

**James Jay Schauer, PhD, PE, MBA**

Peterson-Rader-Hawnn Professor, Department of Civil and Environmental Engineering  
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**Academic Training:**

B.S., Chemical and Petroleum Refining Engineering, Colorado School of Mines, 1984  
M.S., Environmental Engineering, University of California at Berkeley, 1991  
Ph.D., Environmental Engineering Science, California Institute of Technology, 1998

**Continued Education**

MBA, University of Wisconsin-Whitewater, 2010

**Professional Experience:**

7/15-6/20	Peterson-Rader-Hawnn Professor, Civil and Environmental Engineering
1/08-Present	Professor, University of Wisconsin-Madison, Madison, WI Civil and Environmental Engineering, 1998-Present Environmental Chemistry Program, 1998-Present The Wisconsin State Laboratory of Hygiene, 1998 – Present Affiliate Faculty, Chemical and Biological Engineering, 2013- Present Affiliate Faculty, Mechanical Engineering, 2012- Present Molecular and Environmental Toxicology Program, 2010-Present
7/04-01/08	Associate Professor, University of Wisconsin-Madison, Madison, WI
10/98-6/04	Assistant Professor, University of Wisconsin-Madison, Madison, WI
3/98-9/98	Postdoctoral Scholar, California Institute of Technology, Pasadena, CA
8/93-3/98	Research Assistant, California Institute of Technology, Pasadena, CA
5/92-8/93	Process Development Specialist, UOP, Des Plaines, IL
8/86-5/92	Technical Advisor/Chief Technical Advisor, UOP, Des Plaines, IL <i>Job Function:</i> Start-up of UOP process units in petroleum refineries and petrochemical facilities in Europe, Asia, Africa, and North America.
3/85-8/86	Process Development Engineer, UOP, Des Plaines, IL

**Awards**

2015-2020 Peterson-Rader-Hawnn Professorship

2013 University of Wisconsin-Madison Kellet Mid-Career Faculty Research Award

2009 National Academy of Science Indo-US Frontiers of Science Kavli Fellow

2008 University of Wisconsin-Madison H. I. Romnes Faculty Research Award

2006 American Association for Aerosol Research (AAAR) Kenneth T. Whitby Award

2002 Health Effects Institute (HEI) Rosenblith Young Investigator Award

2001 Haagen-Smit Award presented by *Atmospheric Environment* Journal in recognition of 1996 publication for contribution to the field of atmospheric sciences.

## **Registered Professional Engineer**

Colorado PE License # 27717

Illinois PE License # 062-051408

## **LEADERSHIP POSITIONS**

### **UW-Madison**

Director, Water Science and Engineering Laboratory, College of Engineering, 2005-Present.

Committee Member, UW-Madison Campus Budget Committee, 2016-Present

Committee Member, UW Madison Conflict of Interest Committee, 2014- Present.

Physical Sciences Representative, UW-Madison Campus Planning Committee, 2013-2017.

Promotions and Professorship Committee, College of Engineering, 2015-2018.

Associate Chair for Environmental Science and Engineering Division, Civil and Environmental Engineering Department, 2010-2016.

Program Committee, Environmental Science Undergraduate Program, 2011-Present.

Member, Global Health Institute Advisory group, 2011-Present.

Physical Sciences Representative, Graduate Faculty Executive Committee, 2009-2013.

Chair, Air Resource Management Program, Nelson Institute, 2004-2011.

### **Other Significant Service**

Editor-in-Chief, *Atmospheric Environment*, 2016-Present.

Member, US EPA Clean Air Science Advisory Committee (CASAC) Particulate Standard Review Committee, 2016-2018.

Working Group Member, WHO IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 109: "Outdoor Air Pollution."

Lead Author, International Panel on Climate Change (IPCC) 5<sup>th</sup> Assessment Report, Working Group III: Mitigation, 2010-2014.

Member, US EPA Clean Air Science Advisory Committee (CASAC) Air Monitoring and Methods Subcommittee (AMMS), 2011-2016.

Guest Professor Peking University, Beijing, China, 2004-Present

US Representative and Member, United Nations Environmental Programs (UNEP) Atmospheric Brown Cloud Asia Program (ABC-Asia) Science Team. December 2008-Present.

Haagen-Smit Award Committee, *Atmospheric Environment*, 2010-2016.

Awards Committee, American Association for Aerosol Research (AAAR), 2011-2014

Expert Witness for Allen County Prosecutor's Office for Criminal Case CR2009 0298, 2010-2011.

Editorial Advisory Board, *Aerosol Science and Technology (AS&T)*, 2005-2010

Board of Directors, American Association for Aerosol Research, 2006-2009

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January 31, 2017

## **RESEARCH**

### **Research Experience**

The goal of my research has been to develop methodologies for applying advanced chemical analysis testing techniques to understand the sources and impacts of pollution, which can ultimately be used to mitigate the impacts of anthropogenic pollution. In the past two decades, my efforts were predominately focused on development and application of analytical testing tools to understanding sources of air pollution and the associated impacts on human health, climate change, sensitive ecosystems, and urban air quality. In order to support these efforts, my research group has been actively developing strategies for pollutant sampling, chemical analysis and data analysis to better understand the sources and impacts of air pollutants. My research team is working in multi-disciplinary groups to understand the health impacts of aerosol, the impact of aerosols on climate change, strategies to meet air quality standards, the sources of atmospheric mercury, characterization of emissions from air pollution sources, and the impact of air pollutants on sensitive ecosystems. In my research efforts, I have maintained a commitment to pursuing a broad impact on society and the international community that has impacts beyond the bounds of physical and biological sciences by conducting policy relevant research and by implementing my research in regions of the world that are critical to improving global health. These efforts have been focused on understanding the sources and public health impacts of air pollution, and identifying control strategies to reduce air pollution and the subsequent impact on human health. Currently, I am participating in two intervention studies that are examining the health benefit of air pollution mitigation strategies. All of these research projects are integrated with testing activities at the Wisconsin State Laboratory of Hygiene as funded research projects or fee for service activities, and are closely followed by federal and state regulatory agencies. A number of these studies have influenced direct interventions to control air pollution and air pollution regulations and rules.

As of January 31, 2017, I have authored and/or co-authored 333 manuscripts that have been published or have been accepted for publication in peer-reviewed scientific journals, and have authored and/or co-authored another 14 manuscripts that are currently in review for publication in peer-reviewed journals. In addition, I have authored and/or co-authored 13 peer-reviewed conference proceedings and two peer-reviewed reports. According to the ISI Science Citation Index (SCI) database, my publications have been cited more than 15,000 times, as of January 31, 2017. Thirty one of these publications have already been cited over 100 times including one publication that has been cited over 900 times. My Hirsch Impact Factor (h-index) on January 31, 2017, as quantified by the ISI Web of Science is 60, and 74 as quantified by Google Scholar. A list of example publications over the past 5 years is provided on the following pages.

In the eighteen years that I have been at UW-Madison, I have received approximately 15 million dollars of external research support, representing the portion of grants that associated with my effort as PI and Co-PI. These awards were from national competitive research programs including the US EPA STAR program, the National Science Foundation (NSF), The National Institute of Health (NIH) and the Department of Energy (DOE). I have also received a number of research grants from state and regional air quality management authorities and the Health Effects Institute (HEI), and Industry Consortia including the Electric Power Research Institute (EPRI), Water Environmental Research Foundation (WERF) and Underwriters Laboratory.

### Select Peer-Reviewed Journal Publications (25 out of a total of 333 publications)

- 1) A. A. Schultz, J. J. Schauer, R. E. Gangnon, and K. A. Malecki. 2017. Ambient Air Pollution and Allergic Disease: Results from the Survey of the Health of Wisconsin 2008-2013. *Environmental Research*. In press.
- 2) M. Pardo, I. Kutra, J. J. Schauer, and Y. Rudich. 2017. Mitochondria-Mediated Oxidative Stress Induced by Desert Dust in Rat Alveolar Macrophages. *GeoHealth*. In press.
- 3) E. M. Carter, C. Norris, K. L. Dionisio, K. Balakrishnan, W. Checkley, S. N. Chillrud, S. Ghosh, D. W. Jack, P. L. Kinney, L. P. Naeher, S. Sambandam, J. J. Schauer, B. J. Wylie, J. Baumgartner. 2017. Assessing Exposure to Household Air Pollution from Biomass Burning: A Systematic Review of Carbon Monoxide as a Surrogate Measure of Particulate Matter. *Environmental Health Perspectives*. In press.
- 4) Y. Tong, X. Yin, H. Lin, B. Duo, D. Zeng; H. Wang; C. Deng; L. Chen; J. Li; W. Zhang; J. Schauer; S. Kang; G. Zhang; X. Bu; X. Wang; Q. Zhang. 2016. Recent Decline of Atmospheric Mercury Recorded by Androsace Tapete on the Tibetan Plateau. *Environmental Science and Technology*. 50, 13224-13231
- 5) E. Carter, S. Archer-Nicholls, N. Kun, C. Wiedinmyer, J. Schauer, M. Ezzati, N. Hongjiang, M. Secrest, S. Sauer, A. Lai, X. Yang and J. Baumgartner. 2016. Seasonal and Diurnal Patterns in Residential Cooking and Space Heating Activities in the Tibetan Plateau. *Environmental Science and Technology*. 50, 8353-8361.
- 6) X. Zhang, N. Staimer, D. L. Gillen, T. Tjoa, J. J. Schauer, M. M. Shafer, S. Hasheminassa, P. Pakbin, N. D. Vaziri, C. Sioutas, and R. J. Delfino. 2016. Associations of Oxidative Stress and Inflammatory Biomarkers with Chemically-Characterized Air Pollutant Exposures in an Elderly Cohort. *Environmental Research*. 150, 306-319.
- 7) X. Zhang, N. Staimer, T. Tjoa, D. L. Gillen, J. J. Schauer, M. M. Shafer, S. Hasheminassa, P. Pakbin, J. Longhurst, C. Sioutas, R. J. Delfino. 2016. Associations between Microvascular Function and Short-term Exposure to Traffic-related Air Pollution and Particulate Matter Oxidative Potential. *Environmental Health*. 15, 81.
- 8) M. M. Shafer, J. C. Hemming, D. Antkiewicz and J. J. Schauer. 2016. Use of a Macrophage ROS Model to Examine the Role of Metals in Oxidative Activity of Size-Resolved Atmospheric Aerosols from Six European Cities. *Faraday Discussions*. 189, 381-405.
- 9) B. de Foy, Y. Tong, X. Yin, W. Zhang, S. Kang, Q. Zhang, G. Zhang, X. Wang, and J. J. Schauer. 2016. First Field-Based Atmospheric Observation of the Reduction of Reactive Mercury driven by Sunlight. *Atmospheric Environment*. 134, 27-39.
- 10) S. Wittkopp, N. Staimer, T. Tjoa, T. Stinchcombe, N. Daher, J. J. Schauer, M. M. Shafer, C. Sioutas, D. L. Gillen, and R. J. Delfino. 2016. Nrf2-related gene expression and exposure to traffic-related air pollution in elderly subjects with cardiovascular disease: An exploratory panel study. *Journal of Exposure Science and Environmental Epidemiology*. 26, 141-149.
- 11) M. R. Olson, E. Graham, S. Hamad, P. Uchupalanun, N. Ramanathan, and J. J. Schauer. 2016. Quantification of Elemental and Organic Carbon in Atmospheric Particulate Matter Using Color Space Sensing - Hue, Saturation, and Value (HSV) Coordinates. *Science of the Total Environment*. 548-549, 252-259.

- 12) M. Pardo, Z. Porat, A. Rudich, J. J. Schauer, and Y. Rudich. 2016. Repeated Exposures to Roadside Particulate Matter Extracts Suppresses Pulmonary Defense Mechanisms, Resulting in Lipid and Protein Oxidative Damage. *Environmental Pollution*. 210, 227-237.
- 13) R. J. Sheesley, M. Mieritz, J. DeMinter, B. Shelton, and J. J. Schauer. 2015. Development of an In-Situ Derivatization Technique for Rapid Analysis of Levoglucosan and Polar Compounds in Atmospheric Organic Aerosol. *Atmospheric Environment*. 123, 251-255.
- 14) J. J. Schauer. 2015. Design Criteria for Future Fuels and Related Power Systems Addressing the Impacts of Non-CO<sub>2</sub> Pollutants on Human Health and Climate Change. *Annual Reviews in Chemical and Biochemical Engineering*. 6, 101-120.
- 15) M. A. Robinson, Z. G. Liu, M. R. Olson, and J. J. Schauer. 2015. The Effects of Emission Control Strategies on Black and Brown Carbon Emissions from a Modern Heavy Duty Diesel Engine. *Journal of the Air and Waste Management Association*. 65, 759-766.
- 16) S. H. Hamad, J. Heo, J. J. Schauer, and A. K. H. Kadhim. 2015. Seasonal Trends in the Composition and Sources of Fine Particle Carbonaceous Aerosol in Baghdad, Iraq. *Atmospheric Research*. 156, 80-90.
- 17) S. E. Sarnat, A. Winquist, J. J. Schauer, J. R. Turner, and J. A. Sarnat. 2015. Fine Particulate Matter Components and Emergency Department Visits for Respiratory and Cardiovascular Diseases in St. Louis. *Environmental Health Perspectives*. 5, 437-444.
- 18) A. M. Villalobos, F. Barraza, H. Jorquera, and J. J. Schauer. 2015. Chemical Speciation and Source Apportionment of Fine Particulate Matter in Santiago, Chile, During High Pollution Seasons. *Science of the Total Environment*. 512, 133-142.
- 19) J. Heo, B. de Foy, M. R. Olson, P. Pakbin, C. Sioutas, and J. J. Schauer. 2015. Impact of Regional Transport on the Anthropogenic and Biogenic Secondary Organic Aerosols in the Los Angeles Basin. *Atmospheric Environment*. 103, 171-179.
- 20) M. H. Bergin, S. N. Tripathi, J. Jai Devi, T. Gupta, M. McKenzie, K. S. Rana, M. M. Shafer, and J. J. Schauer. 2015. Source Attribution of the Discoloration of the Taj Mahal due to Aerosol Deposition. *Environmental Science and Technology*. 49, 808-812.
- 21) J. Baumgartner, Y. X. Zhang, J. J. Schauer, W. Huang, Y. Wang, and M. Ezzati. 2014. Highway Proximity and Black Carbon from Cookstoves as a Risk Factor for Higher Blood Pressure in Rural China. *Proceedings of the National Academy of Sciences*. 111, 13229-13234.
- 22) J. E. McGinnis, J. Heo, M. R. Olson, A. P. Rutter, and J. J. Schauer. 2014. Understanding the Sources and Composition of the Incremental Excess of Fine Particles across Multiple Sampling Locations in One Air Shed. *Journal of Environmental Science*. 26, 818-826.
- 23) B. de Foy, J. Heo and J. J. Schauer. 2014. Sources of Atmospheric Reactive Mercury: An Inverse Modeling Analysis. *Atmospheric Environment*. 85, 73-82.
- 24) S. Guo, M. Hu, Q. Guo, X. Zhang, J. J. Schauer, and R. Zhang. 2013. Quantitative Evaluation of Emission Control on Primary and Secondary Organic Aerosol Sources during Beijing 2008 Olympics. *Atmospheric Chemistry and Physics*. 13, 8303-8314.
- 25) R. J. Delfino, N. Staimer, T. Tjoa, D. L. Gillen, J. J. Schauer, and M. M. Shafer. 2013. Airway Inflammation and Oxidative Potential of Air Pollutant Particles in a Pediatric Asthma Panel. *Journal of Exposure Science and Environmental Epidemiology*. 23, 466-473.