



**Exponent**<sup>®</sup>  
Engineering & Scientific Consulting

## Qiongyan "Judy" Zhong, Ph.D., CIH

Managing Scientist | Health Sciences  
39100 Country Club Dr. | Farmington Hills, MI 48331 (248) 324-9159 tel |  
qzhong@exponent.com

### Professional Profile

Dr. Zhong has a multidiscipline background in chemistry, environmental sciences, and occupational health/Industrial hygiene. Her areas of expertise include occupational and environmental health investigation, exposure assessment, industrial hygiene monitoring, chemical analysis, research and development of air quality monitoring instrumentation, and wastewater treatment. Her professional experience totals more than 20 years both in the U.S. and China, working in academic research, manufacturing industries, and consulting. Dr. Zhong has conducted numerous occupational and environmental health investigations related to chemicals and products used in workplaces and residential homes.

Prior to joining Exponent, Dr. Zhong was a research and development scientist at Thermo Fisher Scientific, working on the development and application of environmental monitoring instrumentation. Her early career experience includes wastewater treatment and fabric dyeing. Dr. Zhong's research during her Ph.D. focused on the development of a real-time portable gas chromatograph with multi-stage adsorbent pre-concentrator-focuser, tunable separation, and microsensor array detection for complex mixture of volatile organic compounds (VOCs). Her research during her Master's study was to develop innovative oxide-fluoccculation reactor technique to treat wastewater from a broad spectrum of industries.

### Academic Credentials & Professional Honors

Ph.D., Industrial Health, University of Michigan, Ann Arbor, 2008

M.S., Environmental Science, Zhongshan (Sun Yat-Sen) University, China, 1999

B.S., Applied Chemistry, Zhongshan (Sun Yat-Sen) University, China, 1993

### Licenses and Certifications

Certified Industrial Hygienist (CIH), #CP11080

### Prior Experience

Research & Development Scientist, Thermo Fisher Scientific, Inc., 2008-2010

Research Assistant, University of Michigan, 2002-2008

Project Leader, Jiangmen Wenchangsha Wastewater Treatment Plant (China), 1999-2001

## Professional Affiliations

American Industrial Hygiene Association (member)

Michigan Industrial Hygiene Society (member)

American Society for Testing and Materials (ASTM) International (member)

Product Stewardship Society (member)

## Languages

Mandarin Chinese

Cantonese Chinese

## Publications

Zhong Q, Steinecker WH, Zellers ET. Characterization of a high-performance portable GC with chemiresistor array detector. *The Analyst* 2009; 134:283-293.

Zhong Q. A portable gas chromatograph with tunable separation and microsensor array detection: design, characterization, and environmental health application. Ph.D. dissertation, 2008.

Zhong Q, Veeneman RA, Steinecker WH, Jia C, Batterman SA, Zellers ET. Rapid determination of ETS markers with a prototype field-portable GC employing a microsensor array detector. *Journal of Environmental Monitoring* 2007; 9:440-448.

Zhong Q, Steinecker WH, Zellers ET. Meso-scale VOC-mixture analyzer with tunable separation and microsensor array detection. *Rare Metal Materials and Engineering* 2006; 35(3):61-64.

Xiong Y, Zhong Q, An TC, Cha ZH, Zhu XH. Removal of cyanide from dilute solution using a cell with three-phase three-dimensional electrode. *Journal of Environmental Science and Health Part A - Toxic/Hazardous Substances & Environmental Engineering* 2002; 37(4):715-724.

Peng YF, Chen WG, Zhu XH, Zhang JH, Zhong Q, Ruo CR, Xu S. Experimental researches on paint wastewater treatment — the application of coagulation-flocculation and oxidation-flocculation reactor technique. *Industrial Water Treatment* 2000; 20(1):13. (In Chinese).

Zhang JH, Zhong Q, Chen WG, Zhu XH. Basic study on the oxide-flocculation reactor technique for the treatment of wastewater — II. Kinetic of degradation for organic compounds. *Acta Scientiarum Naturalium Universitatis Sunyatseni* 1999; 38(5):55. (In Chinese).

Li XY, Zhong Q. The effect of time on the cyanide result by the method of iso-nicotinic acid and pyrazolone photometric determination. *Administration and Technique of Environmental Monitoring* 1999; 11(2):45. (In Chinese).

Liu Y, Zhang JH, Liang LW, Zhong Q, Chen WG, Zhu XH. Researches on the decolorization of high colority dyeing wastewater. *Industrial Water Treatment* 1998; 18(5): 15. (In Chinese).

Li YY, Zhang MS, Zhong Q. Optimal synthesis and luminescence of  $\text{La}_2\text{Ce}_2\text{O}_7$ : Tb<sup>3+</sup>-x-y. *Journal of Guangdong Non-Ferrous Metals* 1996; (2):35. (In Chinese).

## Articles

Zhong Q, Malzahn D. Spray polyurethane foam insulation litigation support. Michigan Defense Trial Counsel e-letter 2016: 2.

Malzahn D, Zhong Q. Emerging battery industry requires fresh look at OSHA hazardous substance release regulations. Michigan Defense Trial Counsel e-letter 2011; 11.

### **Conference Proceedings**

Zellers ET, Reidy SM, Veeneman R, Gordenker RJ, Steinecker WH, Lambertus GR, Kim H, Potkay JA, Rowe MP, Zhong Q, Avrey C, Chan HK, Sacks RD, Najafi K, Wise KD. An integrated micro-analytical system for complex vapor mixtures. IEEE International Conference on Solid-State Sensors and Actuators (Transducers), pp. 1491-1496, Lyon, France, June 2007.

Zhong Q, Steinecker WH, Rowe MP, Jin C, Zellers ET. Meso-scale VOC-mixture analyzer with tunable separation and microsensor array detection. Technical Digest of the 6th East Asia Conference on Chemical Sensors, pp. 152-153, Guilin, China, November 2005.

Steinecker WH, Rowe MP, Xu H, Zhong Q, Jin C, Farina L, Kurdak C, Zellers ET. Au-thiolate nanoparticles as interfacial layers on microsensor arrays for micro gas chromatography. Proceedings, Eurosensors XIX, pp 11-16, Barcelona, Spain, September 2005.

Rowe M, Steinecker W, Zhong Q, Xu H, Kurdak C, Zellers E. Monolayer protected nanoparticles as vapor sensor array interface materials. 207th Electrochemical Society Meeting, Quebec City, Canada, May 2005.

Zellers ET, Wise KD, Chan HK, Pang SW, Da Silva LW, Kaviany M, Kim J, Kurdak C, Lu Y, Aslam DM, Zheng J, Agah M, Potkay JA, Zhong J, Oborny MC, Steinecker WH, Nichols J, Rowe MP, Matzger AJ, Lambertus GR, Elstro A, Whiting J, Sacks RD, Bergstrom PL. Materials and processing challenges related to the fabrication of a MEMS micro gas chromatograph. Symposium on Materials, Mechanisms, and Systems for Chemical and Biological Detection and Remediation, San Francisco, CA, April 2004.

Zellers ET, Wise KD, Najafi K, Aslam D, Brown RB, Cai QY, Driscoll J, Flynn M, Giachino J, Gordenker R, Hsieh MD, Nguyen Ct-C, Bergstrom P, Drelich J, Friedrich C, Gamble E, Kaviany M, Lu CJ, Matzger A, Oborny M, Pang S, Potkay J, Sacks R, Tian W-C, Steinecker W, Whiting J, Zhong Q. Determinations of complex vapor mixtures in ambient air with a wireless microanalytical system: Vision, progress, and homeland security applications. Technical Digest of the IEEE Conference on Technologies for Homeland Security, Waltham MA, IEEE, pp. 92-95, Boston, MA, November 2002.

### **Conference and Seminar Presentations**

Zhong Q. Portable GC with adsorbent preconcentration, dual-column separation, and sensor array detection: Characterization and adaptation to trace-level breath biomarker analysis. The Pittsburgh Conference (Pittcon), New Orleans, LA, March 2008 (oral).

Zhong Q. A novel multi-vapor analyzer: Characterization and application to analyzing breath biomarkers of lung cancer. Seminar at the Engineering Research Center (ERC) for Wireless Integrated Microsystem (WIMS) at the University of Michigan, February 2008.

Zhong Q. A field-portable GC with multi-stage preconcentration, dual-column separation, and chemiresistor-array detection for VOC analysis. The 33rd Federation of Analytical Chemistry and Spectroscopy Societies (FACSS), Lake Buena Vista, FL, October 2006 (poster).

Zhong Q. Meso-scale VOC-mixture analyzer with tunable separation and microsensor array detection. The 6th East Asia Conference on Chemical Sensors (EACCS), Guilin, China, November 2005 (oral).

Zhong Q. A portable GC for indoor VOC determinations. The Pittsburgh Conference (Pittcon), Orlando, FL, March 2005 (poster).

Zhong Q. Chamber and preliminary field studies of a versatile portable instrument for indoor VOC determinations. American Industrial Hygiene Conference & Expo (AIHce), Atlanta, GA, May 2004 (poster).

Zhong Q. Portable analytical system employing tunable separation and microsensor array detection for monitoring organic vapor contaminants in indoor air. American Industrial Hygiene Conference & Expo (AIHce), Dallas, TX, May 2003 (oral).

Zhong Q. A microfabricated gas chromatographic subsystem for complex vapor-mixture analyses. American Industrial Hygiene Conference & Expo (AIHce), Dallas, TX, May 2003 (poster).

## Project Experience

- Structural fire smoke damage in residential homes and commercial buildings
- Chemical exposure during and after installation of building materials in residential homes and commercial buildings. Building materials include spray polyurethane foam insulation, urea formaldehyde foam insulation, roofing products, and gypsum wall board
- Occupational exposure to substances in various occupational settings, such as printing, road paving with asphalt hot mix, hair salons, automobile mechanic shops, sanitization for food processing and medicine packaging, foundries, and oil wells. Substances evaluated included formaldehyde, benzene, toluene, hydrogen peroxide, sodium hydroxide, phosphoric acid, chloride, butyl cellulose, silica, heavy metals, polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), Portland cement, metalworking fluids, vehicle coolants, brake cleaners, and particulates.
- Occupants' exposure to substances used in disinfection in residential homes, including ozone and phenol
- Chemical off-gassing from operating household appliances.
  
- Occupational exposure in various occupational settings from asbestos-containing materials, including thermal insulation, gaskets and packing, brakes and clutches, cement boards, adhesive, flexible duct connector, floor tile, cement, joint compound, gloves/mittens, and roofing material
- Indoor molds
- Photographic film processing chemicals review
- Claims of personal injury from consuming coffee containing cleaning chemicals
- Occupational exposure evaluation for a new brake cleaning product
- Noise survey at automobile repair stores
- Health and safety consultation for lithium-ion battery storage in automobile facilities