Dr. Wenjian Lao

Research Coordinator
Chemistry Department
Southern California Coastal Water Research Project

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 Shiyou Institute (Xi'an Petroleum University), 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)
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., S. Sauers, C.S. Wong. 2025. Characterization and potential influence of laboratory airborne particle fallout on microplastics analysis. *Journal of Hazardous Materials* 499:140309.

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.

Lao, W., J. Gan. 2009. Doubly tethered tertiary amide linked and ionically bonded diproline chiral stationary phases. *Journal of Separation Science* 32:2359-2368.

Lao, W., J. Gan. 2009. Evaluation of triproline and tri-a-methylproline chiral stationary phases retention and enantioseparation associated with hydrogen bonding. *Journal of Chromatography A* 1216:5020-5029.

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.

Lao W., L. Cong, T. Hong, J. You, 2015. Spectroscopic Characterizations of Semiquinone Anion Radical Formation and Autosensitized Photooxidation for Elsinochrome A. *Journal of the Chemical Society of Pakistan.* 37 (1), 99-104.

Lao W., L. Cong, T. Hong, J. You. 2014. Photoinduced electron-transfer between Elsinochrome A and carbazole chemicals. *Chemical Research.* 25 (3), 260-263.

Lao W. 2013. Analysis of toxaphene and its eight congeners in sediment and fish tissue by gas chromatography-negative ion mass spectrometry. *Chinese Journal of Chromatography.* 31(7): 667-673.

Lao W. 2013. Thermodynamic and Extrathermodynamic Studies of Enantioseparation of Imidazolinone Herbicides on Chiralcel OJ Column. *ISRN Chromatography.* Article ID 460787, 9 pages. doi:10.1155/2013/460787.

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.

Lao W., J. Gan. 2007. Hold-up volume and its application in estimating effective phase ratio and thermodynamic parameters on a polysaccharide-coated chiral stationary phase. *Journal of Separation Sciences*, 30, 2590-2597.

Lao W., J. Gan. 2006. Responses of enantioselective characteristics of imidazolinone herbicides and Chiralcel OJ column to temperature variations. *Journal of Chromatography A.* , 1131 (1-2) 74-84.

Lao W., J. Gan. 2006. High-performance liquid chromatographic separation of imidazolinone herbicide enantiomers and their methyl derivatives on polysaccharide-coated chiral stationary phases. *Journal of Chromatography A.* , 1117 (2), 184-193.

Zhang G., R. E. Rogers, W. T. Frenca and Lao W.. 2006. Investigation of microbial influences on seafloor gas-hydrate formations. *Marine Chemistry.* 103 (3-4) 359-369.

Zhao R., Lao W.□□X. Xu. 2004. Headspace Liquid-Phase Microextraction of Trihalomethanes in Drinking Water and Their Gas-Chromatographic Determination. *Talanta*. 62,751-756.

Ma L., Lao, W., X. Wang, H. Liu, S. Chu, X. Xu. 2003. Analytical method for trace semi-volatile organic compounds in the soil of Beijing suburbs. *Chinese Analytical Chemistry,* 31(9), 1025-1029.

Liu X., Lao W., X. Bi, X. Xu, J. Zhao. 2002. Determination of organochlorine pesticides in abalone samples from Antarctic. Research Center for Eco-environmental Sciences, Chinese Academy of Sciences, Beijing, Peop. Rep. China. *Chinese Analytical Chemistry* 30(9), 1035-1037.

You J., Lao W.,; M. Huang, G. Wang. 2002. Study of molecular imprinted polymer as the adsorbent in the clean-up step after supercritical fluid extraction. Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou, Peop. Rep. China. *Chinese Analytical Chemistry* 30(5), 518-521.

Bi Y., Lao W.,; Zhao, Suli; Li, Jubai. 2001. Synthesis and structure identification of partly hexenyl-substituted □□-cyclodextrin. *Journal of Chemical reagents*. 23(5), 284-285.

Lao W., Yu Hua Zhang, Yue Qi Liu, Qing Jin Wu, Zi Xing Huang, Qing Yu Ou, 2001.The Microwave-assisted Preparation and X-Ray Structure of 3-Bromo-9-carbazoly-N-acetic acid. *Chinese Chemical Letter,* 12(4) 321-324.

Lao W., J. You, H. Lu, S. Chen, X. Shen and Q. Ou, 2001.Study on the Synthesis, Properties and Biological Actitities of (9-Carbazoly)-carboxylic acids. *Chemical Journal of Chinese Universities*, 22(6) 955-957

Lao W., J. You, J. M.You, G. Wang, Q. Ou 2001.The Advances of fluorescence derivatization for alcohols and acids in high-performance liquid chromatography. *Analysis and Testing Technology and Instruments*. 7(1) 28-36.

You J, Lao W., G. Wang. 2001. Enantiomeric Separation of Pesticides by High Performance Capillary Electrophoresis. *Analysis and Testing Technology and Instruments*. 7(2) 100-104.

You J., Lao W., S. Chen, Q. Ou, 2001. Molecular Imprinted Polymer Used as An Additive for High Performance Capillary Electrophroesis. *J. of Instrumental Analysis*, 20(1) 19.

Zhang Y., Lao W., Y. Yin, Z. Huang, J. Wu, 2001. The Reaction of Octacarbonyldicobalt and Dipropargyl Malonate. *Chinese Journal of Structure Chemistry*, 20, 104

Zhang Y., J. Zhang, Lao W., Y. Yin, Z Huang and J.Wu, 2001. Synthesis, characterization and reactions of cluster complexes containing SeRuCoM (M = Mo or W) core and a functionally substituted cyclopentadienyl ligand. *Journal of Organomet. Chemistry*, 628(1) 123-130.

Zhang Y, Zhang J, Lao W., Y., Z. Huang and J.Wu, 2002. The reaction of octacarbonyldicobalt and dipropargyl terephthalate. *Journal of coordination chemistry* 2002 55(4) 373 □C380.

Zhang Y., Lao W., Y. Liu, Y. Yin, J. Wu and Z. Huang, 2001. Reaction of dipropargyl manolate, terephthalate with Co2(CO)8, Mo2Cp2(CO)4 and RuCo2(CO)11 gives the di or tetranuclear clusters. The crystal structure of [CH2(CO2CH2C2H-m)2][Co2(CO)6]2 and [p-(HC2CH2OCO)C6H4(CO2CH2C2H-m)][Co2(CO)6].*Polyhedron*, 20(9-10) 1107-1113.

Lao W., J.M. You, X. Sun, X. Kong, Q. Ou. 2000. Facile and Rapid Synthesis of 9H-Carbazole-9-Carboxylic Acids Under Microwave Irradiation. *Synthetic Communications* 30 (19) 3491.

Lao W., C. Xu, S. Ji, J.M.You, Q. Ou.. 2000. Electronic and vibrational spectra of series substituted Carbazole derivatives. *Spectrochimica Acta,* Part A. 56/11 2049-2060.

Lao W., Z. Yu, Y. Liu, and Q. Ou. 2000.Microwave-induced Fast Synthesis and Optical Resolution of 2-(9-Carbazoly)-Carboxylic Acids Enantiomers. *Journal f□□r Praktische Chemie-Chemiker-Zeitung* . 342 (6) 596.

Lao W., X. Sun, J.M. You , and Q. Ou. 2000. Microwave-assisted rapid preparation of substituted carbazole-9-carboxylic acids and their absorption and fluorescence spectroscopic characteristics. *Monatshefte F□□r Chemie/Chemical Monthly.* 131,803.

Lao W., X. Sun, J.M. You, Q.Ou. 2000. Microwave-assisted preparation substituted carbazole-9-acetic/propoinice acid and fluorescence spectroscopic characteristics. *Heterocyclic Communications* 6 (1) 81.

Lao W., J.M. You, X. Sun, X. Kong, Q. Ou. 2000.Rapid Preparation of 1.4-Dimethyl-Carbazole-9-Carboxylic acid under Microwave Irradiation. *Chinese Journal of Synthetic Chemistry.* 8 (1) 6.

Lao W. J.M. You, Z. Yu, Q. Ou. 2000.On the synthesis of bromine substituted carbazoles and their normal phase HPLC separation. *Journal of Chemical reagents* 22(5) 260.

Y. Liu, Lao W., Y. Zhang, S. Jiang, L. Chen, 2000. Direct optical resolution of the enantiomers axially chiral compounds by HPLC on Cellulose tri-(3,5-dimethylphenylcarbamate) stationary phase. *Chromatographia.* 52(3/4) 190.

You J., Lao W., G. Wang, 1999. Analysis of organic pollutants in sewage by supercritical fluid extraction. *Chromatographia.* 49(7/8) 399.

You J.M., Lao W., You J., G. Wang, 1999.Characterization and application of acridine-9-N-acetyl-N-hydroxysuccinimide as a pre-column derivatization agent for fluorimetric detection of amino acids in liquid chromatography, *Analyst*, 124, 1755-1760

You J.M., Lao W., X.J.Fan, Q.Y.Ou, X.L.Jia, 1999. Study on the chromatographic behavior and inclusion constants of several new fluorescence agents using cyclodextrin as additives under the conditions of steady and dynamic state equilibrium with fluorescence detection, *Chromatographia*, 49, 95-104.

You J.M., X.J.Sun, Lao W., Q.Y.Ou, 1999. Determination of alcohols using condensation agent carbazole-9-acetyl-benzene-disulfonate by high performance liquid chromatography with pre-column fluorescence derivatization, *Chromatographia*, 49, 657-665.

You J.M., Lao W., Q. Ou, Xuejun Sun, 1999. Fluorescence properties of carbazole-N-(2-methyl) acetyl chloride and determination of amino compounds via high-performance liquid chromatography with pre-column fluorescence derivatization, *J. Chromatogr.* A, 848, 117-130.

You J.M., Lao W., X. Sun, Q. Ou, 1999. Carbazole-9-N-acetyl-N-hydroxysuccinimide (CAHS) as precolumn derivatization agent for fluorimetric detection of amino compounds with liquid chromatogrpahy, *J.Liquid Chromatogr. & Related Technol.* 22, 2907-2923.

X. Suo, Lao W., 1999. Study on the Geochemical Prospecting System of Near the Earth's Surface Free Hydrocarbons and Its Applied Effect. *Petroleum Explorationist.* 4(1) 35.

You J.M., Lao W., Q. Ou, X. Sun, 1999. A simple an d mild derivatization method for hydroxyl compounds using condensation agent carbazole-9-N-(2-methyl)-acetyl-benzene-disulfonate and its application for the determination of volatile alcohols from plasma by HPLC with fluorescence detection, *Fresenius J Anal Chem* , 365, 521-528.

You J.M., You J., Lao W., G. Wang, X. Jia, 1999. Fluorescence properites of carbazole-9-ylpropionic acid and its application to the determination of amines via HPLC with fluorescence detection, *Analyst*, 124, 281-288

You J.M., H. Sun, Lao W., Q. Ou, 1999. Fluorescence properties of carbazole-9-yl-acetyl chloride and its application for the simultaneous determination of amino acids and bigenic amines via liquid chromatography with fluorescence detection, *Anal. Chim.Acta*, 3 2, 51.

You J.M., X. Sun, Lao W., Q. Ou, D. Jiang, 1999. Derivatization of alcohols using acridone-9-N-acetyl-benzene-disulfonate as a condensation agent and its application for the determination of volatile alcohols in human plasma by liquid chromatography with fluorescence detection, *Anal.Chim.Acta*, 391, 43-55.

You J.M., X. Fan, Lao W., Q. Ou, Q. Zhu, 1999. High performance liquid chromatographic determination of biogenic amines and amino acids, *Talanta*, 48, 437.

You J.M., Lao W., Q. Ou, 1998. High-performance liquid chromatographic determination of amino compounds with carbazole-9-N(2-methyl)-acetic chloride. *Chinese Chem. Lett.* 9(7) 657-660

Lao W., G.Wang, 1995. The rapid analysis of free hydrocarbon by gas chromatography in field for oil and gas geochemical prospecting. *Analysis and Testing Technology and Instruments.* 1 (3) 28.

Technical Reports

Wong, C.S., W. Lao, S. Sauers, D. Nguyen, L.M. Thornton Hampton. 2024. Multimedia investigations of microplastic concentrations in the Los Angeles and San Gabriel Rivers. Technical Report 1389. Southern California Coastal Water Research Project. Costa Mesa, CA.

Wong, C.S., W. Lao, S. Sauers, D. Nguyen, R. Butler, D. Lin. 2024. Characterizing the Removal of Microplastics by California Wastewater Treatment Plants: Implications for Management Strategies. Technical Report 1378. Southern California Coastal Water Research Project. Costa Mesa, CA.

Wong, C.S., S. Sauers, W. Lao. 2024. Stormwater Monitoring Coalition Laboratory Guidance Document (Fourth Edition). Technical Report 1379. Southern California Coastal Water Research Project. Costa Mesa, CA.

Bay, S.M., D.J. Greenstein, A.N. Parks, D.J. Gillett, W. Lao, D.W. Diehl. 2021. Sediment Quality Assessment Technical Support Manual. Technical Report 777. Southern California Coastal Water Research Project. Costa Mesa, CA.

Maruya, K.A., A.C. Mehinto, W. Lao, R. Sutton, T. Jabusch, J. Sun, D. Lin, J. Davis, R. Fadness. 2018. Pilot Monitoring of Constituents of Emerging Concern (CECs) in the Russian River Watershed (Region 1). Technical Report 1020. Southern California Coastal Water Research Project. Costa Mesa, CA.

Dodder, N., W. Lao, D. Tsukada, D.W. Diehl, K.C. Schiff. 2014. Areas of Special Biological Significance: Bioaccumulation Monitoring. Technical Report 816. Southern California Coastal Water Research Project. Costa Mesa, CA.

Schiff, K.C., R. Gossett, K. Ritter, L.L. Tiefenthaler, N. Dodder, W. Lao, K.A. Maruya. 2011. Southern California Bight 2008 Regional Monitoring Program: III. Sediment Chemistry. Technical Report 661. Southern California Coastal Water Research Project. Costa Mesa, CA.

Schiff, K.C., R. Gossett, K. Ritter, L.L. Tiefenthaler, N. Dodder, W. Lao, K.A. Maruya. 2011. Southern California Bight 2008 Regional Monitoring Program: III. Sediment Chemistry (Appendix A). Technical Report 661.A. Southern California Coastal Water Research Project. Costa Mesa, CA.

Schiff, K.C., R. Gossett, K. Ritter, L.L. Tiefenthaler, N. Dodder, W. Lao, K.A. Maruya. 2011. Southern California Bight 2008 Regional Monitoring Program: III. Sediment Chemistry (Appendix B). Technical Report 661.B. Southern California Coastal Water Research Project. Costa Mesa, CA.

Schiff, K.C., R. Gossett, K. Ritter, L.L. Tiefenthaler, N. Dodder, W. Lao, K.A. Maruya. 2011. Southern California Bight 2008 Regional Monitoring Program: III. Sediment Chemistry (Appendix C). Technical Report 661.C. Southern California Coastal Water Research Project. Costa Mesa, CA.

Schiff, K.C., R. Gossett, K. Ritter, L.L. Tiefenthaler, N. Dodder, W. Lao, K.A. Maruya. 2011. Southern California Bight 2008 Regional Monitoring Program: III. Sediment Chemistry (Appendix D). Technical Report 661.D. Southern California Coastal Water Research Project. Costa Mesa, CA.

Schiff, K.C., R. Gossett, K. Ritter, L.L. Tiefenthaler, N. Dodder, W. Lao, K.A. Maruya. 2011. Southern California Bight 2008 Regional Monitoring Program: III. Sediment Chemistry (Appendix E). Technical Report 661.E. Southern California Coastal Water Research Project. Costa Mesa, CA.

Bay, S.M., D.J. Greenstein, K.A. Maruya, W. Lao. 2010. Toxicity Identification Evaluation of Sediment (Sediment TIE) in Ballona Creek Estuary: Final Report. Technical Report 634. Southern California Coastal Water Research Project. Costa Mesa, CA.

Peng, J., K.A. Maruya, K.C. Schiff, D. Tsukada, D.W. Diehl, W. Lao, J. Gan, E. Zeng. 2007. Organochlorine pesticides and other trace organic contaminants in the Upper Newport Bay watershed. Technical Report 512. Southern California Coastal Water Research Project. Costa Mesa, CA.

Annual Report Articles

Greenstein, D.J., S.M. Bay, D. Young, S. Asato, K.A. Maruya, W. Lao. 2013. The use of sediment toxicity identification evaluation methods to evaluate clean-up targets in an urban estuary.

Alvarez, D., K.A. Maruya, N.G. Dodder, W. Lao, E. Furlong, K. Smalling. 2013. Occurrence of contaminants of emerging concern along the California coast (2009-10) using passive sampling devices.

Fernandez, L.A., W. Lao, K.A. Maruya, C. White, R.M. Burgess. 2012. Passive sampling to measure background dissolved persistent organic pollutant concentrations in the water column of the Palos Verdes Shelf Superfund site.

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.

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.

Sabin, L.D., K.A. Maruya, W. Lao, D.W. Diehl, D. Tsukada, K.D. Stolzenbach, K.C. Schiff. 2011. A

pilot study of air-water exchange of organochlorine compounds at three coastal estuaries in southern California.

Lao, W., L.L. Tiefenthaler, D.J. Greenstein, K.A. Maruya, S.M. Bay, K. Ritter, K.C. Schiff. 2011. Pyrethroids in southern California coastal sediments.

Lao, W., J. Gan. 2010. Temperature effects on a doubly tethered diproline chiral stationary phase: Hold-up volume, enantioselectivity and robustness.

Sayre, J.M., R.G. Adams, W. Lao, K.A. Maruya. 2010. Comparing solid phase microextraction and polyethylene passive samplers for measuring ultra-low aqueous concentrations of regulated organic pollutants.

Lao, W., D. Tsukada, D.J. Greenstein, S.M. Bay, K.A. Maruya. 2009. Analysis, occurrence, and toxic potential of pyrethroids and fipronil in sediments from the Ballona Creek estuary.

Sabin, L.D., K.A. Maruya, W. Lao, D.W. Diehl, D. Tsukada, K.D. Stolzenbach, K.C. Schiff. 2008. Exchange of polycyclic aromatic hydrocarbons between the atmosphere, water, and sediment in southern California coastal embayments.