 1-10.
  - d. Carlo-Rojas, Z. (Graduate Student); **Lee, W.-Y.**, "Cu and Zn Uptake Inhibition by PAHs as Primary Toxicity in Plants", *Proceedings of the 2007 National Conference on Environmental Science & Technology*, 2009, Springer Science + Business Media, 41-46.

## D. Research Support

### On-going Research

- 05/25/2012 to 03/31/2017, Role: co-PI (PI, Renato Aguilera)

NIH

Project Title: RISE Option III: Research Scholars Program

Goals: The primary objective of the RISE Scholars Program at the University of Texas at El Paso (UTEP) is to increase the participation of disadvantaged underrepresented minority students (URM) in biomedical research. The specific aims of this program are as follows: (1) To provide increased access to educational and research biomedical training activities for URM students; (2) Increase the number of URM undergraduates who choose to pursue careers in biomedical research; and (3) Increase the representation of URM graduate students in the Biology and Chemistry Ph.D. programs to a level equivalent to our URM undergraduate population.

- 10/01/2011 to 09/30/2017, Role: co-PI (PI, Pei-Ling Hsu)

NSF

Project Title: Transforming Students' Partnership with Scientists Through Cogenerative Dialogues

Goals: This research project is to use the educational innovation of cogenerative dialogues (cogens) to transform high school students' partnerships with scientists. Working with scientists has been suggested as a powerful activity that can stimulate students' interest in science and help them experience science practice. The proposed project will take cogens from formal (urban) schooling into informal science education to investigate their impact on communication between high school students and scientists.

### **Completed Research Support**

- 01/01/2013 to 12/31/2013, Role: PI

UTEP/IDR

Project Title: Study of Removal of Contaminants of Emerging Concerns in Municipal Wastewater

Goals: Our preliminary studies indicate that some of these EDCs could be partially removed during sewage treatment. The goal of this study is to develop an effective treatment for the removal of EDCs in reclaimed water and drinking water. Specific aims include: (1) Validate the removal efficiency of EDCs by Ultraviolet (UV) photolysis and chlorination at wastewater treatment plants (WWTPs). (2) Study the parameters in UV radiation and chlorination to develop an effective treatment process for complete removal of EDCs.