Dr. Wenjian Lao

Research Coordinator
Chemistry Department
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Education

Ph.D., analytic chemistry, Lanzhou Institute of Chemical Physics (LICP), Chinese Academy of Sciences (CAS), 2000

M.S., analytic chemistry, LICP, CAS, 1996

B.S., chemistry, Xi'an Petroleum Institute, P.R. China, 1990

Professional Experience

Research Coordinator, Southern California Coastal Water Research Project. Costa Mesa, CA. 2022-present

Senior Research Technician, Southern California Coastal Water Research Project. Costa Mesa, CA. 2006-2022

Postdoctoral Researcher, University of California, Riverside, Department of Environmental Sciences. Riverside, CA. 2005-2006

Postdoctoral Associate, Mississippi State University, Chemistry Department. Mississippi State, MS. 2003-2005

Research Associate, Vanderbilt University, Department of Chemistry. Nashville, TN. 2003

Research Scientist, The Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences. Beijing, P.R. China. 2001-2003

Graduate Student Researcher, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences. Lanzhou, P.R. China. 1995-2000

Engineer, Analytical Chemistry Division, Geochemical Crews, BGP Inc., China National Petroleum Corporation. Zhuozhou, P.R. China. 1990-2002

Honors and Awards

Principal investigator, China Postdoctoral Science Foundation (2001)
The Peng Yingang Science and Technology Fellowship, Chinese Academy of Science (2000)
Achievement Award of Quality Control, China National Petroleum Corporation (1995)

Professional Societies and Certifications

Board of Directors, Southern California Regional Chapter of the Society of Environmental Toxicology and Chemistry (SoCal SETAC) (2008-2010)
Hydrology & Watershed Management Committee, American Water Resources Association
American Chemical Society
Sigma Xi

Selected Presentations and Conference Proceedings

Lao W, S. Dial, and C. S. Wong. 2023. Establishing a high efficiency and practical method for analysis of microplastics in complex matrices. SETAC North America 44th Annual Meeting. November, Louisville, KY.

Lao, W., B. Du, D. Shultz, J. Smith, C.S. Wong. Quantitatively measuring freely dissolved cyanotoxins with diffusive gradients in thin films (DGT) samplers in recreational lakes of Southern California, USA. EmCon: International Conference on Emerging Contaminants. September 13-14, 2021. Via webinar.

Lao, W., A. Parks, E. Wenger, M. Maruya, B. Bay, J. Carilli, J. Leather. 2019. Characterizing freely dissolved polychlorinated biphenyls and organochlorine pesticides in San Diego Bay (CA, USA) using polyethylene passive samplers. SETAC North America 40th Annual Meeting. November, Toronto, ON, CA.

Lao, W., G. Kim, K. Maruya. 2017. Developing passive sampling methods for bioavailable current-used pesticides in sediment. 253rd American Chemical Society National Meeting & Exposition. San Francisco, California.

Maruya, K., W. Lao, G.B. Kim, Y. Hong, J. Gan. 2016. Extending the scope of passive sampling for

contaminated sediments: standardizing ex situ methods for determination of Cfree. 7th SETAC World Congress/SETAC North America 37th Annual Meeting. November, Orlando, FL.

Flavetta, G., W. Lao, K.A. Maruya, R.M. Burgess, L. Fernandez. 2016. Temporal and spatial monitoring of persistent organic pollutants on the Palos Verdes Shelf using two passive sampling methods. 7th SETAC World Congress/SETAC North America 37th Annual Meeting. November, Orlando, FL.

Hong, Y., W. Lao, D. Tsukada, K. Maruya, J. Gan. 2015. Evaluation of various polymers for equilibrium passive sampling of moderately hydrophobic emerging pollutants in water. Platform presentation at SETAC North America 36th annual meeting. November, Salt Lake City.

Lao, W., D. Tsukada, M. Maruya. 2014. Incorporating performance reference compounds (PRCs) for passive sampling of organic contaminants using solid phase microextraction (SPME). Poster presentation at SETAC North America 35th annual meeting. November, Vancouver.

Lao, W., D. Tsukada, M. Maruya. 2013. Correction for non-equilibrium measurement of hydrophobic organic chemicals using polyethylene passive samplers. Poster presentation at SETAC North America 34th annual meeting. November, Nashville.

Lao, W., D. Tsukada, M. Maruya. 2012. Linkage between laboratory and field exposures of low-density polyethylene film as passive sampler in seawater. Poster presentation at SETAC North America 33rd annual meeting. November, Long Beach, CA.

Pirogovsky, M., A. Joyce, W. Lao, J. Haw, R. Adams, K. Maruya. 2012. Calibrating Solid Phase Microextraction Passive Samplers for the In Situ Measurement of Contaminants in Southern California. American Chemical Society 243rd National Meeting & Exposition. San Diego, CA.

Joyce, A., M. Pirogovsky, W. Lao, J. Haw, R. Adams, K. Maruya. 2012. Measurement of Polyethylene-Water partition Coefficients for In Situ Passive Sampling of Contaminants of Emerging Concern in Los Angeles, California. American Chemical Society 243rd National Meeting & Exposition. San Diego, CA.

Lao, W., L. Tiefenthaler, D. Greenstein, K.A. Maruya, S.M. Bay, K.C. Schiff. 2011. Pyrethroids in Sediment from Southern California Coastal Environment-Bight’08 Survey. Presentation at the American Chemical Society 242nd National Meeting & Exposition. Denver, CO.

Adams, G.R, A.S. Joyce, M.S. Pirogovsky, W. Lao, J.F. Haw, K.A. Maruya. 2011. Calibration and use of Polyethylene Passive Samplers for Quantifying Legacy and Emerging Contaminants of Concern at POTW Outfalls. Presentation at the Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC). Los Angeles, CA.

Lao, W., L. Tiefenthaler, D. Greenstein, K.A. Maruya, S.M. Bay, K.C. Schiff. 2011. Pyrethroids in

Sediment from Southern California Coastal Environment-Bight'08 Survey. Presentation at SoCal SETAC Annual Meeting. Huntington Beach, CA.

Journal Articles

Lao, W. 2025. Postprocessing methods based on minimum detectable amount and method blank for data reporting of particle count and refining estimation of matrix spike recovery in environmental microplastics analysis. *Chemosphere* 377:144325.

Lao, W., X. Shang, S. Yu, H. Xiao, Y. Lou, C. Song, J. You. 2025. Evaluation of multilayer co-extrusion film and other three plastic membranes as passive samplers for determination of polyhalogenated carbazoles in water. *Water Research* DOI:10.1016/j.watres.2025.123266.

Lao, W., G.B. Kim. 2024. Principles of passive sampling for ex situ measurement of hydrophobic organic compounds in sediment: Key considerations on dilution, depletion, and equilibrium. *Science of the Total Environment* 954:176277.

Lao, W., S. Sauers, M. Salmon, C.S. Wong. 2024. Development and validation of an acid/alkaline digestion method for efficient microplastic extraction from wastewater treatment plant effluents: Sulfuric acid concentration and contact time do matter. *Science of the Total Environment* 917: 170528.

Thornton Hampton, L.M., H. De Frond, K. Gesulga, S. Kotar, W. Lao, C. Matuch, S.B. Weisberg, C.S. Wong, S. Brander, S. Christansen, C.R. Cook, F. Du, S. Ghosal, A.B. Gray, J. Hankett, P.A. Helm, K.T. Ho, T. Kefela, G. Lattin, A. Lusher, L. Mai, R.E. McNeish, O. Mina, E.C. Minor, S. Primpke, K. Rickabaugh, V.C. Renick, S. Singh, B.V. Bavel, F. Vollnhals, C.M. Rochman. 2023. The influence of complex matrices on method performance in extracting and monitoring for microplastics. *Chemosphere* 334:138875.

Lao, W., C.S. Wong. 2023. How to establish detection limits for environmental microplastics analysis. *Chemosphere* 327:138456.

Lao, W. 2023. Incorporating performance reference compounds in retractable/reusable solid phase microextraction fiber for passive sampling of hydrophobic organic contaminants in water. *Science of the Total Environment* DOI:10.1016/j.scitotenv.2023.162252.

De Frond, H., W. Cowger, V. Renick, S. Brander, S. Primpke, S. Sukumaran, D. Elkhatib, S. Barnett, M. Navas-Moreno, K. Rickabaugh, F. Vollnhals, B. O'Donnell, A. Lusher, E. Lee, W. Lao, G. Amarpuri, G. Sarau, S. Christiansen. 2023. What determines accuracy of chemical identification when using microspectroscopy for the analysis of microplastics?. *Chemosphere*

DOI:10.1016/j.chemosphere.2022.137300.

Langknecht, T., W. Lao, C.S. Wong, S. Kotar, D.E. Khatib, S. Robinson, R.M. Burgess, K.T. Ho. 2023. Comparison of two procedures for microplastics analysis in sediments based on an interlaboratory exercise. *Chemosphere* DOI:10.1016/j.chemosphere.2022.137479.

Wang, S., W. Lao, H. Li, L. Guo, J. You. 2023. Assessing bioaccumulation potential of sediment associated fipronil degradates in oligochaete Lumbriculus variegatus based on passive sampler measured bioavailable concentration. *Science of the Total Environment* 863:1-7.

Kotar, S., R. McNeish, C. Murphy-Hagan, V. Renick, C.T. Lee, C. Steele, A. Lusher, C. Moore, E. Minor, J. Schroeder, P. Helm, K. Rickabaugh, H.D. Frond, K. Gesulga, W. Lao, K. Munno, L.M. Thornton Hampton, S.B. Weisberg, C.S. Wong, G. Amarpuri, R.C. Andrews, S.M. Barnett, S. Christiansen W Cowgeri, K. Crampond, F. Du, A.B. Gray, J. Hankett, K. Ho, J. Jaeger, C. Lilley, L. Mai, O. Mina, E. Lee, S. Primpke, S. Singh, J. Skovly, T. Slifko, S. Sukumaran, B. Bavel, J.V. Brocklin, F. Vollnhals, C. Wu, C.M. Rochman . 2022. Quantitative assessment of visual microscopy as a tool for microplastic research: Recommendations for improving methods and reporting. *Chemosphere* 308:1-9.

Maruya, K.A., W. Lao, D.R. Vandervort, R. Fadness, M. Lyons, A.C. Mehinto. 2022. Bioanalytical and chemical-specific screening of contaminants of concern in three California (USA) watersheds. *Heliyon* 8:e09534.

De Frond, H., L.M. Thornton Hampton, S. Kotar, K. Gesulga, C. Matuch, W. Lao, S.B. Weisberg, C.S. Wong, C.M. Rochman . 2022. Monitoring microplastics in drinking water: An interlaboratory study to inform effective methods for quantifying and characterizing microplastics. *Chemosphere* 298:134282.

Wang, S., W. Lao, Y. He, H. Shi, Q. Ye, J. Ma. 2021. Promoting the stability and adsorptive capacity of Fe3O4-embedded expanded graphite with an aminopropyltriethoxysilane-polydopamine coating for the removal of copper(II) from water. *RSC Advances* 11:35673-35686.

Du, B., W. Lao, C.S. Wong, K. McLaughlin, K.C. Schiff. 2021. Scrutinizing surficial sediment along a 600-km-long urban coastal zone: Occurrence and risk assessment of fipronil and its three degradates. *Science of the Total Environment* DOI:10.1016/j.scitotenv.2021.151071.

Wang, P., B. Du, J. Smith, W. Lao, C.S. Wong, E.Y. Zeng. 2021. Development and field evaluation of the organic-diffusive gradients in thin-films (o-DGT) passive water sampler for microcystins. *Chemosphere* 287:132079. DOI:10.3389/fmicb.2021.674214.

Mehinto, A.C., L.M. Thornton Hampton, D.E. Vidal-Dorsch, N. Garcia-Reyero, M.A. Arick, K.A. Maruya, W. Lao, C.D. Vulpe, M. Brown-Augustine, A. Loguinov, S.M. Bay. 2021. Transcriptomic

response patterns of hornyhead turbot (Pleuronichthys verticalis) dosed with polychlorinated biphenyls and polybrominated diphenyl ethers. *Comparative Biochemistry and Physiology - Part D: Genomics and Proteomics* DOI:10.1016/j.cbd.2021.100822.

Lao, W. 2020. Fiproles as a proxy for ecological risk assessment of mixture of fipronil and its degradates in effluent-dominated surface waters. *Water Research* DOI:10.1016/j.watres.2020.116510.

Alava, J.J., P. Calle, A. Tirape, G. Biedenbach, O.A. Cadena, K. Maruya, W. Lao, W. Aguirre, P.J. Jimenez, G.A. Dominguez, G.D. Bossart, P.A. Fair. 2020. Persistent Organic Pollutants and Mercury in Genetically Identified Inner Estuary Bottlenose Dolphin (Tursiops truncatus) Residents of the Guayaquil Gulf, Ecuador: Ecotoxicological Science in Support of Pollutant Management and Cetacean Conservation. *Frontiers in Marine Science* DOI:10.3389/fmars.2020.00122.

Wang, S., W. Lao, H. Li, J. You. 2020. Measuring bioconcentration factors of sediment-associated fipronil in Lumbriculus variegatus using passive sampling techniques. *Journal of Hazardous Materials* DOI:10.1016/j.jhazmat.2020.122420.

Lao, W., K.A. Maruya, D. Tsukada. 2019. An exponential model based new approach for correcting aqueous concentrations of hydrophobic organic chemicals measured by polyethylene passive samplers. *Science of the Total Environment* 646:11-18.

Jonker, M.T.O., S.A. van der Heijden, D. Adelman, J.N. Apell, R.M. Burgess, Y. Choi, L.A. Fernandez, G.M. Flavetta, U. Ghosh, P.M. Gschwend, S.E. Hale, M. Jalalizadeh, M. Khairy, M.A. Lampi, W. Lao, R. Lohman, M.J. Lydy, K.A. Maruya, S.A. Nutile, A.M.P. Oen, M.I. Rakowska, D. Reible, T.P. Rusina, F. Smedes, Y. Wu. 2018. Advancing the Use of Passive Sampling in Risk Assessment and Management of Sediments Contaminated with Hydrophobic Organic Chemicals: Results of an International Ex Situ Passive Sampling Interlaboratory Comparison. *Environmental Science and Technology* 52:3574-3582.

Ulrich, E.M., P.L. TenBrook, L.M. McMillan, Q. Wang, W. Lao. 2018. Enantiomer-Specific Measurements of Current-Use Pesticides in Aquatic Systems. *Environmental Toxicology and Chemistry* 37:99-106.

Lin, K., W. Lao, Z. Lu, F. Jia, K.A. Maruya, J. Gan. 2017. Measuring freely dissolved DDT and metabolites in seawater using solid-phase microextraction with performance reference compounds. *Science of the Total Environment* 599-600:364-371.

Mehinto, A.C., D.R. VanDervort, W. Lao, G. He, M.S. Denison, S.M. Vliet, D.C. Volz, R.D. Mazor, K.A. Maruya. 2017. High throughput in vitro and in vivo screening of inland waters of Southern California. *Environmental Science: Processes and Impacts* 19:1142-1149.

Lao, W., Y. Hong, D. Tsukada, K.A. Maruya, J. Gan. 2016. A New Film-Based Passive Sampler for Moderately Hydrophobic Organic Compounds. *Environmental Science and Technology* 50:13470-13476.

Crago, J., E.G. Xu, A. Kupsco, F. Jia, A.C. Mehinto, W. Lao, K.A. Maruya, J. Gan, D. Schlenk. 2016. Trophic transfer and effects of DDT in male hornyhead turbot (Pleuronichthys verticalis) from Palos Verdes Superfund site, CA (USA) and comparisons to field monitoring. *Environmental Pollution* 213:940-948.

Maruya, K.A., W. Lao, D. Tsukada, D.W. Diehl. 2015. A passive sampler based on solid phase microextraction (SPME) for sediment-associated organic pollutants: Comparing freely-dissolved concentration with bioaccumulation. *Chemosphere* 137:192-197.

Joyce, A.S., M.S. Pirogovsky, R.G. Adams, W. Lao, D. Tsukada, C.L. Cash, J.F. Hawa, K.A. Maruya. 2015. Using performance reference compound-corrected polyethylene passive samplers and caged bivalves to measure hydrophobic contaminants of concern in urban coastal seawaters. *Chemosphere* 127:10-17.

Fernandez, L.A., W. Lao, K.A. Maruya, R.M. Burgess. 2014. Calculating the diffusive flux of persistent organic pollutants between sediments and the water column on the Palos Verdes Shelf Superfund Site using polymeric passive samplers. *Environmental Science and Technology* 48:3925-3934.

Greenstein, D.J., S.M. Bay, D.L. Young, S. Asato, K.A. Maruya, W. Lao. 2014. The use of sediment toxicity identification evaluation methods to evaluate clean up targets in an urban estuary. *Integrated Environmental Assessment and Management* 10:260-268.

Alvarez, D.A., K.A. Maruya, N.G. Dodder, W. Lao, E.T. Furlong, K.L. Smalling. 2014. Occurrence of contaminants of emerging concern along the California coast (2009-10) using passive sampling devices. *Marine Pollution Bulletin* 81:347-354.

Maruya, K.A., N.G. Dodder, C.L. Tang, W. Lao, D. Tsukada. 2014. Which coastal and marine environmental contaminants are truly emerging?. *Environmental Science and Pollution Research* 22:1644-1652.

Fernandez, L.A., W. Lao, K.A. Maruya, C. White, R.M. Burgess. 2012. Passive sampling to measure baseline dissolved persistent organic pollutant concentrations in the water column of the Palos Verdes shelf superfund site. *Environmental Science and Technology* 46:11937-11947.

Lao, W., J. Gan. 2012. Enantioselective degradation of warfarin in soils. *Chirality* 24:54-59.

Lao, W., D. Tsukada, K.A. Maruya. 2012. The effect of co-occurring polychlorinated biphenyls on quantitation of toxaphene in fish tissue samples by gas chromatography negative ion mass

spectrometry. *Journal of Chromatography A* 1270:262-268.

Lao, W., L.L. Tiefenthaler, D.J. Greenstein, K.A. Maruya, S.M. Bay, K. Ritter, K.C. Schiff. 2012. Pyrethroids in southern California coastal sediments. *Environmental Toxicology and Chemistry* 31:1649-1656.

Lao, W., K.A. Maruya, D. Tsukada. 2012. A two-component mass balance model for calibration of solid-phase microextraction fibers for pyrethroids in seawater. *Analytical Chemistry* 84:9362-9369.

Lao, W., J. Gan. 2010. Characterization of warfarin unusual peak profiles on oligoproline chiral high performance liquid chromatography columns. *Journal of Chromatography A* 1217:6545-6554.

Lao, W., J. Gan. 2010. Temperature effects on a doubly tethered diproline chiral stationary phase: Hold-up volume, enantioselectivity and robustness. *Journal of Separation Science* 33:3052-3059.

Lao, W., D. Tsukada, D.J. Greenstein, S.M. Bay, K.A. Maruya. 2010. Analysis, occurrence, and toxic potential of pyrethroids, and fibronil in sediments from an urban estuary. *Environmental Toxicology and Chemistry* 29:843-851.

Ramezani, M.K., D.P. Oliver, R.S. Kookana, W. Lao, G. Gill, C. Preston. 2010. Faster degradation of herbicidally-active enantiomer of imidazolinones in soils. *Chemosphere* 79:1040-1045.

Sabin, L.D., K.A. Maruya, W. Lao, D.W. Diehl, D. Tsukada, K.D. Stolzenbach, K.C. Schiff. 2010. Exchange of polycyclic aromatic hydrocarbons among the atmosphere, water, and sediment in coastal embayments of southern California, USA. *Environmental Toxicology and Chemistry* 29:265-274.

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Lao, W., J. Gan. 2008. Characterization of column hold-up volume with static and dynamic methods on an immobilized polysaccharide-based chiral stationary phase. *Chromatographia* 67:3-7.

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and carbazole chemicals. *Chemical Research.* 25 (3), 260-263.

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Lao W., C. Song, J. You, Q. Ou. 2013. Fluorescence derivatization of alcohols by1.4-dimethyl-carbazole-9-yl-propionic acid. *Chemical Research.* 24 (1), 75-78.

Lao W., C. Song, J. You, Q. Ou. 2012. Fluorescence and □□-cyclodextrin inclusion properties of three carbazole-based dyes. *Dyes and Pigments.* 95, 619-626.

Lao W., L. Cong, T. Hong, J. You. 2012. Theoretical study on molecular configuration and intramolecular hydrogen bond of Elsinochrome A. *Chemical Research.* 23 (4), 85-90.

Lao W., C. Song, J. You, Q. Ou. 2012. Bifurcated hydrogen-bond in 3-Br-carbazole-9-yl-acetic acid crystal and its theoretical analysis. *Chemical Research.* 23 (5), 40-43.

Lao W., G. Arye, F. Ernst, Y.P. Xu, S. Bondarenko, D. Haver, J. Kabashima, D. Shibberu, and J. Gan. 2008. Reduction of Pyrethroid Runoff from A Commercial Nursery, in Synthetic Pyrethroids: Occurrence and Behavior in Aquatic Environments. *American Chemical Society.* ISBN: 978-0-8412-7433-4. 428-446.

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