

Glenn C. Morrison

Associate Professor, Civil, Architectural and Environmental Engineering
221 Butler-Carleton Hall
Missouri University of Science and Technology
Rolla, MO 65409
(573) 341-7192; gcm@mst.edu

EDUCATION

Ph.D., Department of Civil and Environmental Engineering (Environmental Engineering).
University of California, Berkeley. Dissertation title: Ozone-surface interactions:
Investigations of mechanisms, kinetics, mass transport, and implications for indoor air
quality. Advisor: William Nazaroff. **1999**

M.S., Department of Civil and Environmental Engineering (Environmental Engineering).
University of California, Berkeley. **1995**

B.S., School of Applied Mechanics and Engineering Sciences (Chemical Engineering). University
of California, San Diego. **1988**

EXPERIENCE

Associate Professor of Civil, Architectural and Environmental Engineering; Missouri University of
Science and Technology, Rolla, MO. **8/2001-present** (Assistant Professor **8/2001-7/2007**)
Applied research and instruction in the area of improving the indoor environment;
formation, transport, transformation, and fate of air pollutants; pollutant interactions at
interfaces; measurement and control of air pollutants; exposure assessment.

Post-Doctoral Research Assistant; National Oceanic and Atmospheric Administration (NOAA),
Aeronomy Laboratory. Group leaders: Carl Howard and Akkihebbal Ravishankara. **1/2000-6/2001**
Atmospheric chemical kinetics; development of real-time, airborne, organic compound
quantification using chemical ionization mass spectrometry

Adjunct Assistant Professor of Mechanical Engineering; University of Colorado, Boulder. **1/2001-
6/2001**

Graduate Student Research Assistant; Lawrence Berkeley National Laboratory, Indoor
Environment Program; University of California, Berkeley. **1994-1999**

Teaching Assistant; University of California, Berkeley. **1994, 1998**

Engineering Fellow; Catalytica Inc. **1988-1994**

PUBLICATIONS AND PRESENTATIONS

Refereed journal articles in press or published (*corresponding author)

D Kunkel, E Gall, J Siegel, A Novoselac, GC Morrison, RL Corsi*. Passive reduction of human
exposure to indoor ozone. *Building and Environment*. **2009**. In press.

D Rim, A Novoselec, GC Morrison*. The influence of chemical interactions at the human surface on breathing zone levels of reactants and products. *Indoor Air*. **2009**. In press.

JR Wells*, GC Morrison, BK Coleman. Kinetics and reaction products of ozone and surface-bound squalene. *Journal of ASTM International*. **2008** 5(7) ID JAI101629.

GC Morrison*. Interfacial chemistry in indoor environments. Feature Article, *Environmental Science & Technology*. **2008** 42:3495-3499.

M Ongwandee, GC Morrison*. The influence of ammonia and carbon dioxide on the sorption of a basic organic pollutant to latex-painted gypsum board and carpet. *Environmental Science & Technology*. **2008** 42(15):5415-5420.

L Pandrangi, GC Morrison*. Ozone interactions with human hair: ozone uptake rates and product formation. *Atmospheric Environment*. **2008** 42: 5079-5089
<http://dx.doi.org/10.1016/j.atmosenv.2008.02.009>. (Excerpted in Popular Science, New Scientist, Discover Magazine, and numerous science oriented internet sites)

M Ongwandee, GC Morrison*, X Guo, C Chusuei*. Adsorption of trimethylamine on zirconium silicate and polyethylene powder surfaces. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*. **2007** 310: 62-67.

S Regmi, M Ongwandee, R Surampalli, M Fitch, GC Morrison*. Effectiveness of porous covers for control of ammonia, reduced sulfur compounds, total hydrocarbons, selected volatile organic compounds, and odor from hog manure storage lagoons. *Journal of the Air and Waste Management Association*. **2007** 57(6):761-768.

GC Morrison*, JC Little, Y Xu, M Rao, D Enke. Gas-phase exposure history derived from material-phase concentration profiles. *Atmospheric Environment*. **2007** 41(15): 3276-3286.

RL Corsi*, J Siegel, A Karamalegos, H Simon, GC Morrison,. Personal reactive clouds: introducing the concept of near head chemistry. *Atmospheric Environment*. **2007** 41(15): 3161-3165.

H Wang, GC Morrison*. Ozone initiated secondary emission rates of aldehydes from indoor surfaces in four homes. *Environmental Science and Technology*. **2006** 40: 5263-5268.

GC Morrison*, P Zhao, L Kasthuri. The spatial distribution of pollutant transport to indoor surfaces. *Atmospheric Environment*. **2006** 40(18): 3389-3395.

GC Morrison*, DJ Wiseman. Temporal considerations in the measurement of indoor mass-transfer coefficients. *Atmospheric Environment*. **2006** 40(20): 3677-3685.

M Ongwandee, SS Bettinger, GC Morrison*. The influence of ammonia and carbon dioxide on the sorption of a basic organic pollutant to a mineral surface. *Indoor Air*. **2005** 15: 408-419.

T Custer, V Bierbaum, S Cato, CJ Howard, GC Morrison*. Gas-phase kinetics and mechanisms of the reactions of protonated hydrazine with carbonyl compounds. *Journal of the American Chemical Society*. **2004** 126(9): 2744-2754.

GC Morrison*, P Zhao, DJ Wiseman, M Ongwandee, H Chang, J Portman, S Regmi. Rapid measurement of indoor mass-transfer coefficients. *Atmospheric Environment*. **2003** 37: 5611-5619.

GC Morrison*, WW Nazaroff. The rate of ozone uptake on carpet: Mathematical modeling. *Atmospheric Environment*. **2002** 36: 1749-1756.

GC Morrison*, WW Nazaroff. Ozone interactions with carpet: Secondary emissions of aldehydes. *Environmental Science and Technology*. **2002** 36(10): 2185-2192. (Excerpted in *Science News*, *Environmental Health Perspectives*, *Spectroscopynow.com*, and *Shape*)

GC Morrison*, CJ Howard. Selective Detection of Gas-Phase Aldehydes And Ketones Using Protonated Hydrazine. *International Journal of Mass Spectrometry*. **2001** 210/211: 503-509.

GC Morrison, WW Nazaroff*. The rate of ozone uptake on carpets: experimental studies. *Environmental Science & Technology*. **2000** 34(23): 4963-4968.

GC Morrison, WW Nazaroff*, JA Cano-Ruiz, AT Hodgson, MP Modera. Indoor air quality impacts of ventilation ducts: ozone removal and emissions of volatile organic compounds. *Journal of the Air and Waste Management Association*. **1998** 48(10): 941-952.

LC Marr, GC Morrison, WW Nazaroff, RA Harley*. Reducing the risk of death due to vehicle-related carbon monoxide poisoning. *Journal of the Air and Waste Management Association*. **1998** 48(10): 899-906.

Referred journal articles in review (*corresponding author)

H Wang, GC Morrison. Ozone-surface reactions in 5 homes: surface reaction probabilities, product yields and trends. In review, *Indoor Air*. **2009**

Book chapters

GC Morrison. Indoor Organic Chemistry in Indoor Environments-Organic Pollutants. Salthammer and Uhde, eds. Wiley-VCH, **2009**.

GC Morrison. Indoor Chemistry and Exposure in Human Exposure to Pollutants via Dermal Absorption and Inhalation. Lazaridis and Colbeck, eds. *Invited and submitted*. **Oct 2006**

Refereed conference papers

S Shu, GC Morrison. Surface reaction rate of ozone and alpha-terpineol on polyvinylchloride and glass. *Healthy Buildings 2009*. Syracuse, NY. **2009**

GC Morrison, R Shaughnessy. Statistical approach to establishing ozone emission rates for consumer appliances. *Healthy Buildings 2009*. Syracuse, NY. **2009**

RL Corsi, GC Morrison. Tradeoffs between energy conservation and adverse outcomes of indoor chemistry in residential buildings. *Healthy Buildings 2009*. Syracuse, NY. **2009**

MS Waring, JA Siegel, GC Morrison, RL Corsi. Dynamics of indoor particle formation from ozone/terpene reactions: The role of surfaces. AAAR, Orlando, FL. **2008**.

D Kunkel, GC Morrison, A Novoselac, J Siegel, R Corsi. Passive control of ozone in residences using reactive panels. *2008 Air and Waste Management Association Annual Conference and Exposition*. Portland, OR. **2008**.

R Luna, C Morris, GC Morrison. Introduction of GIS into civil engineering curricula. *ASEE annual conference*. Pittsburgh, PA **2008**

JR Wells, B Coleman, GC Morrison. Impact of skin oil on the aircraft cabin environment. *Symposium on Airliner Cabin Environment: Recent Progress in Characterization and Improvement*, ASTM D22. Anaheim, California. **2008**.

H Wang, GC Morrison. Secondary emissions of aldehydes from consumer products in the presence of ozone. *Indoor Air 2008*, Copenhagen, Denmark. **2008**. Paper ID 615.

M Springs, RJ Wells, GC Morrison. Reaction probability between terpenes and ozone on model indoor surfaces. *Indoor Air 2008*, Copenhagen, Denmark. **2008**. Paper ID 601.

MS Waring, JA Siegel, GC Morrison, RL Corsi. Dynamics of indoor particle formation from ozone/terpene reactions: The role of surfaces. *Indoor Air 2008*, Copenhagen, Denmark. **2008**.

H Wang, GC Morrison*. Ozone-initiated secondary emission rates of aldehydes from indoor surfaces in field homes. *Air and Waste Management Association Annual Conference and Exposition*. Pittsburgh, PA. **2007**.

M Springs, GC Morrison*. Chemical kinetics of a monoterpene with ozone on a model indoor surface. *Air and Waste Management Association Annual Conference and Exposition*. Pittsburgh, PA. **2007**.

L Pandrangi, GC Morrison*. Ozone interactions with human hair: ozone uptake rates and product formation. *Air and Waste Management Association Annual Conference and Exposition*. Pittsburgh, PA. Paper #48, **2007**.

GC Morrison*, JC Little, Y Xu, M Rao, D Enke. Gas-phase exposure history derived from material-phase concentration profiles. *International Society for Exposure Analysis annual conference, ISEA2006*, Paris, France, **2006**. Also: *Epidemiology*, 17 (6): S360, Supp S. **2006**.

H Wang, GC Morrison*. Ozone initiated secondary emission rates of aldehydes from indoor surfaces in four homes. *AWMA/EPA specialty conference Indoor Environment Quality - Problems, Research, and Solutions*, **2006**.

GC Morrison*, RL Corsi, H Destailats, JC Little, WW Nazaroff, and JR Wells. Indoor chemistry and the lifecycle of a building: Materials, operation and occupant activities. *Healthy Buildings 2006, Lisbon, Portugal*. II, 237-241.

M Ongwandee, GC Morrison*, CC Chusuei. Characterizing the chemical nature of a sorbed amine on indoor surfaces using ATR-FTIR. *Healthy Buildings 2006, Lisbon, Portugal*. IV, 55-58.

M Ongwandee, GC Morrison*. The influence of ammonia and carbon dioxide on sorption of basic pollutants on carpet and paint. *Healthy Buildings 2006, Lisbon, Portugal*. IV, 69-73.

A Srirama, GC Morrison*. Geometric design of a mass transfer sensor for evaluating pollutant transport in indoor air. *Indoor Air 2005, Beijing, China*. III, 2877.

GC Morrison*, JC Little, D Grow. Estimation of historic indoor exposures from pollutant distribution in indoor materials. *Indoor Air 2005, Beijing, China*. III, 2833.

M Ongwandee, SS Bettinger, GC Morrison*. Adsorption of basic compounds on indoor surfaces: influence of pH, CO₂ and NH₃. *Indoor Air 2005, Beijing, China*. II(1), 1942.

A Karamalegos, H Simon, P Zhao, G Morrison, J Siegel, and RL Corsi*. Personal reactive clouds: Introducing the concept of near-head chemistry. *Indoor Air 2005, Beijing, China*, II(2), 2356.

H Wang, GC Morrison*. Field measurements of ozone-induced secondary emission rates of aldehydes from indoor surfaces. Paper #1232 *Air and Waste Management Association 2005, Minneapolis, MN*.

GC Morrison*, S Regmi, Y Liu, M Fitch, R Surampali. Odor control for anaerobic swine lagoons using lagoon covers. Paper #1228 *Air and Waste Management Association 2005, Minneapolis, MN*.

M Fitch*, S Regmi, Y Liu, R Surampali, GC Morrison. Odor control technologies for swine barns. *Air and Waste Management Association 2005, Minneapolis, MN.*

A Srirama, GC Morrison*. Geometric design of a mass transfer sensor for measuring pollutant transport in indoor air. *Proceedings of ACE2004, Air and Waste Management Association 2004 Annual Conference, Indianapolis, IN.* pap 217.

GC Morrison*, P Zhao, DJ Wiseman. The influence of temperature, humidity and changing conditions on the measurement of mass transfer coefficients in indoor air. *Proceedings of ACE2004, Air and Waste Management Association 2004 Annual Conference, Indianapolis, IN.* pap 215.

DJ Wiseman, P Zhao, GC Morrison*. Microbalance Measurements of Indoor Mass-Transfer Coefficients. *Proceedings of Engineering Solutions to Indoor Air Quality Problems, AWMA/EPA Joint conference 2003, Research Triangle Park, NC.* ps1.

P Zhao, DJ Wiseman, GC Morrison*. Mass transfer measurements of ozone using coated filters *Proceedings of Engineering Solutions to Indoor Air Quality, AWMA/EPA Joint conference 2003, Research Triangle Park, NC.* s4A.

GC Morrison*, M Ongwandee, H Chang, J Portman. Rapid Measurements Of Indoor Mass-Transfer Coefficients. *Indoor Air 2002, Monterey, CA.* 3:524-529.

GC Morrison* and CJ Howard. Examination of indoor chemistry using chemical ionization mass spectrometry. *Proceedings of the Air and Waste Management Association's 94th Annual Conference and Exhibition, Orlando, FL, 2001.* pap 165.

GC Morrison, WW Nazaroff*. Emissions of odorous oxidized compounds from carpet after ozone exposure. *Proceedings of the 8th International Conference on Indoor Air Quality and Climate, Edinburgh, Scotland.* 1999 (4): 664-669.

GC Morrison, WW Nazaroff*. Ozone uptake on carpets: implications for indoor air quality. *Proceedings of the Air and Waste Management Association Annual Meeting, St Louis, MO.* 1999 pap 51.

GC Morrison and WW Nazaroff*. Ozone removal in ventilation ducts. *Engineering Solutions to Indoor Air Quality Problems: Proceedings of the Air & Waste Management Association/ Environmental Protection Agency Symposium.* 1997 VIP-75: 514-521.

GC Morrison and AT Hodgson*. Evaluation of ventilation system materials as sources of volatile organic compounds in buildings. *Proceedings of the 7th International Conference on Indoor Air Quality and Climate, Nagoya, Japan.* 1996 (3):585-590.

WW Nazaroff*, RA Harley, GC Morrison. Preventing accidental deaths caused by carbon monoxide emissions from motor vehicles. *Proceedings of the 7th International Conference on Indoor Air Quality and Climate, Nagoya, Japan.* 1996 (2):357-362.

Refereed outreach publications

GC Morrison, RL Corsi. Smog and lemons: Discovering indoor air chemistry. *EM: Environmental Manager.* May 2003 14-21.

Invited presentations

GC Morrison, RL Corsi. Ozone removal for passively and actively ventilated buildings. *National Institute of Standards and Technology (NIST). Bethesda, MD.* August 18, 2009

GC Morrison. Ozone reactions with human hair and skin: implications for human exposure to ozone and its reaction products. *Environmental and Occupational Health Sciences Institute, Rutgers NJ. 2009.*

GC Morrison and RL Corsi. Passive reactive panels for control of indoor ozone and its reaction products. *Indoor Environment Division 2008 Research Symposium, E.O. Lawrence Berkeley National Laboratory, Berkeley, CA. April 25, 2008.*

GC Morrison. Using chemical activity in materials to reconstruct pollution histories and improve exposure analysis. *University of Texas, CAEE graduate lecture series, Austin, TX. 2008.*

GC Morrison. Indoor interfacial chemistry: laying the groundwork for controlling personal exposure to smog. *Rice University, Civil and Environmental Engineering graduate lecture series, Houston, TX. 2007.*

GC Morrison. Interfacial chemistry in indoor environments. *National Science Foundation, Arlington, VA. 2007.*

GC Morrison. Impact of surfaces on ozone-terpene conversion rates in buildings. *E.O. Lawrence Berkeley National Laboratory, Berkeley, CA. 2007.*

JG Burken and GC Morrison. Hog farm odor control technologies. *Odor task force workgroup meeting, Jefferson City, MO. 2007*

GC Morrison. Unanticipated outcomes: chemical transformations and the future of IEQ. *Healthy Indoor Environments Conference, Kansas City, Kansas. 2006.*

JG Burken and GC Morrison. Hog farm odor control technologies. *Odor task force workgroup meeting, Jefferson City, MO. 2007*

S Burian, GC Morrison, A Morse. Making it work at your institution: a recipe for success. *EXCEED seminar, Fayetteville, AR. 2006.*

GC Morrison. Indoor air pollution: Physics, chemistry and engineering. *University of South Carolina, graduate lecture series, Columbia, SC. 2005.*

GC Morrison. Indoor air pollution: Physics, chemistry and the long road to solutions. *University of Georgia, Savannah River Ecology Laboratory, Aiken, SC. 2005.*

GC Morrison. Surfaces and their influence on indoor air pollution. *University of Missouri-Rolla, graduate lecture series in Chemical and Biological Engineering, Rolla, MO. 2005.*

GC Morrison. Pre-tenure writer's collective: increased scholarship and career development. *UMR New Faculty Teaching Scholars, Rolla, MO. 2005.*

GC Morrison. Indoor air pollution: Physics, chemistry and engineering. *University of Missouri-Columbia, graduate lecture series, Columbia, MO. 2004.*

GC Morrison, et al. Making the most of teaching resources in the pre-tenure years. *Invited panel presentation for UM New Faculty Teaching Scholars course design workshop, Lake of the Ozarks, MO. 2004.*

GC Morrison, B Fahrenholtz, GK Venayagamoorthy. Tips on Being a Successful Teacher-Scholar in an Evolving University. *UMR New Faculty Teaching Scholars, Rolla, MO. 2004.*

GC Morrison. Indoor air pollution: Physics, chemistry and engineering. *Washington University graduate lecture series, St. Louis, MO. 2004.*

GC Morrison. Indoor air pollution: the (long) road to solutions. *Air and Waste Management Association (AWMA) St. Louis Chapter meeting, St. Louis, MO. 2003.*

GC Morrison. Indoor air, pollutant transport and personal exposure. *Virginia Technological University graduate lecture series, Blacksburg, VA. 2003.*

GC Morrison. Implications of air chemistry in ducts. *ASHRAE 2003 conference in Kansas City, MO. 2003.*

J Groccia, A Dorestani, J Fleming, M Qureshi, G Morrison. Preparing for the Academic Job Search and Hiring Process: Conversations with Recent Hires *University of Missouri, Teaching Renewal Conference. Columbia, MO. 2003.*

GC Morrison, *Fourth Friday KUMR radio Interview with Louise Morgan. 2002.*

GC Morrison. Real time measurement of carbonyl compounds in the atmosphere. *University of Denver graduate lecture series, Denver, CO. 2001.*

GC Morrison. Carpet emissions and indoor air quality. *University of Colorado-Boulder graduate lecture series, Boulder, CO. 2000.*

GC Morrison. Secondary formation of carbonyl compounds at indoor surfaces. *National Oceanic and Atmospheric Administration-Aeronomy Lab, Boulder, CO. 2000.*

Presentations, posters, and other papers

J McKinney, GC Morrison. Methods for determining historical exposures from chemical analysis of building materials. *Missouri S&T undergraduate research conference. 2009 (2nd place prize)*

J McKinney, GC Morrison. Methods for determining historical exposures from chemical analysis of building materials. *Missouri S&T undergraduate research conference. 2008 (2nd place prize)*

A Balakrishnan, GC Morrison. Design of a wind tunnel for calibration and reproducibility studies of an indoor mass-transfer sensor. *Presented at the Mid America Environmental Engineering Conference, Washington University, St. Louis, MO, 2005.*

R Corsi, J Siegel, P Zhao, GC Morrison. Near-head chemistry. *International Society for Exposure Analysis, 2005.*

M Ongwande, GC Morrison. Adsorption of acidic and basic compounds on indoor surfaces. *Presented at the Mid America Environmental Engineering Conference, Southern Illinois University, Edwardsville, IL, 2004.*

S Regmi, Y Liu, M Fitch, R Surampalli, GC Morrison. The shiny raft: A device for simultaneous measurement of manure lagoon odor control technologies. *Presented at the Frontiers in Assessment and Measurement in the Environment, Association of Environmental Engineering and Science Professors, Minneapolis, MN, 2003.*

P Zhao, D Wiseman, GC Morrison. Rapid Measurements of Mass Transfer Coefficients using a microbalance and coated sensors. *Presented at the Mid America Environmental Engineering Conference, University of Missouri, Columbia, MO, 2003.*

TG Custer, S Kato, R Fall, GC Morrison, CJ Howard, VM Bierbaum. Chemical-ionization Monitoring of Plant VOCs. *Presented at the 2001 American Society of Mass Spectrometry conference. 2001.*

GC Morrison. Ozone-surface interactions: Investigations of mechanisms, kinetics, mass transport, and implications for indoor air quality. Report # LBNL-45044 E.O. Lawrence Berkeley National Laboratory. **1999**.

A Gadgil and GC Morrison. Production of Third Party Verification Document for the AquaGenesis Desalinization Process. Report # E.O. Lawrence Berkeley National Laboratory. **1998**.

GC Morrison. Ozone interactions with carpeting. *Air & Waste Management Association Annual Meeting Student Paper*. **1998**.

A Gadgil, et. al. Saving energy and lives with UV disinfection of drinking water in the developing world. American Council for an Energy-Efficient Economy 1996 Summer Study. **1996**.

MA Richard, OW Bynum, DR Sheridan, PH Mark, GC Morrison, LT Brewer. Sensor technology for advanced combustion control and monitoring instrumentation. Abstracts of papers of the American Chemical Society 206: 64-FUEL Part 1, AUG 22 **1993**.

GRANTS AWARDED

PI: "Development and Implementation of a New Protocol for Testing the Air Quality Implications of Green Building Materials." US Green Building Council (100% effort over 1.5 yr), \$149,769.1/09-7/10.

PI: "EPA GRO Fellowship for undergraduate Jon McKinney. EPA. (100% effort over 1 yr), \$25,000. 9/08-6/09.

Co-PI: "Indoor Air Quality Simulator with Lab Interface and Interactive Consumer Interface" Computer Research Association's Committee on the Status of Women in Computing Research (with Daniel Tauritz of CompSci). (50% effort over 1 yr), \$22,500, Direct payment from CRA of student stipends and supplies/travel reimbursement. 7/07-7/08.

Co-PI: "Introduction of GIS into Civil Engineering Curricula". NSF; \$499,794 (10% effort over 2.5 years). Ronaldo Luna, PI. 8/07-1/10.

PI: "Workshop on Interfacial Chemistry in Indoor Environments". NSF; \$23,762. California Air Resources Board; \$4,999 (100% effort over 5 months). 4/07 – 8/07.

PI: "Ozone chemistry on indoor surfaces". NIOSH; \$70,000 (100% effort over 2 years). 7/06-7/08.

Co-PI: "Learning System to Integrate GIS into Civil Engineering Curricula". National Science Foundation (NSF); \$74,935 (3% effort over 1 year). Ronaldo Luna, PI. 1/05-1/06.

PI: "Indoor Surface Adsorption of Acids and Bases". University of Missouri Research Board. \$26,735 (100% effort over 1 year). 1/04-1/05.

PI: "CAREER: Secondary Emissions of Chemical Irritants into Indoor Air". National Science Foundation (NSF); \$400,000 (100% effort over 5 years). 7/03-7/08.

Co-PI: "Environmental Technologies for Concentrated Animal Feed Operations". Environmental Protection Agency (EPA); \$2,000,000 (14% effort over 3 years). Craig Adams, PI. 7/01-7/04.

GRADUATE STUDENTS ADVISED

PhD

Shi Shu (Segovia). PhD Dissertation tentative title, "The influence of CO₂ and NH₃ on ozone chemistry on indoor surfaces". (PhD- expected completion **2010**)

Meredith Springs. PhD Dissertation tentative title, "Kinetics of terpene-ozone reactions on indoor surfaces." (PhD- expected completion **2009**)

Hong Wang. PhD Dissertation title, "Field and laboratory investigation of ozone-indoor surface reactions: Ozone uptake rates, secondary emissions inventory and implications for indoor air quality" **2007**

Maneerat Ongwandee. PhD Dissertation title, "Adsorption of basic compounds on indoor surfaces: influence of pH, CO₂ and NH₃" **2006**

MS

Seth Lamble, MS Thesis tentative title, "Methods for evaluating the ability of green building materials to remove ozone and reduce occupant exposure to smog. " MS-Expected completion **2009**.

Lakshmi Pandrangi. MS Thesis title, "Ozone interactions with human hair: ozone uptake and product formation." **2007**

Anjana Srirama. MS Thesis title, "Geometric design of a mass-transfer sensor using computational fluid dynamics." **2005**

Shekhar Regmi. MS Thesis title, "Odor Evaluation and Control at an Anaerobic Swine Lagoon." **2004**

Deborah-Jean Wiseman. MS Thesis title, "Rapid Measurement of Indoor Mass Transfer Coefficients." **2003**

Ping Zhao. MS Thesis title, "Indoor Mass Transfer Coefficient Measurements of Ozone Using Nitrite Coated Filters." **2003**

UNDERGRADUATE RESEARCH STUDENTS ADVISED

Julie Portman (ChemEng), Hong Chang, Katie Boring, Samuel McEwan, Sarah Bettinger, Anthony Chiles, Erin Duggan, Benjamin Johnson, William Granich, Amy Cervantes, Ryan Stringer, Jonathan McKinney, Josh Eads (CompSci), Elizabeth Babb, Amber Loftis (ChemEng), Ashley Lang (CompSci), Janet Guntley, Sarah Shell, Connie Rozycki

UNIVERSITY LEVEL COURSES TAUGHT (# OF TIMES THROUGH SPRING 2009)

Introduction to Environmental Engineering-undergrad (9)

Introduction to Air Pollution-grad/undergrad (2)

Air Pollution Control Engineering- grad/undergrad (3)

Indoor Air Pollution- grad/undergrad (3)

Physical and Chemical fundamentals in Environmental Engineering-grad (4)

PROFESSIONAL DEVELOPMENT

Promotion and Tenure Writer's Group (Chair F'02-F'06) **2002-2007**

EXCEED: Assistant mentor for the Excellence in Engineering Education (2 day teaching workshop at UMR). **2005**

EXCEED: Excellence in Engineering Education (6 day teaching workshop at West Point, NY). **2004**

University of Missouri New Faculty Teaching Scholars (year-long teaching program/workshop). **2002-2003**

University of Missouri-Rolla New Faculty Forum. **2001-2002**

AWARDS

Joseph H. Senne, Jr.- Academy of Civil Engineers Faculty Achievement Award. **2009**

Cockrell Family Regents Chair in Engineering, University of Texas-Austin. **2007-2008**

Outstanding Teaching Award, University of Missouri. **2007**

School of Engineering Teaching Innovation Award. University of Missouri. **2005**

American Society of Civil Engineering EXCEED Fellowship, **2004**

National Science Foundation Career Award, **2003**

First prize in the Air and Waste Management Association Student Poster Competition, **1998**

Science to Achieve Results (STAR) Fellowship for Graduate Environmental Study; United States Environmental Protection Agency, **1996**

National Laboratories Graduate Fellowship; Associated Western Universities, **1996**

Member of team that won Discover Magazine's 1996 Environmental Technology Award for "UV Waterworks" ultraviolet-light water disinfection system for developing nations. **1996**

UNIVERSITY SERVICE

University level

CArE representative, Information Technology Campus Committee (F'03-S'06),

Pre-tenure writers group (chair, F'02-F'06; member F'06- present)

School of Engineering level

CArE representative, Freshman Engineering Advising Program (F'03-Sp'05)

CArE Department level

Computer committee (F'03-present; chair through S'06)

Civil engineering curriculum committee (F'01-W'02)

Environmental engineering curriculum committee (F'01-present)

Architectural engineering curriculum committee (F'03-present; voluntary member)

Phonathon (each year)

Undergraduate recruiting (Springfield, 2000; Rolla High School 2003, 2004, 2005; Rolla night, St. Louis Engineers Club 2003, 2004)

CArE dept. Open House organizer and participant

GTA workshop evaluator (frequently)

BE10 presentations.

PROFESSIONAL SERVICE AND AFFILIATIONS

International

Technical Chair and Organizer of *Indoor Air 2011, Austin, TX*. International Society of Indoor Air Quality and Climate (ISIAQ)

International Scientific Committee: ISIAQ; Chair/co-chair and peer reviewer for conference sessions *Indoor Air 2005, Beijing, China*.

International Scientific Committee: ISIAQ; Chair/co-chair and peer reviewer for conference sessions *Indoor Air 2002, Monterey, CA*.

National

Organizer, *Workshop on Interfacial Chemistry in Indoor Environments*. Sponsored by NSF and Cal ARB. July 2007.

Project Advisory Committee for California Energy Commission study, "Implication of Natural Gas Interchangeability for California Gas Customers". 2006-2007.

Technical committee and session chair: AWMA-EPA specialty conference, "Indoor Environmental Quality: Problems, Research and Solutions". July 2006

Technical committee and session organizer: Air & Waste Management Association (AWMA): Officer of the AB-7 Indoor Air Committee (Chair 2006-present; vice-chair 2003-2006; secretary 2001-2003); Chair and Co-chair for conference sessions 2000-present.

Assistant mentor for EXCEED: Excellence in Engineering Education: 6 day teaching workshop at Fayetteville, AK, 2006.

Assistant mentor for EXCEED: Excellence in Engineering Education: 2 day teaching workshop at UMR, Rolla, MO 2004.

Invited panelist for *Workshop on Indoor Air Chemistry and Health*, National Institutes for Industrial and Occupational Safety and Health (NIOSH). (2004)

National Science Foundation Biosensors Panel Review (2002 and 2006)

Invited panelist for *Workshop on Combining Environmental Fate and Air Quality Modeling*. Reactivity Research Working Group (RRWG). EPA and Chemical Manufacturers Association (2000).

Professional affiliations

American Chemical Society (ACS)

Association of Environmental Engineering and Science Professors (AEESP)

American Society of Civil Engineers (ASCE)

Air and Waste Management Association (AWMA)

International Society of Indoor Air Quality and Climate (ISIAQ)

Peer reviewer for archival journals

ASHRAE Journal, Atmospheric Environment, Building and Environment, Environmental Science and Technology, Indoor Air, International Journal of Heat and Mass Transfer, Journal of the Air and Waste Management Association, Microelectronics Reliability

CONSULTING

Scientific review of policy and test procedures for ozone generating air purifiers used in Canadian homes for Health Canada.

Policy document review for the federal Consumer Product Safety Commission (CPSC).

Engineering evaluation of in-situ process gas analyzers, engineering analysis of proposed water purification systems.

Scientific consultant for litigation related to indoor air quality. (< 60 hrs/yr)

PATENTS

DR Sheridan and GC Morrison; U.S. Patent 5,627,328. Gas sampling system and method. **1997**

RA Dalla Betta, JC Schlatter, GC Morrison, J Nikkel; U.S. Patent 5,040,551. Optimizing the oxidation of carbon monoxide. **1991**