

CURRICULUM VITAE

Kimberly Ann Gray

(12/18)

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EDUCATION

- 1988 Ph.D., Department of Geography and Environmental Engineering
The Johns Hopkins University, Baltimore, MD
Thesis Title: The Formation, Characterization, and Use of Inorganic Iron(III) Polymers for
Coagulation in Water Treatment
Advisor: Dr. Charles R. O'Melia
- 1983 M.S., Department of Civil Engineering
University of Miami, Coral Gables, FL
Advisor: Dr. Thomas D. Waite
- 1978 B.A., Biology, Minor Biochemistry
Northwestern University, Evanston, IL

PROFESSIONAL EXPERIENCE

- 2017 – present Kay Davis Professor
- 2015 – present Chair, Civil and Environmental Engineering, Northwestern University
- 2015 – present Searle Center on Law, Regulation and Economic Growth, Faculty Affiliate
- 2012-2013 Senior Science Fellow – Public Interest Scientist, Environmental Law and Policy Center,
Chicago, IL.
- 2009 – present Global and Ecological Health Engineering Program, co-Director with Matthew Glucksberg
- 2008-2010 Northwestern Institute of Sustainable Practices, Director.
- 2006-present Professor, Department of Civil and Environmental Engineering, Northwestern University
- 2003-2010 Director, Environmental Science, Engineering & Policy Program (WCAS); Coordinator of
Environmental Engineering and Science (MEAS), Northwestern
- 2002-present Member, Transportation Center, Northwestern University
- 1999-present Member, Institute of Policy Research Northwestern University
- 1998-2005 Associate-Director, Institute of Environmental Catalysis, Northwestern University
- 1997-present Member, Center for Catalysis and Surface Science, Northwestern University

1996-present	Courtesy Appointment in the Department of Chemical & Biological Engineering, Northwestern University
1995-2006	Associate Professor, Department of Civil and Environmental Engineering, Northwestern University
1989-1995	Assistant Professor, Department of Civil Engineering and Geological Sciences, University of Notre Dame (promoted to Associate Professor)
1987-1989	Research Engineer, Lyonnaise des Eaux, Laboratoire Central, Le Pecq, France.
1983-1987	Research Assistant, Department of Geography and Environmental Engineering, The Johns Hopkins University.
1984-1985	Instructor, Part-Time Engineering, The Johns Hopkins University.
1982-1983	Instructor and Research Assistant, Department of Civil Engineering, University of Miami.
1981-1982	Environmental Engineer, Carr Smith and Assoc., Coral Gables, FL.
1980-1981	Research Hydrologist, Everglades National Park, Homestead, FL.
1979-1980	Research Assistant, Smithsonian Institution Foreign Currency Program in India.

PROFESSIONAL MEMBERSHIPS

American Chemical Society
 American Society of Civil Engineers
 Association of Environmental Engineering and Science Professors

HONORS

2011 – Invitee, 9th Annual National Academies Keck *Futures Initiative* (NAKFI), *Ecosystem Services*

2009-2010, 2010-2011 Northwestern Faculty Honor Roll

2009 Distinguished Scientist, Trinity University, San Antonio, Texas

Aldo Leopold Leadership Fellow, 2008, Woods Institute for the Environment, Stanford University

Sigma Xi Distinguished Lecturer, 2008-2010

2007 McCormick Excellence Award in Research, Teaching, & Citizenship

Presidential Young Investigator, National Science Foundation, 1991-1996.

Graduate School Award for Best Dissertation in the College of Engineering; Dissertation Director of Roger J. Hilarides, 1994.

Second Place, Montgomery-Watson and Assoc. of Environmental Engineering Professors Master Thesis Award and Honorable Mention in AWWA Academic Achievement Award Competition, Thesis Advisor of David Widrig, 1993.

Stanley E. Blumberg Alumni Association Scholarship, The Johns Hopkins University, 1986-1987.

Hattie Strong Foundation Fellowship, 1986-1987.

American Chemical Society Graduate Student Award in Environmental Chemistry, 1986.

American Association of University Women Fellowship, Alternate, 1986.

American Water Works Association, Chesapeake Section, Student Paper Award, 1986.

PROFESSIONAL ACTIVITIES

Organized and chaired Resilience Workshop - Bounce Forward: Moving Communities from Crisis to Resilience, April 19 – 20, 2018, Evanston, IL.

Member, U.S. Environmental Protection Agency Board of Scientific Counselors (BOSC), 2017.

Chair, External Review of Civil & Environmental Engineering, Pennsylvania State University, Oct., 2017.

Member, NAS Committee to Review EPA's "Science to Achieve Results" Research Grants Program, 2016.

Preceptor, Master of Biotechnology Program, Department of Chemical and Biological Engineering, Northwestern University, 2014, 2015

Graduate Student Teaching Mentor, Mentored Discussions of Teaching, Center for the Integration of Teaching, Research and Learning at Northwestern, Fall, 2014.

Member, Science Advisory Committee, Center for Sustainable Urban Development (CEDEUS), Pontificia Universidad Catolica de Chile, Santiago, Chile, 2013 – present.

Participant, Research Roundtable on *Natural Preservation in Rapidly Changing Climate*, Searle Center for Legal and Regulatory Studies at Northwestern Law School, 4-5 October 2012.

Panel Moderator for Infrastructure, Policy and Regulatory Considerations at The Electrification of Transportation - A Look at the Road Ahead Workshop, NU Transportation Center, Allen Center, 18 April 2012.

2012 - Reach the Decision Makers Program, UCSF Program on Reproductive Health and the Environment

2011 – Consultant, Academic Affairs Division of the Texas Higher Education Coordinating Board, evaluation of the Environmental Engineering program at Texas A&M University at Kingsville

Member, Board of Directors, International Association for Urban Environment, 2009-present.

Member, Editorial Board, The International Journal of Sustainable Development & World Ecology, 2008-present.

Member, Panel Discussion on Energy: Chicago's Energy Needs in 2020, Major Donor Recognition Event with Ira Flatow for WBEZ, Chicago Public Radio, April 28, 2010.

Panel Member, *Environmental Racism: Poverty and Pollution in Minority Communities*, 2010 Martin Luther King Celebration, NU School of Law, January 12, 2010.

Science, Ethics, and Appropriate Uses of Technology: A U.S.-France-Iran Workshop, National Academy of Science, Fondation des Treilles, Tourtour, France, Nov. 7-12, 2009.

"Energy & Sustainability" symposium (Panel member with Thomas L. Friedman) as part of President Morton Schapiro's Inauguration, 9 October 2009.

Member, CBEN NSEC Site Visit Review Panel, Rice University, 29 July, 2009.

Member, Strategic Planning Panel for the Shedd Aquarium, Sustainable Place, Practices, People, Chicago Oct. 8, 2008.

Member, Steering Committee, International Institute of Nanotechnology, Northwestern University, 2008-present.

Panel Member, Sustainable Water and Land Management, Clean Technologies & Sustainability: Global Perspectives & Opportunities, Federal Reserve Bank of Chicago, Sept. 9, 2008.

Panel Moderator, Sustainable Manufacturing: Balancing Environmental Benefits with Economic Costs, 2007 Manufacturing Business Conference, Evanston, IL, May 12, 2007.

Invited Participant, Business, Engineering, & Sustainability: Collaborative Programs for Innovation, 2007 Planning Workshop, University of Maryland, College Park, MD, Feb. 16-17, 2007.

Panel Moderator, Next Generation Strategies for Creating Value through Sustainable Product Design and Manufacturing, 2006 Net Impact Conference, Oct. 28, 2006.

Panel Member, University of Chicago Review of Environmental Science Division, Argonne National Laboratory, Sept. 18-20, 2006.

International Association for Great Lakes Research, Session Organizer and Chair, Integrative Approaches to Ecosystem Modeling, May, 2005.

Canadian Foundation for Innovation, Review panel, October, 2003.

Board of Directors, Chicagoland Redevelopment Initiative (REDI), 2002-2006; Community Advisory Board, Great Lakes Redevelopment Initiative Fund, 2004-present.

American Chemical Society, Division of Environmental Chemistry, Symposium Organizer and co-Chair (with Bruce Logan), Analysis of Environmental Phenomena at Molecular Scales, August, 2001.

Association of Environmental Engineering Professors, Board of Directors, 1996-2000; Vice-President, 1997-98; President, 1998-1999, Past-President, 1999-2000.

National Research Council Water Science and Technology Board, Member of Committee on USGS Water Resources Research, 1996-1999.

National Science Foundation Review Panels: Environmental Engineering, 2010, 2011; Career Award, 1998, 2004, 2005, 2006; NSF Young Investigator Award, 1992; IGERT, 2004, 2005, 2007; Small Business Innovation Research Grant Proposals, 1990, 1994, 1996; BES 2000, 2001, 2002; Division of Undergraduate Education (UCD & ILI), July, 1993, January & July, 1994; Advisory Panel, Environmental Technology, 1995; Committee of Visitors (BES review), 2002.

Organized Workshop at the AEESP Research Needs Conference, "Gender, Diversity and Family Issues," Pennsylvania State University, July 31, 1999.

Organized 1998 Annual Meeting of the Center of Catalysis and Surface Science, "New Frontiers in Environmental Catalysis," Sept. 9, 1998.

Panel Member, NSF-AEEP Frontiers in Environmental Engineering Workshop, Monterey, California, Jan. 14-16, 1998.

Panel Member for "Photodetoxification and Purification of Water and Air" at the DOE Workshop on Research Opportunities in Photochemistry, Estes Park, Colorado, 5-8 February 1996.

Panel Member for NSF Workshop, "Application of Ionizing Radiation for Decontamination of Environmental Resources," Miami, FL, June 1-3, 1994.

Environmental Protection Agency and American Academy of Environmental Engineers WASTECH Task Group 1992-1994, coauthor of monograph, "Chemical Treatment: Innovative Waste Treatment Technologies".

Environmental Protection Agency, Member of Bioremediation Education Subcommittee, 1991-1993.

American Water Works Research Foundation, Project Advisory Committee for “Destruction of Toxic Organics Using Adsorption and Photocatalytic Regeneration with Sunlight or Low Intensity Artificial Lights,” 1991-1993.

American Water Works Association, Organic Contaminants Research Committee 1994-present, Coagulation Research Committee 1989-1991.

American Institute of Chemical Engineers, Session Chair and Organizer: Theory and Application of Radiation Processes for the Destruction of Hazardous Compounds, 1990, 1991, 1993; Chemical and Biological Treatment of Waste, 1992; Physical and Chemical Treatment to Enhance Bioremediation of Hazardous Waste, 1994; Photochemical and Radiolytic Treatment Processes, 1996.

Program Development Council and Superfund Subcommittee for Hazardous Materials Control Resources Institute 1994-1996; Session Chair, “Laboratory & Analytical Methods” at 1994 Superfund XV Conference and Exhibitor.

Midwest Environmental Chemistry Workshop, Conference Organizer, University of Notre Dame, October 17-18, 1993.

Fine Particle Society, Division of Aerosols, Health and Environment, Session Chair and Organizer, “Free Radical Processes for Contaminant Destruction in Heterogeneous Systems,” 1993.

American Chemical Society, Symposium Organizer, “Polysaccharide Chemistry in Environmental Processes,” April, 1992.

Reviewer: Chemistry of Materials, Journal of Catalysis, Applied Catalysis A & B, ACS Catalysis, Coordination Chemistry Reviews, Chemical Reviews, Environmental Science & Technology, Angewandte Chemie, Journal American Chemical Society, Journal of Physical Chemistry, Langmuir, Physical Chemistry Chemical Physics, Energy & Fuels, Nanoscale, Carbon, Catalysis Communication, Catalysis Letters, Transportation Research, Thin Solid Films, Journal of Material Science, Journal of Colloid and Interface Science, Colloids and Surfaces, Journal of Membrane Science, Journal of Applied Microbiology, Aquatic Ecology, Chemistry and Ecology, Journal of Applied and Analytical Pyrolysis, Science of the Total Environment, Water Research, Water Quality Journal of Canada, Water Environment Research, Environmental Toxicology and Chemistry, Journal AWWA, Biodegradation, ASCE Journal of Environmental Engineering, CRC Critical Reviews in Environmental Science and Technology, Chemosphere, Waste Management, Industrial & Engineering Chemistry Research, Research on Chemical Intermediates, Israel Journal of Chemistry, Journal of Solar Energy Engineering, Biotechnology Progress, Environmental Progress, Solar Energy, Journal of Advanced Oxidation Technology, Journal of Hazardous Materials, ACS Symposium Series, New York Sea Grant Program, National Research Council, USGS - Water Resources Center, Dept. of Energy BES, DOD – DEPSCoR, Journal of Molecular Catalysis, Journal of Solid State Chemistry, Sustainability.

COURSES TAUGHT

Undergraduate: Sustainability: The City CEE 368 (2013 – present)
 Sustainability: Issues and Action CEE 395 (2006-2011)
 Energy and the Environment: The Automobile, Envr Sci 203 (2005-2010)
 Community Based Design, CEE-398 – 1, 2 (1996 – present)
 Urban Neighborhoods: Issues and Action, Soc-376 (co-taught, W. Espland; Cross School Initiative, 2002)
 Environmental Engineering Analysis CE 261 (co-taught, B. Rittmann, J-F Gaillard)
 Introduction to Water Chemistry and Treatment (UND)
 Water and Wastewater Treatment Design (UND)
 Water Quality Management (UM)

Graduate: Sustainability Practicum, CEE 395 (co-listed with Law School, PPTY TORT 616 SEC 1
 Practicum: Sustainability Solutions & ISEN 440)

Sustainable Product Design and Development, DSGN 495 (2009, 2010)
Physicochemical Processes in Aquatic Systems, CE-444 (NU & UND)
Physical Principles in Environmental Systems CE-440 (co-taught, J-F. Gaillard)
Unit Operations in Environmental Systems CE-445
Environmental Analytical Chemistry CE-446 (co-taught, J-F. Gaillard)
Sustainable Manufacturing, IEMS-497-40 (2005, 2006, 2007, 2008 MMM)
Energy and the Environment IPLS -492 (2009)
Changing Views of Nature MALS- 403 (2006, 2012)
Cities and the Environment: Past, Present and Future, MALS-403 (2004)
The Environmental Legacy of Modern Industrialized Societies, MALS-403 (2001)
Aquatic Chemistry/Advanced Aquatic Chemistry (UND)
Water and Wastewater Treatment Design (JHU)
Water Supply and Drainage (JHU)

DOCTORAL STUDENTS ADVISED - CURRENT

Tom Schmitt (2016 – present) – PIRE, Effects of TiO₂ pigments on 20th Century Paintings

Yechan Won (2015 – present) - Characterization and testing of the polyelectrolyte complex membrane performance for environmental applications

DOCTORAL STUDENTS ADVISED – COMPLETED

Carolyn Wilke – (November, 2018) Outsized Effects: Mixtures of Photoactive Nanomaterials Systems and Unexpected Biological Stress Environmental Conditions.

Kevin Schwartzenberg (August 2015) – MnOx clusters supported on TiO₂: Synthesizing multifunctional photo- and thermal catalysts for solar fuel production.

Sarist Macksasitorn (August 2015): A Tale Of Two Ecosystems: Examining Biological Responses to Legacy Contamination and the Implications for Resource Use

Tiezheng Tong (June, 2015): The unintended ecological consequences and interactions of nanotitania in aquatic environments: From single- to multi-nanomaterial systems (134 p.).

Todd Eaton (June 2015, Dept. of Chemical & Biological Engineering): Development and application of synthesis-structure-function relationships in Ti-SiO₂ catalysts aided by site-specific titration tools (174 p.)

Daniel Finkelstein-Shapiro (2008-2013, Dept. of Chemistry): New Paradigms for Active Site Engineering in TiO₂ photocatalysts.

Katie Kalscheur (June, 2012): Characterizing the Effects of Organic Quality on the Structure and Function of Periphyton in Urbanized Streams.

Paul Desario (June, 2011): Cation Doped TiO₂ Thin Films Prepared by Reactive Sputtering: Synthesis, Characterization, and Applications for Environmental Catalysis.

Marshall Lindsey (December, 2010, Dept. of Chemical and Biological Engineering): Location, Vehicle Miles of Travel, and the Environment: A Chicago Case Study.

Shannon Ciston (June, 2009, Dept. of Chemical and Biological Engineering): Photo-active Ceramic Membranes for the Prevention of Biofouling: Synthesis, Characterization & Testing

Yuan Yao (Feb., 2009, Dept. of Mechanical Engineering; co-advised with Prof. Richard Lueptow): Synthesizing TiO₂-Carbon Nanotube Composite Materials for Photocatalysis.

Le Chen (September, 2008): "Synthesizing Mixed Phase Titania Nanocomposites by Reactive DC Magnetron Sputtering to Enhance Photoactivity and Photoresponse." (161 p.)

Carla Ng (May, 2008); Dept. of Chemical and Biological Engineering): "Integrative modeling of the cumulative effects of chemical and biological stresses on aquatic food web structure to predict contaminant transfer." (135 p.)

Jill Kostel (June, 2006): "Periphyton Community Structure in Lotic Systems: The Interactions of Metals, PCBs, and Environmental Variables." (451 p.)

Cari Ishida (September, 2005): "Strategies to Enhance Denitrification Rates in Restored Wetlands: Hydrology, Ecology, and Microbiology." (194 p.)

Mary Finster (May, 2005): "Phytoremediation of Lead in Urban Residential Soils: A Study of Application, Feasibility and Effectiveness in Chicago."

Alexander Agrios (May 2003): "Visible Light Photocatalysis: Adsorption, Complexation, and Reaction of Chlorophenols on Titanium Dioxide." (168 p.)

Tanita Sirivedhin (May, 2002): "Monitoring the Behavior of Organic Carbon in Surface Waters using Pyrolysis/GC/MS." (365 p.)

G. Adam Zacheis (August, 2000): "Degradation of Contaminants Adsorbed to Heterogeneous Surfaces Using Ionizing Radiation." (296 p.)

Allen Simpson (May, 1997): "Interpretation of PY-GC-MS Data to Evaluate the Behavior of Natural Organic Material in Aquatic Systems." (214 p.)

Daniel C. Schmelling (May, 1996): "The Photocatalytic Behavior of 2,4,6-Trinitrotoluene in Titanium Dioxide Systems: Photochemical, Electrochemical and Radiolytic Investigations." (138 p.)

Hong Wang (May, 1996): "The Response of a Laboratory Stream System to PCB Exposure: Study of Periphytic and Sediment Dynamics." (233 p.)

Melissa Dieckmann (May, 1995): "The Sensitized Photocatalytic Degradation of Colored Aromatic Pollutants using TiO₂." (192 p.)

Ulick Stafford (Oct., 1994): "Mechanistic Study of Photocatalytic Degradation of Chlorinated Phenols on TiO₂." (223 p.)

Roger J. Hilarides (May, 1994): "Destruction of 2,3,7,8-Tetrachlorodibenzo-p-dioxin on Soil using Cobalt-60 Gamma Radiation." (249 p.)

MASTER'S STUDENTS ADVISED – Current

Apanchanit Pruksapipat (Sept. 2017 – present)

Simi Thomas Abraham (2017 – present) – Masters in Biotechnology Program

MASTER'S STUDENTS ADVISED - COMPLETED

Xiaoya Chen (December, 2017): Combined toxicity of nano-CuO/nano-TiO₂ and CuSO₄/nano-TiO₂ on *Escherichia coli* in aquatic environment under dark and light conditions.

Stephanie Brim (Sept. 2017): Silver Nanoparticles and Wastewater Treatment: An Investigation into Transportation, Complexation, and Bioavailability

Pablo Campos Barria (Sept. 2016): Assessment of energy generation technologies at an urban scale. Case study: Concepción, Chile.

Bettina Wunderlich (June 2017): Masters in Biotechnology Program – Monitoring bacterial viability as a function of nanomaterial exposure.

Jeanne La Vergne (June 2017): Masters in Biotechnology Program – Fate of pharmaceuticals and personal care products in restored wetland systems.

Anna Leenay (Dec. 2015): “Water Quality Testing and Potential for Solar Disinfection/Distillation in Villages of Barmer District, Rajasthan, India.”

Peter T. Eshedagho (August 2014): “Developing water purification strategies for desert regions in India.”

Kathleen Roberts (March 2014): “Metropolitan Water Reclamation District of Greater Chicago Air Permit Renewal (J. Vega-Perkins, X. Zhou) 2017.

Eric Spooner (Dec. 2012): “Solar Distillation in Rajasthan, India.”

Lisa VanBladeren (Dec. 2012): “Feasibility Study for Creating a Field-based Water Quality Testing Kit for use in Rajasthan India.”

Tracy Yang (March 2012): “Mobile Testing in the Thar Desert: Assessing water quality with limited resources.”

Blake Chastain (June 2012, MALS): “The Creation Care Bubble and Evangelical Politics.”

Ke Gong (March 2012): “Ecotourism”

Ritu Gopal (June, 2011): Aroclor analysis of Green Bay fish and sediments.

David Petrone (May, 2011; Dept. of Chemical and Biological Engineering): “An Application and Evaluation of the EPA Greenhouse Gas Inventory Reporting Rule.”

Erin Himmelspace (Sept., 2010; Dept. of Chemical and Biological Engineering): “Investigation of Titania-Silica Nanocomposites: Probing Interfacial Catalytic Hot Spots for the Photocatalytic Reduction of Carbon Dioxide.”

Kevin Schulte (June, 2009): “Synthesis and Characterization of TiO₂ Nanotubes for CO₂ Reduction.”

Debra Weissman (June, 2006): “Nutrient Dynamics in Riparian Wetlands.”

M. Christina Vicario (July, 2001, Dept of Chemical Engineering): “Novel VUV Photocatalytic Reactor.”

Y. Mwende Munyasya (November, 2000): “The Effects of Catalyst Loading, Light Wavelength, and Oxygen on the Photocatalytic Transformation of 2,4,5-Trichlorophenol.”

Mary Finster (October, 1999, Dept. of Chemical Engineering): “The Urban Heat Island, Photochemical Smog, and Chicago: Local Features of the Problem and Solution.”

David Widrig (November, 1992): “Preozonation to Enhance Coagulation: The Effect of Algal Species and Water Quality on the Removal of Dissolved Organic Carbon” (172 p.).

Jonathan Noris (August, 1994): “Treatment of High Selenium Waters” (102 p.).

POST DOCTORAL FELLOWS – CURRENT

Dr. Patricio Carnelli (2017 – present)

POST DOCTORAL FELLOWS - COMPLETED

Dr. Chao Liu (2015 – 2018)
Dr. Kevin Schwartzberg (2015 - 2016)
Dr. Anas Shereef (2011 – 2012)
Dr. Olga Lyandres (2009-2011)
Dr. Baiju Vijayan (2008-2011)
Dr. Gonghu Li (2005-2007)
Dr. Shai Arnon (2004-2006, co-advised with Aaron Packman)
Dr. Deanna Hurum (1999-2004)
Dr. Sung Il Chang (2001-2003)
Dr. Usha Rao (1997-1999, co-advised with Dave Hollander)
Dr. Robert Bornick (1995-1997)
Dr. Rey Baretto (1993-1995)
Dr. Ann St. Amand (1990-1992)

RESEARCH GRANTS AND CONTRACTS – CURRENT or PENDING

“The effects of legacy contaminants, invasive species and benthic processes on contaminant bioaccumulation in Green Bay food webs” \$1,859,722, Superfund Research Program, NIEHS, - 12.01.2019 – 11.30.2024 (pending).
Superfund

“Catalyzing Resilient Urban Infrastructure Systems: Integrating the Natural and Built Environments,” NSF LEAP HI, 08/2019 – 08-2024, \$1,999,330.

“Managing Water, Energy & Environmental Resources to Enhance Prosperity in the Americas: An Environmental Engineering Partnership” with Universidad Nacional de San Martin, Buenos Aires, Argentina, 100,000 Strong in the Americas Foundation, 09/2018- 09/2019, \$66,960.

“Climate Change Governance,” \$71,000, Big Ideas Award, Buffet Institute, Northwestern University, with David Dana and Klaus Weber 09/16 – 09/19.

“Restoring Riparian & Stream Bed Habitats for Nutrient Removal: *Establishing networks of riffle and pool structures for flood control and C, N, P reduction,*” \$1.32M, Wetlands Research, Inc. (pending).

“Using theory driven design to tailor novel nanocomposite oxides for solar fuel production ,” \$550,000, NSF, (SUSChEM/U.S.-Ireland R&D Partnership) 09/14 – 09/17.

“Water Quality Testing and Treatment for Public Health Protection in Rural Rajasthan Villages,” to Murphy Society, \$35,000, 09/13-09/15.

RESEARCH GRANTS AND CONTRACTS – COMPLETED

“The Urban Biorefinery: Coupling Energy, Water, Waste & Material Cycles for the Sustainable Transformation of Cities,” Innovative Initiative Incubator, \$60,000, 11/2015 – 2018.

“Control of pharmaceuticals, personal care product and endocrine disrupting chemicals in surface waters: *Probing the ability of restored riparian and stream habitats to remove trace organic chemicals*” \$42,128, McCormick Research Catalyst Award, 09/14 – 12/15.

Dow Sustainability Innovation Competition, \$350,000, 12/15—09/18.

“Workshop on Multidisciplinary Complex Systems Research” NSF \$100,000 02/17 – 06/18.

“Photocatalytic Coatings for Medical Devices: *Self-cleaning and self-sanitizing touch screens*,” \$100,000, Baxter, 07/15-07/16.

“The Energy Highway,” in collaboration with Dr. Gayathri Gopalakrishnan (ANL) to National Academy Keck Future Initiatives, \$100,000, 06/12 – 06/14.

“The Unintended Ecological Consequences of Nanomaterials: Effects of nanotitania in benthic systems,” NSF, \$357,539, 04/11-04/14.

“Science Master’s Program in Engineering and Global Health Technologies,” NSF (with Matt Glucksberg, PI), \$700,000, 09/01/10-9/01/13.

“Ecological Forecasting: Framework to evaluate the effects of multiple stresses in Lake Michigan foodwebs and guide remediation,” NOAA, \$999,000, 09/09-03/13.

“The Chicago Transformation Teacher Institutes,” NSF (with UIC), \$436,768, 01/10-12/14.

“Institute for Environmental Catalysis”, DOE, co-PI (CO₂ Reduction Subtask Leader) with Peter Stair (PI), \$4M, 09/05-09/12; individual allocation, ~ \$700,000.

“Ecological Goods and Services in Urban Development in the Asia Pacific Rim Countries,” Asia Pacific Economic Cooperation, Business Advisory Committee, Summa Capital, Ltd. \$162,000, 4/15/11 – 12/31/11.

“Tailoring titania nanocomposites to LED illumination for gas phase reactions,” Honeywell Corporation, \$300,000, 8/1/08-12/31/11.

“TiO₂-based nanocomposites for solar fuel production: *Engineering the solid-solid interface for specialized photocatalytic function*,” NSF. \$400,000 09/08-09/12.

“Second Generation Photocatalysts: TiO₂-based nanocomposites by dc reactive sputtering,” National Science Foundation, \$240,000, 07/07-12/11.

“Collaborative Research. Mediation of denitrification by algal/bacterial interactions in stream periphyton: role of successional development and species identity,” National Science Foundation, \$292,240, 08/07-08/12.

“Reactor and Reaction Optimization for the Photocatalytic Reduction of CO₂,” Boeing Corporation, \$95,000, 08/08 – 12/08.

“Reactive Membrane Technology for Water Treatment,” National Science Foundation, \$400,000, 10/04-12/08 (PI, Richard Lueptow).

“Deterioration of Zinc Potassium Chromate Pigments: Elucidating the effects of pigment mixture and environmental conditions on changes in color and chemical speciation,” Mellon Foundation, \$29,716, 10/06-06/08.

“Engineering Riparian Flood Events: Baseline Monitoring,” U.S. Army Corps of Engineers, \$41,160, 05/05-01/07.

“GAANN: Community-Based Urban Environmental Issues,” Dept. of Education, \$ 495,850, 8/03-8/07 (PI, co-PIs – Aaron Packman and J-F Gaillard).

“Engineering an Artificial Substrate System to Accelerate the Denitrification of Agricultural Runoff by Periphyton,” \$324,000, 8/02-8/06 (PI, co-PI-Aaron Packman).

“Titania Coated Shikkui Tiles: Determining the Role of the Support,” Fukuoka University Institute for Recycling and Environmental Control Systems, \$30,000, 11/05-04/06, *FastScience*.

FastScience, Characterization of Titania Coatings by EPR for Sundecor and Professor Katsuyuki Nakano, Fukuoka University, and the Institute for Recycling and Environmental Control Systems, Phase I, \$10,000, Phase II, \$15,000, Phase III, \$10,000, 3/04-3/05.

“Hydraulic Effects on Biological Diversity in Wetlands,” U.S. Army Corps of Engineers, \$356,160, 11/01-11/04.

“The Fate of Carbon and Nitrogen in an Experimental Marsh,” The Wetlands Initiative, \$44,000, 01/99-08/02, \$25,005, 08/03-12/05.

“Collaborative Learning Communities,” Cross-School Initiative, Northwestern University, \$100,000, 09/00-6/03.

“Safer Yards – Phytoremediation of Lead-Contaminated Soils,” Housing and Urban Development, \$171,073, 02/00-02/03.

“Technical Assistance to Community Groups through the Chicago Legal Clinic,” USEPA, Region V, \$26,250, 9/00-1/02

“Radiolysis on Oxide Surfaces,” National Science Foundation, \$77,269, 2/00-3/01.

“Radiation-Induced Catalysis on Metal Oxide Surfaces: Preliminary Investigation of Basic Phenomena and Potential Applications,” Center for Catalysis and Surface Science, Seed Proposal, \$25,000/1 year 6/98-6/00.

“Pavement Analysis and the Urban Heat Island Effect,” USEPA, Atmospheric Pollution Prevention Division, \$111,121, 7/98-6/99.

“Institute of Environmental Catalysis”, NSF, Environmental Molecular Science Institute Program, Assoc. Director and co-PI with Peter Stair, \$7,982,692/5 yrs total; individual expenditure, \$516,000, 9/1998-12/2004.

“Community Based Projects for Teaching Environmental Engineering Design,” Murphy Society, \$40,916, 1/99-9/99, \$54,069, 01/01-01/02.

“Technical Assistance to Community Organizations: Brownfield Cleanup using Wetlands,” USEPA, Region V, \$15,000, 1/98-1/99.

“Community Based Projects for Teaching Environmental Engineering Design,” Mitsubishi Foundation, \$10,000, 1/98-1/99.

“Detached Plume Study in Portland Cement Manufacturing Plants-Part 1,” Portland Cement Association, \$122,500, 7/98-9/99.

“Carbon Cycling in a Riparian Wetland of the Des Plaines River,” Wetlands Research, Inc., \$13,000, 6/97-6/99; Evaluation of the Denitrification Potential of Wetlands, \$55,000, 6,99-6/00.

“Photocatalysis for Space Mission and Aircraft Applications,” Allied Signal, \$20,000/9/97-8/98.

“Environmental Stress in Ecosystems: Linking Ecology and Engineering”, Co-PI with Gary Lamberti (UND), NSF Research Training Group in Environmental Biology, \$537,500/(9/95-6/2000).

“Macrocosm Total Organic Carbon Analysis using Pyrolysis-GC-MS”, Orange County Water District, \$50,000 (8/94-3/96); Monitoring the Organic Quality of the Santa Ana River and Anaheim Lake by Pyrolysis-GC-MS, \$50,000 (8/96-6/97).

“The Use of Pyrolysis-GC-MS to Evaluate Drinking Water Treatment Processes”, U.S. EPA, \$232,813/2 years (1993-1995). Extended to 6/97.

“Instrumentation and Laboratory Improvement for Undergraduate Environmental Analytical Chemistry”, with Co-PI, Jean-Francois Gaillard, NSF, \$137,512/3 years (6/15/93-11/95).

“Removal of DBP Precursors by Granular Activated Carbon Adsorption”, American Water Works Research Foundation, \$40,000 (1/93-8/95).

“Radiolytic Destruction of Organic Compounds”, Occidental Chemical Corporation, \$65,138/1 year, with co-PI: R.L. Irvine (5/92-12/93), \$73,766 as sole PI (1/94 - 12/94), \$55,231 (1/95-6/97).

“Pilot and Laboratory Scale Studies of KDF Electrochemical Media”, KDF Fluid Treatment Inc., \$6,200/1 year (1994).

“Characterization and Performance of Polyferric Sulfate Coagulants”, Midland Resources, Inc., \$7,000 (1/91-12/91).

“The Role of an Attached Algae Mat in the Fate of PCBs in Artificial Stream Ecosystems”, The Jesse H. Jones Faculty Research Fund, \$8,500/1 year (7/91-7/92); NSF Planning Grant, \$26,182/1 year (4/91-4/92).

Presidential Young Investigator Award, “Physicochemical Processes in Aquatic Systems”, NSF, \$500,000/5 years (7/91-7/96), (\$312,500 from Sponsor/non Federal Matching Funds in excess of \$187,000 have been obtained). Extended to 12/97.

“Mechanistic Studies of Photocatalytic Degradation of Hazardous Organic Compounds in Semi-conductor Systems”, NSF, \$69,964/2 years, approved; declined due to PYI Award (1991).

“Coagulation Performance of Aqualenc”, Rhone-Poulenc Chemical Company, \$20,000 (1/90-6/91).

“Removal of Algal Material: Treatment Techniques and Mechanisms”, Lyonnaise des Eaux, Paris, France, \$116,400 (4/90-12/93).

“Request for Purchase of Combined Electrophoresis and Submicron Size Analyzer”, Jesse H. Jones Faculty Research Equipment Fund, University of Notre Dame, \$19,050 (4/90-4/91).

INVENTION DISCLOSURES/PATENT APPLICATIONS

1. Photocatalytic Composite (TiO₂/SWCNT) for Organic Chemical Oxidation (US PATENT 9,078,942, issued 07/14/15), Y. Yao, R. Lueptow, K.A. Gray.
2. Mixed-phase nano-structured TiO₂ composite photocatalyst for energy and energy efficiency applications, (provisional patent application NU 27093) G. Li & K.A. Gray.
3. Reactively sputtered TiO₂ nanocomposite thin films for photoreduction and photooxidation applications under UV and visible light, (Patent No. US 8,202,820 B2 issued 06/19/12) L. Chen, M. Graham, K.A. Gray
4. Methods of making non-covalently bonded carbon–titania nanocomposite thin films and applications of the same, (Patent No. US 9,393,550, issued 07/19/16), Yu Teng Liang, Baiju Vijayan, Kimberly Gray, Mark Hersam.
5. Process and catalyst for the simultaneous photocatalytic production of H₂O₂ and its utilization in selective oxidation, (provisional patent application NU2015-019), Todd R. Eaton, Kimberly A. Gray, Justin M. Notestein.
6. Self-cleaning TiO₂-Based Transparent Coatings, (Invention Disclosure – NU 2018-050), Kimberly A. Gray, Kevin Schartzenberg, Yechan Won.

JOURNAL and PEER-REVIEWED PUBLICATIONS

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Chao Liu, Scott L. Nauert, Marco A. Alsina, Dingdi Wang, Alex Grant, Kai He, Eric Weitz, Kimberly A. Gray, Justin M. Notestein (2018). Role of surface reconstruction on Cu/TiO₂ catalysts in CO₂ conversion, *Applied Catalysis B*, in review.

Xiaoya Chen, Carolyn Wilke, Jean-François Gaillard and Kimberly A. Gray (2018). Combined toxicity of nano-CuO/nano-TiO₂ on *Escherichia coli* in aquatic environments under dark and light conditions, *Chemosphere*, in review.

Pablo Campos, Stefano Moret, Kimberly Gray, François Maréchal (2018). Integration of low Carbon energy technologies for urban centers – A case study in Concepcion, Chile, *Renewable and Sustainable Energy Reviews*, in review.

T.E. Eaton, L. Sorokina, A.B. Thompson, Z. Bo, C.C. Yang, K.A. Gray, J.M. Notestein (2018). “Combined photo/thermo-catalytic system for alkene epoxidation with *in situ* hydrogen peroxide production,” in preparation.

S. Macksasitorn, J.J. Janssen, K.A. Gray (2017). Recent trends in total PCB concentrations in common Green Bay fish: Decreasing, increasing, or plateauing? *Journal of Great Lakes Research*, in preparation.

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K. Gray & A. Motter (2018). Multidisciplinary Complex Systems Research. Report from an NSF Workshop in May 2017. <https://www.nsf.gov/mps/dms/documents/MultidisciplinaryComplexSystemsResearch-Workshop%20Report-May2017.pdf>

K.Gray (2016) “Transportation Infrastructure and the Future of Cities,” in Transportation Infrastructure Vision 2050 for Association of Equipment Manufacturers.

K. Gray, D. Farr, D. Dana (2011) “Living Cities: Transforming APEC Cities into Models of Sustainability by 2030,” Asia Pacific Economic Cooperation, Business Advisory Council, 146 pages.

A. Agrios, K. Gray, (2005) “Beyond Photocatalytic Environmental Remediation: Novel TiO₂ Materials and Applications,” in *Environmental Catalysis*, V. Grassian, ed. (Marcel Dekker), Ch. 15, 369-390.

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B.A. Ankenman, K.A. Gray, (2001) “The Detached Plume Study: Statistical Analysis of Causative Factors in Portland Cement Manufacturing Plants.” (Portland Cement Association, Skokie, IL) 112 pages.

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K.A. Gray, A.H. Simpson and K.S. McAuliffe, 1995. Use of PY-GC-MS to Study the Nature and Behavior of NOM in Water Treatment, in Proceedings of the 210th ACS National Meeting, 35:2:635-638.

U. Stafford, K.A. Gray and P.V. Kamat, 1995. Kinetic Modeling of 4-Chlorophenol Degradation in Titania Slurries, in Proceedings of the 210th ACS National Meeting, 35:2:563-566.

D.C. Schmelling, K.A. Gray and P.V. Kamat, 1995. The Role of Nitrogen Reduction in the Photocatalytic Degradation of Nitroaromatic Compounds, in Proceedings of the 210th ACS National Meeting, 35:2:484-486.

K.A. Gray, 1995. Use of Ionizing Radiation to Destroy Pollutants, in Transactions of the American Nuclear Society, 1995 Annual Meeting, Philadelphia, PA, 72:132-133.

K.A. Gray, 1994. Treatment of Soils and Sediments: Radiolytic Destruction of Chlorinated Dioxins Using Cobalt-60, Pages in Proceedings of NSF Workshop on Applications of Ionizing Radiation for Decontamination of Environmental Resources, Miami, FL .

M.S. Dieckmann, K.A. Gray and P.V. Kamat, 1994. The Sensitized Photocatalysis of a Mixed Reactant System of 4-Chlorophenol and 4-Nitrophenol. Pages 726-732 in Proceedings of the 1994 National Conference on Environmental Engineering "Critical Issues in Water and Wastewater Treatment" (J.N. Ryan and M. Edwards, eds.) American Society of Civil Engineers.

K.A. Gray and R.J. Hilarides, 1994. Innovative Treatment of Soil Contamination: Radiolytic Destruction of Dioxin and Co-Contaminants by Cobalt-60. Pages 733-736 in Proceedings of the 1994 National Conference on Environmental Engineering "Critical Issues in Water and Wastewater Treatment" (J.N. Ryan and M. Edwards, eds.) American Society of Civil Engineers.

D.C. Schmelling and K.A. Gray, 1994. Photocatalytic Transformation and Degradation of 2,4,6-trinitrotoluene (TNT) in TiO₂ Slurries. Pages 751-755 in Proceedings of the 1994 National Conference on Environmental Engineering "Critical Issues in Water and Wastewater Treatment" (J.N. Ryan and M. Edwards, eds.) American Society of Civil Engineers.

K.A. Gray, A. St. Amand, and H. Wang, 1993. "Role of a Periphytic Biolayer in the Fate of PCBs in Artificial Stream Systems," Proceedings of the First International Specialized Conference on Contaminated Aquatic Sediments: Historical Records, Environmental Impact, and Remediation, (IAWQ), 271-280.

K.A. Gray and K. McAuliffe, 1991. "Use of Pyrolysis-GC-MS to Study the Organic Matrix of Surface Waters," Proceedings of Water Quality Technology Conference, AWWA, Part II, November, 1991, 1219-1231.

PUBLISHED REVIEWS

Book review of Radioactive Waste Management (Y.S. Yang and J.H. Saling) for *Environmental Progress*.

"Report on the First International Conference on TiO₂ Photocatalytic Purification and Treatment of Water and Air," published in European Photochemistry Association Newsletter (47:50-53) and the Inter-American Photochemical Society Newsletter.

RESEARCH REPORTS

K.A. Gray (2008) "Hydrologic and Environmental Effects of Hydraulic Control Structures: Baseline Monitoring," Technical Report, The Wetlands Initiative, Chicago, IL.

C.K. Ishida, K.A. Gray (2005) "Hydraulic Effects on Biological Diversity and Water Quality in Constructed Wetlands," Final Report to U.S. Army Corps of Engineers, February, 2005.

K.A. Gray (2001) "Physical, Chemical, & Biological Characterization of Swam Lake Sediments," Technical Report, The Wetlands Initiative, Chicago, IL.

M.E. Finster, K.A. Gray (1999) "The Urban Heat Island, Photochemical Smog, and Chicago: Local Features of the Problem and Solution." Technical Report, Atmospheric Pollution Prevention Division, U.S.E.P.A.

"Characterization of the Organic Matrix of the Missouri River by Pyrolysis/GC/MS," Burns and McDonnell, February, 1997.

"Removal of DBP Precursors by Optimized Coagulation and Precipitative Softening: Use of PY-GC-MS to Monitor Coagulation Effectiveness," American Water Works Research Foundation, October, 1996.

"Evaluation of Organic Quality in Prado Wetland and Santa Ana River by Pyrolysis-GC-MS" Orange County Water District, April, 1996.

"Removal of DBP Precursors by Granular Activated Carbon Adsorption: PY-GC-MS Characterization of Organic Quality," American Water Works Research Foundation, Nov. 1995.

"Monthly Monitoring of Prado Wetland Using PY-GC-MS," Orange County Water District, May, 1995.

"Pyrolysis-GC-MS Analysis of Various Contaminated Groundwater Samples," Institut für Wasserversorge, Universität für Bodenkultur, (Vienna, Austria), February, 1995.

"Metal Ion Concentrations in KDF Treated Ground-Water," KDF Fluid Treatment Inc., March, 1994.

"Safety Kleen Refinery Waste Water Evaluation," Safety Kleen Corp., March, 1992.

"Jar Test Results for Polyferric Sulfate: Comparison of Various Waters and Other Coagulants," submitted to Midland Resources, February, 1992.

"The Role of Water Hardness in Performance of Aqualenc for the Coagulation of Clay Turbidity," submitted to Rhone-Poulenc Chemical Company, July, 1991.

"Characterization of Polyferric Sulfate Solutions," submitted to Midland Resources, Inc. and Kemiron Inc., May 1991.

"Radiolytic Destruction of Organics," submitted to Occidental Chemical Company, October 1991.

SIGMA XI DISTINGUISHED LECTURES

Mercer University, Macon GA, Oct. 2, 2008
Pennsylvania State University, Erie, PA, Oct. 16, 2008
University of Northern Iowa, Oct. 23, 2008
Michigan State University, Nov. 6, 2008
Syracuse University, Nov. 13, 2008
University of Wisconsin-Fox Valley, Nov. 17, 2008.
Army Research Lab, Adelphi, MD, Dec. 11, 2008
Trinity University, Jan. 26, 2009 (2 talks)
Purdue University, Feb. 3, 2009.
Western Washington University, Feb. 24, 2009 – 2 lectures given.
Western Kentucky University, March 2, 2009
University of Tennessee, March 17, 2009.
Eastern Illinois University, April 2, 2009 – 2 lectures given.
Cornell University, April 7, 2009
Portland State University, April 21, 2009.
Southern Oregon University, May 14, 2009.
Nalco, June 4, 2009
SUNY-Purchase College, Oct. 29, 2009
University of Nebraska, Nov. 19, 2009
Mayo Clinic, Rochester, MN, Jan. 19, 2010
South Dakota State University, February 25, 2010 (2 talks)
Youngstown State University, March 4, 2010
Tarleton State University, March 11, 2010 (2 talks)
University of Northern Michigan, March 18, 2010 (2 talks)
Rollins College, March 25, 2010 (2 talks)
University of Louisville, April 15-16, 2010 (2 talks)
Rockford College, April 20, 2010 (2 talks)

INVITED LECTURES

"Progress in the photoconversion of CO₂ to high value products," Xin Winter School 2019, Teal-Aviv University Center for NanoScience and Nanotechnology, January, 2019.

"Unexpected Behavior of Photoactive Nanocomposites in Energy & Environmental Applications" Seminar, 3iA, UNSAM, Buenos, Aires, Argentina, November 20, 2018.

“Unexpected Interactions of Photoactive Nanomaterial Mixtures in Environmental Media,” Seminar, Department of Energy, Environmental & Chemical Engineering, Washington University, October 26, 2018.

“Unexpected Behavior of Photoactive Nanocomposites in Energy & Environmental Applications” plenary talk at the AIChE Midwest Regional Meeting, IIT, Chicago, IL. on March 14 2018.

“Surprising Leaders: Women and the Environment,” in Notable Achievements: Focus on Women, Alumnae Continuing Education Lecture Series, November 9, 2017.

“Climate Change & Global Health,” to McGraw Global Health Clinical Scholars in Feinberg School of Medicine Center for Global Health, 12 July 2017.

“Service Learning and Project-based Teaching in Environmental Engineering,” at the AEEESP Research & Education Conference at University of Michigan, 20 June 2017.

“Resource Recovery/Nutrient Removal at Clean Water Utilities,” at Building a Regional Nutrient Network, Current Workshop, Chicago, IL, June 5, 2017.

“The Intentional & Unintentional Consequences of Climate Intervention: A Science & Engineering Perspective,” Research Roundtable on Global Climate Change Governance: Geoengineering, Searle Center on Law, Regulation and Economic Growth, Pritzker School of Law, May 18, 2017.

“Nanotechnology & The Environment: *Water, Energy, & Health*,” Department of Chemical and Environmental Engineering, University of California-Riverside seminar, Feb. 10, 2017.

“Night and day: The effects of light and other environmental factors on nanomaterial ecotoxicity,” Department of Civil & Environmental Engineering, University of Pittsburgh seminar, Jan. 20, 2017.

“Novel Nano-Architectures: *Water, Energy, & Health*, NU-TAU Workshop, Energy, Sustainability, & Biomaterials, NU 20 Sept. 2016.

“A Vision of the Future,” in Mobility 2050: A vision for transportation infrastructure & how we can get there, NU symposium, 23 May 2016.

“Imaging the Urban Future: *Two Scenarios of Change*,” seminar presented at University of Illinois-Chicago, Dept. of Civil & Environmental Engineering, 13 April 2016.

“Environmental applications of TiO₂ based nano-composites: *Water, Energy, & Health*,” UK & I Photochemistry Spring Meeting, Tyndall Centre, Cork, Ireland, 6 April 2016.

“Reinventing Cities: Nature as Muse,” Challenges and Innovation in Civil and Environmental Engineering and Earth Sciences Seminar Series, University of Notre Dame, 25 February 2016; rescheduled for Oct. 6, 2016.

“The reality of a rapidly changing climate,” Environmental Law Seminar, NU Law School, 28 January 2016.

“Nanotechnology & The Environment: *Water, Energy & Health*,” seminar presented at Institute of Molecular Engineering, University of Chicago, 14 January 2016.

“The cumulative effects of chemical and biological stress on aquatic food web structure and contaminant bioaccumulation,” School of Freshwater Sciences, University of Wisconsin-Milwaukee, 8 December 2015.

“Unintended public & ecological health risks of nanomaterial use,” Center for Innovations in Global Health Technologies, Seminar, NU, 20 November 2015.

“Reinventing the City,” Midday @ McCormick, 26 October 2015

“Infrastructure Vision 2050: Tale of Two Cities,” presentation to American Equipment Manufacturers, 23 October 2015.

“Does nanotechnology hold the key to reinventing our energy and urban systems?” Keynote talk at the 23rd Annual Conference of the Association of Chinese-America Scientists & Engineers (ACSE), 24 October 2015.

“Smart City, Sustainable City?” Fall 2015 Alumnae Continuing Education Speaker Series, “Falling Apart – America’s Neglected Infrastructure,” Evanston, IL, 22 October 2015.

“The Control in Complex Systems: Energy in Cities,” in the Role of Science in the Third Millennium, 48th Session of the International Seminar on Planetary Emergencies, Ettore Majorana Foundation and Centre for Scientific Culture, Erice, Sicily, Aug 18-24, 2015.

“Innovation & Nature: Impacts & Opportunities,” presented in Energy & Environment Panel of Bridges not Barriers: The Law-STEM Alliance as Catalyst for Innovation, NU Law School, Chicago, IL, 16 June 2015.

“The role of ecology in the new “smart,” sustainable city,” Dept. of Civil & Environmental Engineering, Georgia Tech, Atlanta, Georgia, 1 April 2015.

“Smart Cities, Sustainable Cities?” CEDEUS International Conference, Concepcion, Chile, March 25-27, 2015.

“Novel Nano-architectures: TiO₂-based Composites, Interfaces & Defect Structure,” seminar, Dept. of Chemical Engineering, Worcester Polytechnic Institute, Feb. 25, 2015.

“From water quality to nanotechnology to cities: Details and people matter,” Keynote presentation, Women in Environmental Science and Engineering Symposium, 248th ACS National Meeting, San Francisco, CA, 12 August 2014.

“Restoration of Coastal Wetlands and Marsh Systems as Adaptation to Climate Change,” Research Roundtable on Climate Change and Natural Preservation: Adaptation Litigation, Oceans, and other Topics, Searle Center for legal and Regulatory Studies, Northwestern Law School, 17-18 July, 2014.

“Interactions of nanotitania at bacterial surfaces under environmental conditions,” 88th Colloid and Surface Science Symposium, Philadelphia, PA, 24 June 2014.

“Sustainable Cities: Coupling cycles of energy, water & land-use to reinvent the urban landscape,” Energy, Cities and the Control of Complex Systems, Expert Workshop, 47th Session of International Seminars on Planetary Emergencies, May 12-14, 2014, Ettore Majorana Foundation and Centre for Scientific Culture, Erice, Sicily.

“Living Cities: Sustainable urban design for the exploding megacities of Asia & the shrinking cities of the Midwest,” Graduate Colloquium at Northern Illinois University, 20 February 2014.

“Living Cities: The Sustainable Reinvention of Exploding Megacities and Shrinking, Post-industrial Cities,” Keynote Talk, Sustainable Urban Development, Concepts and Methods, CEDEUS International Conference, Jan. 22-24, 2014.

“Key Features of TiO₂-based Nano-architectures for CO₂ Conversion,” invited presentation at Semiconductor Photocatalysis and Solar Energy Conversion, November 18, 2013, San Diego, CA.

“Key Features of TiO₂-based Nano-architectures for CO₂ Conversion,” invited presentation in *Nanostructured Photocatalysts for Direct CO₂ Reduction* under the Division of Colloid and Surface Chemistry, 245 Annual ACS Meeting, New Orleans, April 2013.

“The Scientific Questions Swirling around Climate Change: Are there any?” Environmental Law Colloquium, Northwestern Law School, 17 January 2013.

“Why the energy issue is fundamentally an environmental issue. . .and why this doesn't seem to matter” State of the Nation: Election 2012, Alumnae Continuing Education Lecture Series, 6 Nov. 2012.

“The Science of Climate Change and Natural Systems,” in Research Roundtable, Natural Preservation in a Rapidly Changing Climate, Searle Center for Legal and Regulatory Studies, Northwestern Law School, Oct. 4-5, 2012.

“Design Concepts for Nanostructured TiO₂-Based Composite Materials as Photocatalysts for CO₂ Conversion,” CEAS Distinguished Lecture series, University of Wisconsin-Milwaukee, 29 Aug. 2012.

“Living Cities: A vision to sustain the exploding megacities of Asia and the shrinking cities of the North America,” Vision Seminar, Dept. of Civil Engineering, Purdue University, 25 April 2012.

“Living Cities: The redesign of cities inspired by ecological principles,” keynote address at the Mid-west Environmental Leadership Summit, 15 April 2012.

“Living Cities: A vision to sustain the exploding megacities of Asia and the shrinking cities of the Midwest,” Environmental Engineering seminar series, Marquette University, 6 March 2012.

“Living Cities: Transforming APEC Cities into Models of Sustainability by 2030,” presentation to the Asia Pacific EC Business Advisory Committee, Hong Kong, 24 February 2012.

“Potential Effects of Nanotitania in Benthic Systems,” presented at IMI-SEE workshop, “Developing sustainable nanotechnologies: Maximizing Functionality while Minimizing Health Impact,” at Sichuan University, Chengdu, China, Sept. 14, 2011.

“Potential Effects of Nanomaterials on Human and Ecological Health,” seminar at Geosyntec Consultants, Chicago, IL, 23 June 2011.

“Sustainable Strides in Urban Design: Lessons from Chicago,” Sci-Tech Seminar, USEPA Region V Science and Technology Council, 20 April 2011.

“The potential effects of nanotitania in benthic systems,” in Reactivity, Transformation and Detection of Natural and Engineered Nanomaterials in the Environment Symposium (Division of Colloid & Surface Science), 241st ACS National Meeting, Anaheim, CA, March 27-31, 2011.

“Sustainable Strides: Lessons from Chicago” plenary presentation at the 2nd Xiamen International Forum of Urban Environment, Xiamen, China, Dec. 11-13, 2010.

“Green Cities/Brown Lakes: The Challenge of Great Lakes Restoration,” seminar, Memorial University of Newfoundland, Canada, Oct. 29, 2010.

“Transforming our Cities: Sustainability and the Post Fossil-Fuel Future,” Keynote presentation, Dialogue on Advancing Global Sustainability, Memorial University of Newfoundland, Canada, Oct. 28, 2010

“Sustainable Cities and the Many Dimensions of a Post-Fossil Fuel Future,” Carbon and Climate: Lessons from the Past, Solutions for the Future, 2nd Annual Climate Change Symposium, NU, Oct. 18, 2010.

“Green Cities/Brown Lakes: The Challenge of Great Lakes Restoration,” The Women’s Board of Northwestern, Sept. 21, 2010.

“The Debate on the Scientific Evidence of Climate Change” Judicial Symposium on Public Nuisance Litigation sponsored by the Northwestern Law Judicial Education Program, Searle Center on Law, Regulation, and Economic Growth, Northwestern University School of Law, 27 April 2010.

“Chemical and physical synthesis of TiO₂-based nanocomposites for solar energy production and other environmental applications,” seminar in Dept. of Chemical Engineering, University of Louisville, 15 April 2010.

“Fabricating Titania-based Nanocomposites for Solar Fuel Production: TiO_{2-x} , $\text{Ti}_{1-x}\text{Nb}_x\text{O}_2$, & Titania Nanotubes,” NIMS International Workshop on Photocatalysis and Environmental Remediation, Tsukuba, Japan, 22-24 February 2010.

“Tailoring Nanomaterials for Probing Environmental Systems: React, Identify, and Monitor,” Workshop on Nano-Enabled Sensing Microsystems for Geosciences, Organized by the NSF National Nanotechnology Infrastructure Network (NNIN), Ann Arbor, MI, 4 February 2010.

“Chemical and physical synthesis of TiO_2 -based nanocomposites for solar energy production and other environmental application,” Nebraska Center for Materials and Nanoscience and Physics colloquium, University of Nebraska, Lincoln, NE, 19 November, 2009.

“The Nanotechnology Revolution and its Unintended Environmental Effects,” Encouraging appropriate use of the products of scientific research: U.S.-Iran-France Workshop, sponsored by NAS, Academie des Sciences, 7-12 November, 2009, Fondation des Treilles, France.

“Progress on Synthesizing Photoactive Nanocomposite Materials to Produce Solar Fuels,” Sino-U.S. Workshop on Nanostructured Materials for Global Energy & Environmental Challenges, Changzhou, China, Oct. 15-18, 2009.

“What will finally spark that the Green Revolution?” One Book Science Café, 7 Oct. 2009.

“Five Myths about Nanotechnology in the Current Public Policy Debate,” CEE Seminar, 25 Sept., 2009.

“Chemical and physical synthesis of TiO_2 -based nanocomposites for solar energy production and other environmental application,” Dept. of Civil and Environmental Engineering, Rice University, Houston, TX, 21 September, 2009.

“Ecology and the Green Revolution,” 61st Annual Meeting of the Association of American Universities, Chicago Botanical Gardens, 20 September 2009.

“The Feasibility of Achieving Sustainability Goals in the Near-Term,” Annual Meeting of North American Management Team, Veolia Energy, 27 Aug. 2009.

“Secrets of the Art World Unlocked: Le Grand Jatte,” Chicago Council on Science and Technology, Art and Science, 8 June 2009.

“Sustainable Water Use in Cities and Industry: Future Challenges and Promising Strategies,” Metropolitan Water Reclamation District of Greater Chicago, Lue-Hing R&D Laboratory Seminar Series, 29 May 2009.

“Five Myths about Nanotechnology in the Current Public Policy Debate,” Searle Center Research Roundtable on *Environmental, Health, and Safety Risks of Emerging Technologies*, Northwestern University School of Law, April 23 - 24, 2009.

“Sustainable Solutions to Energy, Water & Climate Challenges” in Globalization: The Next Stage, Ryan Learning for Life 2008 Lectures, Robert H. Lurie Medical Research Center, NU, Nov. 19, 2008.

“The Effects of Climate Change on Transportation,” Transportation Center Business Advisory Committee Meeting, NU, Oct. 22, 2008

“Progress in developing photoactive nanocomposites to improve the efficiency of artificial photosynthesis,” seminar in the Department of Geography and Environmental Engineering, Johns Hopkins University, October 21, 2008.

“Energy & the Environment - Election 2008: Inside the Issues”, *Classes without Quizzes*, Panel moderated by Les Crystal, NU, Oct. 17, 2008.

“Energy & the Environment: The Central Challenge of Sustainability,” NU Club of Milwaukee, Oct. 7, 2008.

“Photoactive Nanocomposite Materials to Produce Solar Fuels,” Sino-U.S. Workshop on Nanostructured Materials for Global energy & Environmental Challenges, Sept. 22, 2008.

“Sustainable Water Use in Cities and Industry: Future Challenges and Promising Strategies,” 2008 International Open Lecture Series on Business, Technology and Urban Life for a Sustainable Future, Fukuoka University, Japan, July 18, 2008.

“How sustainable does business need to be?” Environmental Sustainability Business Club, Kellogg Business School, Northwestern, 29 May 2008.

“Solar fuel generation: Engineering photocatalytic “hot spots” in TiO₂-based nanocomposites,” Physics Colloquium, Northwestern University, 9 May 2008.

“The Sustainability Imperative: The need for interdisciplinary learning, teaching and research,” Center for Environmental Studies, Brown University, 15 April 2008.

“Second generation TiO₂-based nanocomposites for solar fuel generation,” Division of Engineering, Brown University, 14 April 2008.

“Second generation TiO₂-based nanocomposites for solar fuel generation,” Department of Civil Engineering, Duke University, 21 April 2008.

“The Green Wave: Is there really anything to the sustainability buzz?” Science Café, Sigma Xi Scientific Research Society at Northwestern, April 16, 2008.

“The modern American city: Can we ever make it sustainable?” seminar in Civil and Environmental Engineering at Temple University, February 27, 2008.

“What does Sustainability mean for teaching, learning and living at a university?” Keynote address to Residential College Domain Dinner, Northwestern University, February 5, 2008.

“Structuring Highly Active Nanoscale Photocatalytic Films using Reactive Sputtering,” presented in an Advanced Surface Engineering Division Session at the 54th AVS Symposium, 14-19 October, 2007, Seattle, WA.

“Progress in synthesizing photo-active titania-based nanocomposites for CO₂ reduction and fuel production,” seminar, Honeywell Aerospace & Environmental Quality Group, July 3, 2007.

“Probing the effects of light, humidity and acidity on the deterioration of a zinc potassium chromate pigment,” Photochemical Processes in Art and other Standards, Seminar Series on Conservation Science, June 7, 2007.

“Nanotechnology, Energy, and the Environment,” inaugural seminar sponsored by the McCormick Graduate Student Leadership Council, Northwestern University, March 8, 2007.

“Progress in synthesizing photo-active titania-based nanocomposites for CO₂ reduction and fuel production,” seminar, Dept. of Civil and Environmental Engineering, Duke University, 21 March 2007.

“The feasibility of developing sustainable energy sources for transportation,” 2007 SWE Regional conference, Chicago, IL, 27 January 2007.

“Navigating the Choppy Seas of Science: Reflections on Careers in Environmental Science and Engineering,” Women in Science & Engineering Symposium, Loyola University, July 27, 2006.

“Energy and The Environment: The Central Challenge of Sustainability,” Keynote address at the 2006 Environmental Engineering Spring Symposium, University of Illinois, Urbana-Champaign, March 31, 2006.

“Determining Structure/Function Relationships for Organic Carbon in Surface Waters: Application to Water Reuse,” presented to the Department of Hydraulics and Environmental Engineering at Pontificia Universidad Católica de Chile, Oct. 26, 2005.

“Ecological Restoration in Aquatic System: The importance of understanding molecular scale phenomena in the big picture,” Seminario Internacional, *“Transporte, Reacción y Destino de Contaminantes en Sistemas Acuáticos Naturales Impactados ”* presented to Center for the Environment at the Pontificia Universidad Católica de Chile, Oct. 24, 2005.

“Synthesizing and Characterizing Highly Active TiO₂ Nanocomposite Photocatalysts“ presented at TiO₂-10, Chicago, IL, October, 2005.

“Hurricane Katrina: An Ecological Perspective,” presented in seminar Hurricane Katrina: Preparation, Response and Rebuilding, Northwestern University, Oct. 17, 2005.

“Energy and Environmental Chemistry,” presented at the Midwest Environmental Chemistry Conference, October 16, 2005.

“Nanostructured photoactive materials for environmental applications”, presented in Environmental Nanotechnology at the 230th ACS National Meeting, in Washington, DC, Aug 30, 2005.

“Radiation induced catalytic transformation of organohalide contaminants”, presented in Strategies and Molecular Mechanisms of Contaminant Degradation Chemistry at the 230th ACS National Meeting, in Washington, DC, Aug 29, 2005.

“Future Cities,” plenary lecture at the NSF Summer Institute on Nano Mechanics and Material, Nanotechnology, Biotechnology and Green manufacturing for Creating Sustainable Technologies, Northwestern University, June 22, 2005.

“Nanocatalysis,” presented at the NSF Summer Institute on Nano Mechanics and Material, Nanotechnology, Biotechnology and Green manufacturing for Creating Sustainable Technologies, Northwestern University, June 21, 2005.

“New Directions in Environmental Engineering and Chemistry: Catalysis, Analysis, Restoration,” presented at Fukuoka University, Kitakyushu, Japan, February 22, 2005.

“New Advances in the Study of Photoactive materials for Environmental Applications,” seminar presented at the SPEA, Indiana University, October 13, 2004.

“Impacts of Urban Development on Soil and Water Quality: Characterization and Remediation,” seminar presented in the Department of Environmental Science at the University of Illinois-Urbana, March 12, 2004.

“Environmental Engineering and Chemistry: Catalysis, Analysis, Restoration,” seminar presented at Gas Technology Institute, Des Plaines, IL, May, 2003.

“Structure and Function of Environmental Biofilms: Three Examples,” seminar presented in the Department of Civil Engineering at Case Western University, March, 2003.

Tracking Organic Carbon Quality: Fingerprinting Techniques to Trace the Origins of Organic Material,” seminar presented in 2003 Environmental Engineering Seminar Series, “Barriers and Incentives to Wastewater Reuse in Illinois,” IIT, March 26, 2003.

“The Impact of Metal and Organic Contaminants on the Structure of Periphyton in Lotic Sediments,” presented at the NSF funded US-Chinese Joint Workshop on Sediment Transport and Environmental Studies, July, 2002.

“Feasibility of Applying Phytoremediation in Urban Residential Communities,” presented at the 130th Annual Meeting of the American Public Health Association, Philadelphia, PA, November 13, 2002.

“Radiolytic Dechlorination of Adsorbed Pollutants in Various Matrices,” presented in the Symposium on Radiation Chemistry at the 222th Annual Meeting of the American Chemical Society, Chicago, IL, Aug. 2001.

“Monitoring the Impact of Organic Quantity and Quality in Surface Waters: Two Case Studies,” presented at IL AWWA Annual Meeting, Springfield, March, 2001.

“The Influence of Organic Quantity and Quality in Aquatic Systems,” seminar presented in Dept. of Chemistry, Purdue-Calumet, April, 2001.

“The Combined Effects of Metal and Organic Contaminants on a Periphytic Assemblage in Lotic Sediments” presented in the Symposium on: The Influence of Hydrosphere-Biosphere Interactions on the Speciation and Transport of Metals at the Fall Meeting of the American Geophysical Union, San Francisco, December, 2000.

“Radiation-induced processes in the treatment of contaminated materials. Successes and Challenges.” Gordon Research Conference on Radiation Chemistry, Plymouth, New Hampshire, June 27, 2000.

“Mechanistic Insight into Soil Radiolysis,” presented in NSF Workshop, Determination of Optimum Radiolytic Treatment Methodologies for Remediation of PCB Contaminated Sites, University of Maryland, Nov. 15-17, 1999, College Park, MD.

“Molecular Tools to Study Chemical Phenomena in Environmental Systems,” presented at the AEESP Research Needs Conference, Penn State University, Aug. 1, 1999.

“Jumping Through Hoops: The Promotion and Tenure of Women and Minorities,” presented at the AEESP Research Needs Conference, Penn State University, July 31, 1999.

“Photobiocatalysis: Optimized Treatment Strategy for Recalcitrant Pollutants,” seminar presented to BP-Amoco researchers, June 1, 1999.

“Detached Plumes and Visible Emissions in North American Portland Cement Plants,” presented to MTC Semi-annual Meeting, Roanoke, VA, April 12, 1999.

“Photobiocatalysis: Integrating Chemical and Biological Catalysis for the Treatment of Hazardous Chemicals,” presented at the 21st Midwest Environmental Chemistry Workshop, University of Michigan, Ann Arbor, MI, Oct. 17, 1998.

“Photobiocatalysis: Integration of Photocatalysis and Biocatalysis,” presented at the Center for Catalysis and Surface Science Annual Meeting, Evanston, IL. Sept. 9, 1998.

“Environmental Applications of Radiolysis,” plenary lecture at DOE Workshop Research Needs and Opportunities in Radiation Chemistry, Chesterton, IN, 19-22 April 1998.

“NOM Structure: Pyrolysis/GC/MS versus ¹³C-NMR,” presented in Sunday Seminar, New Developments in Characterizing and Monitoring NOM in Water Treatment, AWWA Water Quality Technology Conference, Denver, CO, Nov. 9, 1997.

“Probing Dissolved Organic Carbon Dynamics in Natural Waters with Pyrolysis/GC/MS,” presented to the Department of Geological Sciences, Northwestern University, Nov. 7, 1997.

"Probing Dissolved Organic Carbon Character in Surface Waters," presented to the Department of Environmental Engineering and Science, University of North Carolina, Chapel Hill, May, 28, 1997.

"TiO₂ Photocatalysis: Transformation of Aromatic Pollutants in Particulate Semiconductor Systems." presented to the Catalysis Center, Northwestern University, May 9, 1997.

"Probing the Organic Carbon Cycle in Wetlands using Pyrolysis-GC-MS" presented in Natural Organic Matter in Aquatic Systems Session at American Geophysical Union 1996 Fall Meeting in San Francisco, CA, 15-19 December 1996.

"Photocatalytic Behavior of Nitroaromatic Compounds in TiO₂ Systems," presented to Environmental Engineering at University of Illinois, 25 April 1996.

"Radiolysis at Environmental Surfaces: Radiolytic Transformation of Chlorinated Dioxins and Other Aromatic Compounds in Soils," presented at the 44th Annual Scientific Meeting of the Radiation Research Society, April 17, 1996, Chicago, IL.

"A Comparison of Electron Beam and Gamma Irradiation to Destroy Halogenated Aromatic Contaminants on Soils," to be presented at the Second International Symposium, Environmental application of Advanced Oxidation Technologies, sponsored by EPRI and U.S. DOE, February 28-March 1, 1996, San Francisco, CA.

"Photocatalytic Interactions of Nitroaromatic Pollutants in TiO₂ Systems," presented to Pritzker Department of Environmental Engineering at the Illinois Institute of Technology, 24 January 1996.

"Use of Ionizing Radiation for Reductive Dechlorination: Chemistry, Design and Economics," presented at the 1995 International Chemical Congress of Pacific Basin Societies, December 17-22, 1995, Honolulu, Hawaii.

"Predicting the Course of 4-Chlorophenol Photocatalytic Degradation: Model Development and Design Implications," presented at the World Environmental Congress, Sept. 17-22, 1995, London, Ontario.

"Use of Ionizing Radiation to Destroy Pollutants," presented at American Nuclear Society 1995 Annual Meeting, June 25-29, 1995, Philadelphia, PA.

"Organic Chemical Transformations," presented at the Groundwater Recharge with Reclaimed Water Workshop sponsored by the WaterReuse Association of California, 25 May 1995.

"Photocatalysis: Theory, Experiments and Models," presented to the Dept. of Civil Engineering, University of Texas at Austin, April, 1995.

"Inorganic Polymers: Fundamental Aspects Related to their Use for Particle Removal and Dewatering," presented at the Annual Meeting of the Society of Mining Engineers, March 6-9, 1995, Denver, CO.

"Radiolytic Transformation of Soil Contaminants: A Comparison of Gamma and Electron Beam Irradiation," presented to National Institute of Standards and Technology, Ionizing Radiation Division, Gaithersburg, MD, Dec. 1, 1994.

"The Wetland Environment: The Biogeochemistry of Inland and Coastal Systems," presented at the Fall Meeting of the Indiana Academy of Sciences, Nov. 5, 1994.

"Photocatalytic Oxidation of a Model Halogenated Aromatic Compound: A Mechanistic Study," presented to Photocatalysis, Catalysis and Environment Group, Ecole Centrale de Lyon, Lyon, France, Oct. 27, 1994.

"Organic and Inorganic Transformation Products of TNT Photocatalysis," presented at "Emerging Technologies in Hazardous Waste Management VI," ACS, I&EC Division Symposium, Atlanta, GA, Sept. 19-21, 1994.

“Radiolytic Treatment of Dioxin Contaminated Soils,” presented at the 9th International Meeting on Radiation Processing, Istanbul, Turkey, Sept. 11-16, 1994.

“Use of PY-GC-MS to Fingerprint the Influences of Algal Material on NOM,” presented in the seminar entitled “Natural Organics and Drinking Water-From Ecology to Engineering,” at the 1994 Annual Meeting of the American Water Works Assoc., New York, NY, June 1994.

“Gamma Radiolysis of Dioxin on Soils: Theoretical and Practical Considerations,” presented at the First International Conference on Advanced Oxidation Technologies for Water and Air Remediation, London, Ontario, June, 1994.

“Treatment of Soils and Sediments: Radiolytic Destruction of 2,3,7,8-TCDD,” presented at the NSF Workshop on Applications of Ionizing Radiation for Decontamination of Environmental Resources, Miami, FL, June 2, 1994.

“Free Radicals and Excited States in Environmental Engineering: Photocatalysis and Radiolysis,” presented to the Department of Civil Engineering, Northwestern University, April 12, 1994.

“Environmental Applications of Semiconductor Photocatalysis,” presented at 3M Corp., St. Paul, MN, March 28, 1994.

“Pyrolysis-GC/MS Analysis of Natural Organic Material in Water,” presented to Orange County Water District and National Water Research Institute, Feb. 24, 1994.

“Characterization of Natural Organic Material Using Pyrolysis-GC-MS: Applications in Water Treatment,” presented at the U.S. Environmental Protection Agency and University of Cincinnati, Feb. 11, 1994.

“Radiolytic Destruction of Dioxin on Soils Using Cobalt-60: Theoretical and Practical Considerations,” presented at Environmental, Ocean and Water Resources Division, Dept. of Civil Engineering, Texas A&M University, Feb. 3, 1994.

“Radiolytic Destruction of Dioxin on Soils: Its Potential as a Pretreatment Method to Enhance Bioremediation,” presented at the 1993 Annual Spring Meeting of AIChE in Houston, TX.

“Photocatalysis for Environmental Applications: General Aspects and Mechanistic Insights,” presented at Dept. of Environmental Science and Engineering, Rice University, March 29, 1993.

“Advanced Oxidation: Photocatalytic Destruction of Aromatic Compounds,” Dept. of Civil Engineering, Northwestern Univ., 3 March, 1993.

Symposium on Environmental Applications of Advanced Oxidation Technologies, sponsored by Electric Power Research Institute and the National Science Foundation,” San Francisco, CA, Feb. 22-24, 1993.

“Water Treatment Studies at the University of Notre Dame” presented at the Central Research Laboratories of the Lyonnaise des Eaux-Dumez, Le Pecq, France, December 21, 1992.

“The Role of Oxygen in the Photocatalytic Degradation of 4-Chlorophenol,” presented at the First International Conference on TiO₂ Photocatalytic Purification and Treatment of Water and Air, London, Ontario, November, 1992.

“Photocatalysis on Semiconductor Surfaces: Novel Applications for Hazardous Chemical Destruction,” presented at the RadTech '92 North America, Boston, MA, April 29, 1992.

“The Raging Dioxin Debate: Scientific and Social Factors,” Center for Social Concerns, University of Notre Dame, January 31, 1992.

“Science and Emotion: The Dioxin Debate,” Institute for International Peace Studies, November 7, 1991.

“Inorganic and Organic Polymeric Coagulants: Theory and Application,” Association of Environmental Engineering Professor Seminar, presented at Annual Meeting of American Water Works Association, Philadelphia, PA, June 24, 1991.

“Alternative Uses of Semiconductor Systems: Photocatalytic Degradation of Halogenated Organic Compounds,” presented in a symposium, *Common Problems in Imaging Science and Photocatalysis*, at the 44th Annual Conference of the Society of Photographic Scientists and Engineers, St. Paul, MN, May 12-17, 1991.

“Influences of Natural Organic Material on Water Treatment Processes,” J.M. Montgomery Consulting Engineers, November, 1990.

“Direct Filtration and Natural Organic Material,” Department of Civil Engineering, Duke University, October 1990.

PRESENTATIONS

Paul A. DeSario, Le Chen, Michael E. Graham, Kimberly A. Gray, “Visible Light Activated TiO₂: Oxygen Vacancies and Cation Substitution,” 239th American Chemical Society Meeting, San Francisco, CA, March 21-25, 2010.

Baiju K. Vijayan, Paul Desario, Nada Dimitrijevic, Kimberly Gray, “Photocatalytic reduction of carbon dioxide to fuel using hydrothermally Synthesized Titania Nanotubes”, 239th American Chemical Society Meeting, San Francisco, CA, March 21-25, 2010.

S. Ciston, Y. Yao, R.M. Lueptow, K.A. Gray, Fouling Prevention in Rotating Reactive Membrane Filtration, Annual AIChE Meeting, Philadelphia, PA, November, 2008.

L. Chen, M. Graham, K.A. Gray, Photoreduction of CO₂ over reactive DC magnetron sputtered TiO₂ thin films, 234th ACS National Meeting, Boston, MA, August 19-23, 2007.

G. Li, K.A. Gray, Solar Fuel Applications of Titania Nanocomposites: Solid-Solid Interfaces for Photoreduction of Carbon Dioxide, 234th ACS National Meeting, Boston, MA, August 19-23, 2007.

S. Ciston, G. Li, L. Chen, R.M. Lueptow, K.A. Gray, Biofouling Prevention through Reactive Ceramic Ultrafiltration Membranes, North American Membrane Society, May 14, 2007.

Y. Yao, K.A. Gray, R.M. Lueptow, Titanium Dioxide/Carbon Nanotube Composites for Photo-reactive Filtration, North American Membrane Society, May, 2007.

C. Ng, K.A. Gray, Predicting Bioaccumulation in Dynamic Food Webs: *Ontogeny, Seasonality, Invasional Successions*. Session Title: Environmental Fate and Transport Processes II. AIChE Annual Meeting, Thursday November 16, 2006, San Francisco.

Shannon Ciston, Le Chen, Gonghu Li, Martina Hausner, Richard M. Lueptow, Kimberly A. Gray, “Effects of TiO₂ nanostructure and various ceramic supports in photocatalytic membranes for water Treatment.” AIChE Annual Meeting, November 16, 2006. San Francisco, CA.

Le Chen, Michael E. Graham, Gonghu Li, Kimberly A. Gray, “Fabricating Highly Active Mixed Phase TiO₂ Photocatalysts by Low Angle Reactive DC Magnetron Sputter Deposition.” 2006 AIChE Annual Meeting, Nov. 15, 2006. San Francisco, CA.

G. Li, L. Chen, S.M. Ciston, T. Rajh and K.A. Gray, “Titania-based Nanocomposite Materials as Highly Active Photocatalysts”, *Fundamentals of Environmental Catalysis*, The AIChE 2006 National Meeting, San Francisco, CA; November 14, 2006.

A.I. Packman, S. Arnon, and K.A. Gray, Structure, Transport, Transformation: Hydrodynamic controls on redox conditions and microbial metabolism in surficial sediments, invited presentation at the Geological Society of America Annual Meeting, Philadelphia, Oct. 2006.

G. Li, L. Chen, S.M. Ciston, T. Rajh and K.A. Gray, "TiO₂-based Nanocomposite Materials as Highly Active Photocatalysts: The Role of Adlineation Sites", *Fundamentals of Metal Oxide Catalysis*, The 232nd ACS National Meeting, San Francisco, CA; September 10, 2006.

Shannon Ciston, Le Chen, Gonghu Li, Martina Hausner, Richard M. Lueptow, Kimberly A. Gray, "Effects of TiO₂ nanostructure and various ceramic supports." ACS National Meeting, September 10, 2006, San Francisco, CA.

A.I. Packman, J.D. Newbold, S. Arnon, and K.A. Gray, Implications of hyporheic structure and biophysicochemical process coupling for modeling nitrogen dynamics in rivers, presentation at the North American Benthological Society Annual Meeting, Anchorage, Jun. 2006.

S. Arnon, A. I. Packman and K. Gray. "Flow conditions and substrate geometry strongly influence benthic denitrification." North American Benthological Society, Anchorage, AK, USA, June, 2006.

L. Chen, K.A. Gray, M. Graham, "Developing photocatalytically active mixed phase TiO₂ by magnetron sputtering deposition," to be presented in the New Horizons in Coatings and Thin Films Symposium at the International Conference on Metallurgical Coatings and Thin Films, May, 2006.

A.I. Packman, S. Arnon, and K. A. Gray, Structure, Transport, Transformation: A framework for analysis of denitrification and other microbially mediated processes in aquatic systems, presentation at the American Geophysical Union Fall Meeting, San Francisco, Dec. 2005.

S. Arnon, A. I. Packman and K. A. Gray. "The effect of flow on periphyton structure and nitrate removal." 2005 American Geophysical Union, New Orleans, LA, USA.

C. Liu, K. Nakano, E. Obuchi, T. Oike, N. Yukihiro, D. Hurum, K. Gray, "Photocatalytic decomposition of formaldehyde using titania coated lime tile," to be presented TiO₂-10, Chicago, IL, October 24, 2005.

C. Ng, M.B. Berg, K.A. Gray, L.A.N. Amaral, "Complex trophic dynamics in an invaded food web," presented at the 90th Annual Meeting of the Ecological Society of America, Montreal, Canada, Aug. 2005.

C. Ng, M.B. Berg, D. Jude, J. Janssen, K.A. Gray, L.A.N. Amaral, "Complex trophic dynamics in a 'simplified' food web: Implications for contaminant transfer," IAGLR 2005, May 25, 2005.

C. Ng, M.B. Berg, K.A. Gray, L.A.N. Amaral, "Network-centered modeling of bioaccumulation in freshwater foodwebs," 228th ACS National Meeting, Philadelphia, PA, Aug., 2004.

C. Ishida, K.A. Gray C. Ng, "Cultivating periphyton to accelerate rates of denitrification in wetlands," 228th ACS National Meeting, Philadelphia, PA, Aug., 2004.

J.A. Kostel, K.A. Gray. "The Impact of Metal and Organic Contaminants on the Structure of Periphyton in Lotic Sediments." 228th ACS National Meeting, Philadelphia, PA, Aug., 2004.

D.C. Hurum, A.G. Agrios, K.A. Gray, T. Rajh, M.C. Thurnauer, "Mixed-Phase titania photocatalysis: EPR studies of catalytic mechanisms," 228th ACS National Meeting, Philadelphia, PA, Aug. 22, 2004.

T. Rajh, M.C. Thurnauer, K.A. Gray, D. Hurum, "Mechanisms of semiconductor photocatalysis revealed via electron paramagnetic resonance," 227th, ACS Annual Meeting, March, 2004.

Hurum, D.C.; Agrios, A.G.; Gray, K.A.; Rajh, T.; Thurnauer, M.C “EPR Studies of Degussa P25 Photochemistry: Insights into Mixed Phase TiO₂ Catalytic Activity” TiO₂-8 Conference, Montreal, Canada, Oct. 27, 2003.

T. Sirivedhin, K.A. Gray. “Assessment of Anthropogenic Influence in Indirect Potable Water Reuse.” Water Reuse Annual Symposium XVIII, San Antonio, TX, 2003.

S.I. Chang, K.A. Gray. “Chemical composition and Cu complexation of the extracellular polymeric substances from pseudomonas aeruginosa biofilms,” 225th ACS National Meeting, New Orleans, LA, March, 2003.

Finster ME, Gray KA, Binns HJ. Lead levels of vegetables grown in contaminated residential soils: a field survey. American Public Health Association Annual Meeting, Philadelphia, PA, November 11, 2002.

Finster ME, Gray KA, Binns HJ. Factors influencing the creation of turf grass barriers on lead-contaminated residential soils. American Public Health Association Annual Meeting, Philadelphia, PA, November 11, 2002.

Binns HJ, Peneff N, Gray KA, Fernandes J, Finster ME; for the Safer Yards Project. Effect of an intervention to reduce soil lead contamination in urban residential yards. American Public Health Association Annual Meeting, Philadelphia, PA, November 13, 2002.

Hurum, D.C.; Agrios, A.G.; Gray, K.A.; Rajh, T.; Thurnauer, M.C “EPR Studies of Degussa P25 Photochemistry: Insights into Mixed Phase TiO₂ Catalytic Activity” 222nd ACS National Meeting, Chicago, IL, Aug. 27, 2001.

Agrios, A.G., K.A. Gray. “Detailing Visible Light Effects of 2,4,5-Trichlorophenol on TiO₂ Surfaces.” 222nd ACS National Meeting, Chicago, IL, Aug. 27, 2001.

M. Bonifacic, K-D. Asmus, K.A. Gray. “Time-resolved pulse radiolysis studies on the reaction of free radicals and hydrated electrons with halogenated phenols,” 222nd ACS National Meeting, Chicago, IL, Aug. 27, 2001.

T. Sirivedhin, K.A. Gray, “The Influence of Organic Carbon Quality on Denitrification Rates at the Des Plaines River Wetland Demonstration Project,” Society of Wetlands Scientists, 22nd Annual Meeting, Chicago, IL May, 2001.

Agrios, A.G., K.A. Gray. “Enhanced Adsorption and Degradation on TiO₂ Due to Visible Light.” Second International Conference on the Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA, May 22-25, 2000.

T. Sirivedhin, K.A. Gray, ”Anthropogenically Influenced Wetlands at the Des Plaines River Wetland Demonstration Site,” IAGLR Conference, Cornwall, Ontario, May, 2000.

Jill A. Kostel and K.A. Gray, “The Influence of Periphyton on the Bioavailability of Contaminants in Lotic Sediments,” IAGLR Conference, Cornwall, Ontario, May, 2000 [IAGLR/Hydrolab 2000 Best Student Presentation Award].

T. Sirivedhin, K.A. Gray, ”Identifying Anthropogenic Markers in Dissolved Organic Matter using Py/GC/MS.” Natural Organic Matter in Soils and Water, North Central Region Workshop, St. Paul, MN, January, 2000.

T. Sirivedhin, K.A. Gray, “Seasonal Effects on the Enhancement of Low Quality Surface Water by a Restored Riparian Wetland,” Annual Conference, American Water Works Association, Chicago, IL, June, 1999.

K.A. Gray and Robert M. Bornick, "Use of PY-GC-MS to Characterize Natural Organic Material in an Artificial Wetland: Issues Related to Drinking Water Quality," presented at the Natural Organic Matter Workshop 18-19 September 1996, Poitiers, France.

D.L. Widrig, K.A. Gray and K.S. McAuliffe, "Removal of Algal-Derived Organic Material by Preozonation and Coagulation: Monitoring Changes in Organic Quality by Pyrolysis-GC-MS," at the AWWA 1996 Annual Conference, Toronto, Canada, June, 1996.

D.C. Schmelling, K.A. Gray and P.V. Kamat, "The Importance of Reductive Transformations in the Photocatalytic Destruction of Nitroaromatic Compounds," presented at the 1996 AIChE Spring National Meeting, Feb. 25-29, 1996, in New Orleans, LA.

K.A. Gray, "Radiolytic Destruction of Hexachlorobenzene on Soils: Comparison of Gamma and High Energy Electron Radiolysis," presented at the 1996 AIChE Spring National Meeting, Feb. 25-29, 1996, in New Orleans, LA.

A.H. Simpson, K.A. Gray and K.S. McAuliffe, "Statistical Analysis of PY-GC-MS Data to Improve Understanding of NOM Chemistry in Water Treatment Processes," presented at AWWA Water Quality Technology Conference, Nov. 11-14, 1995, New Orleans, LA.

Ulick Stafford, Kimberly A. Gray and Prashant V. Kamat, "Kinetic Modeling of 4-Chlorophenol Degradation in Titania Slurries," presented in Mechanistic Environmental Photochemistry Symposium at the 210th ACS National Meeting, Chicago, IL, August 24, 1995.

K.A. Gray, A.H. Simpson and K.S. McAuliffe, "Use of PY-GC-MS to Study the Nature and Behavior of NOM in Water Treatment," presented in NOM Isolation and Characterization Symposium at the 210th ACS National Meeting, Chicago, IL, August 23, 1995.

K.A. Gray, K.S. McAuliffe and A.H. Simpson, "Monitoring Organic Removal for a Variety of Enhanced Coagulation Processes Using Pyrolysis-GC-MS," presented at AWWA Enhanced Coagulation Workshop in Charleston, SC, Dec. 6, 1994.

R.J. Hilarides and K.A. Gray, "Destruction of Dioxin on Soils: Radiolysis of Model and Real Soils," presented at the 1994 AIChE Summer Meeting, August 14-17, Denver, CO.

J.M. Noris, K.A. Gray and J-F. Gaillard, "Treatment of High Selenium Wastewaters," presented at the 1994 AIChE Summer Meeting, August 14-17, Denver, CO.

M.S. Dieckmann, K.A. Gray and P.V. Kamat, "The Sensitized Photocatalysis of a Mixed Reactant System of 4-Chlorophenol and 4-Nitrophenol," presented at the 1994 National Conference on Environmental Engineering, July 11-13, Boulder, CO.

K.A. Gray and R.J. Hilarides, "Innovative Treatment of Soil Contamination: Radiolytic Destruction of Dioxin and Co-Contaminants by Cobalt-60," presented at the 1994 National Conference on Environmental Engineering, July 11-13, Boulder, CO.

D.C. Schmelling and K.A. Gray, "Photocatalytic Transformation and Mineralization of TNT in TiO₂ Slurries," presented at the 1994 National Conference on Environmental Engineering, July 11-13, Boulder, CO.

P.V. Kamat, K. Vinodgopal, U. Stafford and K.A. Gray, "Semiconductor Particulate Films for the Photocatalytic Degradation of Organic Contaminants," presented at the 185th Electrochemical Society Meeting, San Francisco, May 25, 1994.

U. Stafford, K.A. Gray, and P.V. Kamat, "Photocatalytic Oxidation of 4-Chlorophenol on Titanium Dioxide: A Comparison with g-Radiolysis," presented at the 4th Annual Symposium on Chemical Oxidation, Nashville, TN, Feb. 1994.

R.J. Hilarides and K.A. Gray, "Gamma Irradiation of Soils Contaminated with 2,3,7,8-Tetrachlorodibenzo-p-dioxin using ^{60}Co ," presented at the 4th Annual Symposium on Chemical Oxidation, Nashville, TN, Feb. 1994.

D.C. Schmelling and K.A. Gray, "Photocatalytic Destruction of TNT Contaminated Waters," presented at the 4th Annual Symposium on Chemical Oxidation, Nashville, TN, Feb. 1994.

K.A. Gray and K.S. McAuliffe, "Pyrolysis-GC-MS Characterization of the Natural Organic Matrix of Waters and Soils: New Insights into Organic Influences on Treatment Performance," presented at the 20th Annual Water Quality Technology Conference, Miami, Florida, November 14-18, 1993.

D.C. Schmelling and K.A. Gray, "Photocatalytic Degradation of TNT," presented at the 24th Annual Meeting of the Fine Particle Society, Chicago, IL, August 1993.

R.J. Hilarides and K.A. Gray, "Radiolytic Destruction of Dioxin on Soils: Optimal Conditions and Economic Consideration," presented at the Summer Meeting of the American Institute of Chemical Engineers, Seattle, WA, August 1993.

K.A. Gray, A. St. Amand and Hong Wang, "Role of a Periphytic Biolayer in the Fate of PCBs in Artificial Stream Systems," presented at the First International Specialized Conference on Contaminated Aquatic Sediments: Historical Records, Environmental Impact, and Remediation, sponsored by the International Association on Water Quality, Milwaukee, WI, June 14-16, 1993.

K.S. McAuliffe and K.A. Gray, "Characterization of Natural Organic Matrix Using Pyrolysis-GC-MS," presented at the 26th Great Lakes Regional Meeting of the American Chemical Society, May 27, 1993.

K.A. Gray, R. Barreto, P. Yocum, and K. Anders, "The Influence of Photocatalytic Pretreatment on the Biodegradation of MTBE," presented at the Summer Meeting of AIChE, Minneapolis, MN, August, 1992.

K.A. Gray, "Mechanistic Studies of Photocatalysis on Semiconductor Surfaces," poster presentation at the Gordon Conference on Environmental Sciences: Water, June, 1992.

K.A. Gray, P. Kamat, U. Stafford and M. Dieckmann, "Mechanistic Studies of Chloro- and Nitro-phenolic Degradation on Semiconductor Surfaces," presented at The Annual Meeting of the American Chemical Society, San Francisco, April, 1992.

K.A. Gray and K.S. McAuliffe, "Application of Pyrolysis-GC-MS to Characterize a Variety of Surface Waters: Influence of Algal Dynamics," presented at the Annual Meeting of the American Chemical Society, San Francisco, April, 1992.

K.A. Gray, "Use of Pyrolysis-GC-MS to Study the Organic Matrix of Surface Waters," presented at the 1991 Water Quality Technology Conference, American Water Works Association, Orlando, Florida, November, 1991.

U. Stafford, K. Gray, P. Kamat, A. Varma, "The Effects of Semiconductor Properties Upon Photocatalytic Rates for Organic Contaminant Degradation," presented at the 1991 Annual Meeting of the American Institute of Chemical Engineers, Los Angeles, CA, November, 1991.

J. Earley, K. Gray, P. Garrity, "Radiolytic Destruction of Dioxin," presented at the 1991 Annual Meeting of the American Institute of Chemical Engineers, Los Angeles, CA, November, 1991.

K. Anders and K. Gray, "Photocatalytic Degradation of Methyl-tert-Butyl Ether on Semiconductor Surfaces," presented at 2nd Annual Argonne Symposium for Undergraduates, Argonne National Laboratory, November 8-9, 1991.

M.S. Dieckmann, K.A. Gray, and P.V. Kamat, "Photocatalyzed Degradation of Adsorbed Nitrophenolic Compounds on Semiconductor Surfaces," presented at Waste Management in The Chemical and Petrochemical Industries, IAWPRC & Tulane University, New Orleans, June, 1991.

K.A. Gray, "Specific Chemical Effects of The Calcium and Bicarbonate Ions on Colloidal Destabilization by an Inorganic Aluminum Polymer," presented at the Mid-West Environmental Chemistry Workshop, October, 1990.

M.S. Dieckmann, P.V. Kamat, and K.A. Gray, "The Effect of Semiconducting Materials as Photocatalysts in the Degradation of Nitrophenols," presented at the Mid-West Environmental Chemistry Workshop, October, 1990.

K.A. Gray, "Direct Filtration of Model and Natural Waters: The Removal of Turbidity versus Dissolved Organic Matter," presented at the IAWPRC/IWSA Joint Specialist Conference on Coagulation, Flocculation, Filtration, Sedimentation, Flotation, Jonkoping, Sweden, 24-26 April, 1990.

K.A. Gray, "Direct Filtration on the Seine River: The Importance of Chemistry," presented at the 1st Macao Workshop on Water Treatment, 3-4 November, 1989, sponsored by the Macao Water Supply Co., Ltd. and the Lyonnaise des Eaux.

K.A. Gray, F. Bernazeau, C. Hubele, "Reduction of Total Organic Carbon by Direct Filtration: A Pilot Study on the Seine River," presented at the 7th Regional Conference of the Asian-Pacific Group of the International Water Supply Association (IWSA), 29 Oct.-2 Nov., 1989, Nagoya, Japan.

K.A. Gray, F. Bernazeau, C. Hubele, "Upgrading a Slow Sand Filtration Plant for Micropollutant Removal: Use of Direct Filtration Prior to Granular Activated Carbon for Reduction of Total Organic Carbon," presented at the IWSA/AIDE Specialized Conference "Organic Micropollutants," 19-21 Sept. 1989, Barcelona, Spain.

K.A. Gray, F. Bernazeau, C. Hubele, "Direct Filtration on the Seine River: A Pilot Study," presented at the Annual Conference of the American Water Works Association, Los Angeles, June, 1989.

K.A. Gray, C.H. Yao, C.R. O'Melia, "Polymeric Metal Coagulants," presented at the Annual Conference of the American Water Works Association in Kansas City, MO, June, 1987.

K.A. Gray, C.R. O'Melia, "Use of Inorganic Iron(III) Polymers for Coagulation in Industrial Water Treatment," presented at the 18th Mid-Atlantic Industrial Waste Conference, Virginia Polytechnic Institute, Blacksburg, VA, June, 1986.

K.A. Gray, C.R. O'Melia, "The Formation, Characterization and Use of Inorganic Iron(III) Polymers for Coagulation in Water Treatment," presented at the Annual Conference of the American Water Works Association in Denver, CO, June, 1986.

K.A. Gray, C.R. O'Melia, "The Use of Inorganic Iron(III) Polymers for Coagulation in Water Treatment," presented at the 37th Annual Meeting of the Chesapeake Section of the American Water Works Association, Ocean City, MD, Sept., 1985.

K.A. Gray, T.D. Waite, "Coagulation and Precipitation Studies of the Ferrate(VI) Ion," presented at the 186th National Meeting of the American Chemical Society, Environmental Chemistry Division, Washington, D.C., Aug., 1983.

T.D. Waite, K.A. Gray, "Oxidation and Coagulation of Wastewater Effluent Utilizing the Ferrate(VI) Ion," presented at the Fourth International Conference on Chemistry for Environmental Protection, Toulouse, France, Sept., 1983.

UNIVERSITY COMMITTEES AND RESPONSIBILITIES

Department:

Northwestern University:

Environmental Group Coordinator, 2002-2010.
Graduate Recruiting and Admissions, Environmental Program, 2002-present
Redesigned Website – 2001-2002
Environmental Faculty Search Committees (1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010)
Service Learning Pilot and Program Director, 1996-present
Strategic Planning – 2000, 2004-05
Undergraduate Curriculum Development, 1995-present

University of Notre Dame:

Departmental Seminar Coordinator, 1992-1995
Undergraduate Curriculum Committee, Chair, 1989-1993
ASCE Faculty Advisor, 1990-1993
Graduate Recruiting, 1990

College:

Northwestern University:

Search Committee – Chemical & Biological Engineering, 2017-2018
Promotion & Tenure Committee – 2007-2009, 2015-2017
Search Committee – Biomedical Engineering, 2015
Search Committee – Material Science & Engineering and International Institute of Nanomaterials, 2015
Search Committee – Associate Director, Industrial Relations, 2005
Dean Search Committee, Spring, Fall 2004
Freshman Advisor - 1996-2001
McCormick Identity Committee, 2001-2002
MEOP – Summer EXCEL Program, Designed and Supervised Community Engineering course and integration into Leadership Program, 1998,1999.
Planning Committee for the Institute for Manufacturing and Design Technology, 1998
Speaker/Facilitator - McCormick Career Night, 1995

University of Notre Dame:

Grievance Committee, Alternate, 1994-1995
Committee on Undergraduate Studies, 1989-1993
Minority Mentor Program, Advisory Board (member, 1993-1995) and mentor, 1989-1995
Summer Program in Engineering for High School Women and Minorities; Seminar Speaker, 1990-1995

University:

Northwestern University:

Strategic Planning & Affiliated Faculty – Buffet Center for Global Studies
Faculty Task Force on the Undergraduate Experience, 2015
Fulbright Interview & Udall Selection Committees, Office of Fellowships, 2013, 2014, 2015.
Environmental Policy & Culture Faculty Advising Committee, Weinberg CAS, 2008-2011.
School of Continuing Studies' Graduate Faculty Advisory Board, 2007-present
Program Review Committee (2002-2005); Member Geological Sciences Internal Review Subcommittee, 2001; Chair, University Services Internal Review Subcommittee, 2003; Chair, Department of Family Medicine, Internal Review Subcommittee, 2004; Chair, Department of French and Italian Internal Review Subcommittee, 2005
University Re-accreditation; Faculty Self-Study on Interdisciplinarity in Undergraduate Programs, 2003-2004.
Faculty Search Committees; Chemistry (2003-04), Mathematics (2004-05)

Director, Environmental Science, Engineering and Policy Program (formerly, Environmental Science Program, WCAS), 2003-present
Plant Biology and Conservation Graduate Program in WCAS, member of Oversight Committee
Environmental Science Task Force, 2001-02
Committee on Women in the Academic Community, 2001-2003
University Faculty Reappointment, Promotion and Tenure Denial Appeal Panel, 1999-2002
Master (1998-2002), *Associate Master* (1997-98) and *Faculty Associate of Public Affairs Residential College*, 1996-present.

University of Notre Dame:

Committee to Select Proposal to Henry R. Luce Professorship Program, 1994
Graduate Council, Appointed Member, 1991-1994
Planning Committee of Graduate Council, 1992, 1993
Freshman Year of Studies, Discussion Group Leader Freshman Orientation, 1991-1994
Notre Dame Science and Engineering Talent Search, Seminar Speaker, 1991
Program to Promote Minority Enrollment in Graduate School, Seminar Speaker, 1991
Center for Social Concerns, Pilot Workshop to consider Ethical Dimensions of Undergraduate Education, Discussion Leader, January 12-13, 1992
Reilly Center, Scholarship Review Committee, 1992, 1994, 1995
Conference on Business Leadership in the Environmental Crisis, Panelist, Sept., 1992
Institutional Animal Care and Use Committee, Member, 1991-1995
Selection Committee for Graduate Teaching Award, 1993
Speaker-Placement Office Graduate School Information Session, 1993, 1994
Environmental Issues Group, Kroc Institute of Peace Studies
Faculty Fellow and member of Undergrad Advisory Committee, Joan B. Kroc Institute for International Peace Studies 1993-1995
Panel Member: Women in a Catholic University: The Challenge and Promise, 1993
Participant, Information Session for Women in Science and Engineering; Freshman Year, 1993.

EDUCATIONAL and COMMUNITY OUTREACH

K-12 Educational Outreach:

- Designed, organized, and taught in Middle- and High-School Teachers Workshop, Unlocking Nature's Secrets: Catalysis in the Environment and Industry; at Argonne National Laboratory, 2000, 2001 & 2002. Total number of teachers was 91.
- Primary author of educational laboratory module, Environmental Catalysis,; 10th in a series of Material Worldwide Modules; designed, tested, wrote series of activities for students to learn about various principles of catalysis and the importance of catalysis for environmental protection. Field-tested activities in various high schools (ETHS, New Trier, Schaumburg, etc.) in Chicago area and nationally.
- Mentored 7 High School Teachers participating in the NSF REST program (Research Experience for Science Teachers) since 1999, as well as over 26 REU or high school students working on summer research over the last 10 years.

Community Outreach

- Chicago Cross-Pollinator Project, panel member, 11 June 2012.
- The Green City: A Field Study in Chicago; organized and lectured in Summer Institute of School of Continuing Studies, Aug. 9-11, 2006, Aug 1-3, 2007, July 28-30, 2008.
- Technical Advisory Committee, Friends of the Chicago River, 2004-present.
- Advisory Board, Healthy Schools Campaign, 2004-present.

NU Alumni, Development, Student Group, and General University Talks

- Midday @ McCormick, speaker, "Reinventing the City," 26 October 2015.
- Panel moderator, The Environment & Human Rights, Northwestern University Conference on Human Rights, Jan. 18, 2014.

- “Living Cities: An urban model of sustainability,” Fireside at Slivka Residential College, 10 May 2012.
- Undergraduate Research and Arts Exposition, Session Moderator, May 21, 2012.
- Guest lecture, Science of Climate Change, NU Law School, Seminar on Climate and Energy, Jan. 10, 2012.
- Panel member, Sustainability and Renewable Energy Panel, The Graduate School Centennial Celebration, Nov. 4, 2011.
- “Fabricating Titania-based Nanocomposites for Solar Fuel Production: TiO_{2-x} & $\text{Ti}_{1-x}\text{Nb}_x\text{O}_2$ Thin Films & TiO_2 Nanotubes,” Northwestern Undergraduate Chemistry Council, March 8, 2011
- “Sustainable Strides in Urban Design: Lessons from Chicago,” SEED Green Cup Kick-off, 31 January, 2011.
- Panel: Environmental Justice and Hurricane Katrina for Undergraduate Lecture Series on Race, Poverty, and Inequality at Northwestern University & NU Conference on Human Rights – November 22, 2010.
- “The Modern American City: Can we ever make it Sustainable?” McCormick Engineering Week, McCormick Student Advisory Board, NU, May 20, 2010.
- Panel: Working with the Community, Community Research Workshop, NU, May 14, 2010.
- Panel: Environmental Racism: Poverty and Pollution in Minority Communities, in the Martin Luther King, Jr. Lecture Series, NU Medical and Law School, January 12, 2010.
- Panel: Infrastructure Now and Then: Seeing the Future At Another Level, in The Infrastructure Universe: From Highways to Molecules, Alumnae Continuing Education Course, Dec. 3, 2009.
- Domain Dinner on Sustainability, “The Elusive Concept of Sustainability,” 16 Nov. 2009.
- “Can you have a Green City on a Brown Lake,” Junior Science Café, Arlington Heights, 4 Nov., 2009
- “Making Chicago Sustainable: The Water-Energy Connection” in The Infrastructure Universe: From Highways to Molecules, Alumnae Continuing Education Course, Oct. 1, 2009.
- “Can you have a Green City on a Brown Lake,” Sigma Xi Junior Science Café, 21 March, 2009
- “Why this isn’t your father’s energy crisis,” Science Café, Wilmette Public Library, Nov 5, 2008.
- Women in Science and Technology Panel, POWER Dinner, Chicago, IL, May 22, 2008.
- “Sustainability: Fad or Necessity?” Fireside at CCS, May 12, 2008.
- “Who wants to be a billionaire? The mad dash to find sustainable alternatives to fossil fuels?” Northwestern University Circle, March 13, 2008.
- Survival Skills for Graduate Students and Junior Faculty, Women’s Center, NU, Feb. 20, 2008
- “Who wants to be a billionaire? Some thoughts on energy, geopolitics, economics, & technology.” Fireside at Slivka Residential College, Nov., 2007.
- “Are we ever going to be able to make modern American cities sustainable?” Twin Cities NU Club, May 23, 2007.
- “Opportunities in Environmental Science and Engineering,” SEED, May 1, 2007.
- “Design for the Environment – what that means” guest lecture, IDEA 398, Feb. 1, 2007
- “Environmental Engineering: Biology, Chemistry and Physics for Ecological and Public Health Protection,” Society of Hispanic Professional Engineers, Midwestern Expo, Nov. 1, 2006.
- “Energy and Sustainability: Business Opportunities,” Energy Club in Kellogg School of Management, Oct. 3, 2006.
- Domain Dinner on Energy and Environmental Issues, April 11, 2006, organizer, speaker.
- “Designing the Ecologically Sound City: New Orleans as a Case Study” Alumnae Continuing Education Lecture Series, Dreams, Designs, and Development, April 20, 2006.
- “Hurricane Katrina: Preparation, Response and Rebuilding,” Panel member, sponsored by MEAS, Oct. 17, 2005.
- “The Sustainable City: If we know what to do, why aren’t we doing it?” NU Club of Virginia, Richmond, VA, March 18, 2005.
- “The Sustainable City: Ecology, Efficiency, Equity,” NU Engineers for a Sustainable World, May, 2004.
- “Urban Ecology and Technology: Opportunities for Sustainable Societies,” ARCS lunch, Norris Center, April, 2004.
- “Sustainability: Engineering the City of the Future,” Public Interest Alumni Assoc., John Evans Center, Evanston, IL, Oct., 2003.
- “Undergraduate Research and Project Based Learning,” New Student Visits, Norris Center, April, 2003.
- “Engineering the City of the Future: An Environmental Perspective,” NU Alumni

- Association, March, 2003.
- “Do Environmental Issues Really Matter,” NU Alumni Association, Classes without Quizzes, Nov. 12, 2001.
- “Do Environmental Issues Really Matter,” Provost’s Reception for Residential College Faculty Fellows, Hardin Hall, Sept. 25, 2001.
- “Environmental Issues of Urban Areas,” NU Alumni College Program, *The City: Past, Present, and Prospects*. July 28, 1999.
- “PCB Contamination and Other Threats to the Ecological and Human Health of the Great Lakes Region,” Seminar Day, Northwestern Alumni Assoc., April 17, 1999.
- “Environmental Catalysis,” presented at Tech Review, March 23, 1999.
- “Community Service in Chicago Neighborhood,” Lunchtime Seminar, PARC, Sept. 15, 1998.
- “Local Pollution,” Earthday, SEED, NU, 23 April 1998.
- Member, Panel Discussions to Undergraduate and Graduate students on issues related to gender, environmental quality and justice, sustainability issues.

SERVICE LEARNING AND COMMUNITY BASED PROJECTS (students supervised in parentheses)

- Drinking Water Infrastructure in the United States (E. Freeman, C. Howard, S. Reich, P. Shams) 2018.
- Schroud Site Project (A. Pruksapipat, P. Lu, S. Zheng) 2018.
- Quantifying the Effects of Coal-Fired Electricity Generating Unit Transition (T. Venclovas, J. Thomas) 2017.
- Metropolitan Water Reclamation District of Greater Chicago Air Permit Renewal (J. Vega-Perkins, X. Zhou) 2017.
- Lead Contamination Crisis in East Chicago, Indiana (K. Mullen, J. Chen) 2017.
- SPARCC: L-Evated Chicago (E. Doyle, M. Ryzhov) 2017.
- Mobile Reuse Center: Preliminary Business Model (S. Bruno, Y. Xu) 2017.
- Green Infrastructure to Aid Stormwater Control in Highland Park (E. Balasky, J. Schaefer) 2017.
- Integrated Water Management (M. Marni, X. Chen) 2017.
- Green Infrastructure (L. Ayala, L. Hernandez-Gonzalez) 2016.
- The Chicago Manufacturing District redesigned as Food Manufacturing Ecodistrict (J. Ruan, J. Standley Pradhan, A. Ostenso, R. Narula) 2016.
- PERRO and H. Kramer smelter emissions (Valerie Nubbe & David Sutlin) 2015.
- Former People’s Manufactured Gas Plant Sites (Maria Gonzalez & Emily Logan) 2015.
- Building Deconstruction and Resource Recovery (Breanna Kazmierczak & Emily Northard) 2015.
- Strategies for valorizing coal mine methane (Da Xiang & Dingyang Duan) 2015.
- Eco-district design in Chicago – Former Finkl Steel site (Kelly Cai, Emily Rail, Elizabeth Chou, Ariane Bernard de Saint Affrique) 2015.
- Design of Solar Distillation for Drinking Water Supply in Rural Desert Villages in India (Viral Patel & Karis Shang) 2014.
- Field-based water quality testing kit: Method calibration & tailoring (William Oestreich & Hanlin Yao) 2014.
- Petroleum coke storage and health concerns (Sue Ann Gan & Yiqi Zhang) 2014.
- Data management and interpretation: A study of Adopt-a-Beach volunteers for the Alliance for the Great Lakes (Bridget Gibbons & Amanda Ripperger) 2014.
- Enhancing Quentin Road for full service and protection of Deer Grove Forest Preserve (Deborah Teng & Tiffany Sevilla) 2014.
- Lake Calumet Cluster Site & Brightfields: Feasibility of siting a solar facility (Jonathan Feldmand & Asher Levinson) 2014.
- An analysis and recommendation of sediment remediation strategies in Bubbly Creek and Collateral Channel for Little Village Environmental Justice Organization and Pilsen Environmental Rights and Reform Organization (Anna Leenay & Cheng Xue) 2014.
- Water Scarcity in Jaipur, Rajasthan, India (Kathleen Roberts & Michael Reiner) 2013.
- Feasibility Study for Creating a Field-based Water Quality Testing Kit for Use in Rajasthan, India (Eric Spooner & Lisa VanBladeren) 2012.
- Evaluation of Textile Treatment and Treatment Alternatives for the Village of Jasol in Rajasthan, India (Beau Garrett, Benjamin Shorofsky, Regan Radcliffe) 2012.
- Cook County Climate Change and Public Health Action Plan (Beau Garrett & Natalie Lake) 2012.

- Confined Animal Feed Operations (CAFO) Best Management Practices (Regan Radcliffe & Kaleb Tsang) 2012.
- Midwest Generation Trona Injection (Anusha Vadlamani & Bingshu Li) 2012.
- Oxbow Corp. Calcined Petroleum Coke Facility –SO₂ Non-compliance (Lauren Lopez & Yufei Zhou) 2012.
- Hegewisch March (William Boulay & Xingcheng Lu) 2012.
- Air Quality Evaluation for Southeast Chicago with Respect to the Proposed Universal Cement Facility (Jeff Goto & Nopparat Chiangwong) 2012.
- Chicago Area Confined Disposal Facility (Adrienne Masterton, Yan Zou) 2012.
- Preliminary Phase II Remedial Investigation Report; OU3 Onsite Soils & Groundwater Assessment (Lauren Miller & Paige Humecki) 2012.
- Closure, Remediation, and Future Land Use at State Line Power Plant (Lauren Fleer & Taylor Sweet) 2012.
- Clean Construction or Demolition Debris; Rule Making (Tina Wang & Sarist Macksasitorn), 2011.
- 2727 South Troy Street, Little Village: Site Remediation (Dustin Grossheim & Sasha Letuchy), 2011.
- State Line Energy Power Plant: New Source Review (Roshni Barot & Brian Kennedy), 2011.
- South Suburban Citizens Opposed to Polluting the Environment: Storm-water Management & Flooding in Longwood Farms (Michael Giannetto & Ke Gong), 2011.
- Understanding the EPA's Greenhouse Gas Reporting Program (Ben Shorofsky & Boping Liu), 2011.
- Calumet CID Landfill: Future Use Recommendations (Walter Furness & Andrea Morgan), 2011.
- Methods for Attaining Aquatic Life Use A Standards in the Calumet Area Waterways (Sara Thomas & Susan Vescovi), 2011.
- Lake Depue Sediment Contamination: Evaluation of OU5 Ecological and Human Health Risk Assessments (Chelsea Baldino & Anjulie Cheema), 2011.
- Restoration of Miller Meadow (S. Katragadda, M. Roebuck, J. Young), 2010.
- Brownfield Redevelopment in Little Village: Assessing the extent of contamination, remediation strategies, and future use (E. Och, S. Pavlik), 2010.
- Zero Energy Buildings (for Doug Farr & Assoc. by M. James and E. McCarthy), 2010.
- HVAC & Boiler Systems: Proposal for the Robert H. Lurie Medical Center (for Earthwise Environmental, Inc. by B. Sikora, J. Sirk, R. Gophal), 2010.
- Sustainable Urban Infrastructure Systems: Lathrop Homes (for Doug Farr & Assoc. by E. Ulion, S. Bernard, P. Slevin, S. Chaturvedi), 2010.
- Installing an Inflatable Dam at Busse Woods - Assessing Environmental Impacts and Identifying Reasonable Alternatives (Robert Pickering, Mark Woodsum), 2009.
- Transforming the Former Celotex Industrial Site in Little Village to a Community Park - Design Features That Protect the Public and Create a Community Recreational Resource (Virginia Palmer, Nancy Shan), 2009.
- BP Whiting Refinery Permit Review (Christopher Trigg, Shuchi Talati), 2008.
- Robbins Community Power Plant (Maggie Fry, Erica Schleimer), 2008.
- Redesignation of the Calumet River System (Teri McClerkin, Carmen Shank), 2008.
- Revegetation of the Calumet Cluster Site (Ahmad Harake), 2007.
- The City of the Future Competition, sponsored by ASCE, IBM, The History Channel, selected for Chicago competition (Julia Hand, Caitlin Freehan, Jennifer Raber, Siti Abidin), 2007.
- Analysis of the Proposed Ford Heights Ethanol Plant (Siti Abidin, Jonathan Adams, Nur Atiah Ashar, Maya Jensen), 2006.
- USX Bike Path/Public Access (Duane Ambroz, Rosemary Bush, Eva Dubey, Kevin Lee), 2006.
- Lake Calumet Cluster Site: Future Land Use Proposal (Margaret Adsit, Allan Castillo, Douglas Groux, Megan Mann), 2006.
- Probing the photochemical aging of the Seurat's zinc yellow pigments in Sunday at La Grand Jatte with Francesca Casadio at the Art Institute of Chicago (Nirav Shah), 2004-2006.
- Natural Resource Damages for Indian Ridge Marsh (Sara Patrawala and Sohler Dane), 2006.
- Contamination of the Celotex Site at La Villita (Chris Lee and Melissa Mendez), 2006.
- Lucak-Berg Pit Project (Calista Fisher and Marshall Lindsey), 2006.
- Proposal for Quarry Shopping Center's Storm Water Runoff (Debra Weissman and Ori Sivan), 2004- 2005.
- Assessment of Opacity Issues at Five Midwest Generation Coal-fired Power Plants in the Chicago Area (Jonathan Flowers, Nyak Shidawati, Sharon Waller), 2004-2005.
- Methane Production and Energy Cogeneration Potential in the Sediments of the Chicago Sanitary Canal (Colin Barrett), 2003-2004.
- LEEDing the Redevelopment of Brownfields with Green Design (Betty Jurkowski), 2003-2004.

- Remediation of Thorium Contaminated Soils and Sediments: Kerr-McGee Kress Creek and Warrenville Retreat Center (Clare Frederick and Allison Walk), 2003-2004.
- Healthy and High Performing Schools: Economic Analysis of LEED Rated School Construction (Robert Kutter and Megan Johnson), 2003-2004.
- Urban Honey Production: Risk Assessment of Metal and Organic Contamination (Erin Jordan), 2003-2004.
- PM₁₀ Compliance in Southeast Chicago (Michael Goldrich and Ben Jewel), 2003-2004.
- Going Green: A Comprehensive Review of Green Roofs (Aarti Ramachandran) 2003-2004.
- Indiana Harbor/East Chicago CDF (Todd Waldrop), 2002-2003.
- Fort Sheridan Closure (Polina Liberman and Don Walsh), 2002-2003.
- PAH Contamination at Bridgeport Homes (Hilary Holmes), 2002-2003.
- Healthy and High Performance Schools (Se Jong Cho and Francis Wambi-Buessio), 2002-2003.
- Wastewater Disinfection Methods and Their Feasibility at the Metropolitan Water Reclamation Plants in the Greater Chicago Area (Kirsten Dickson), 2002-2003.
- An Investigation of Remediation Alternatives for Contaminated Sediments in the Vessel Slips of Wisconsin Steel Works and United States Steel South Works (Andrew Burnham and Travis Cobb), 2001-2002.
- The Suitability of Shallow Wells to Solve Lockport's Radium Problems (Cari Ishida, Todd Waldrop, Nathan Turner, Cody Prentice, Andrew Marcus), 2001-2002.
- Solar and Wind Renewable Energy Systems at the Southeast Chicago Cluster Site (Todd Waldrop), 2001-2002.
- The CTA's Forest Glen Bus Garage: The Air Pollution and Some Solutions (Jennifer Wilson), 2000-2001.
- Hazardous Air Pollutant Emissions from Natural Gas-Fired Peaking Power Plants in Northeast Illinois (Lynette Cheah), 2000-2001.
- Health Risks from Radioactive Emissions from Coal Burning Power Plants (Ben Porter), 2000-2001.
- Evaluation and Design of Enhanced Wetlands for the Lake Calumet Cluster Site (Jennifer Wendrowski), 1999-2000.
- A Guide to Identifying Communities with Health Hazards: Using the Tools of CCRI (Emily C. Anderson and Marlena M. Lacey), 1999-2000.
- A Characterization and Assessment of Vessel Slip Contamination: United States Steel South Works Site and Wisconsin Steel Works Site (Nuria Bertran-Ortiz and Christina Hemphill), 1999-2000.
- Resource Guide: The Phytoremediation of Lead in Urban, Residential Soils (Joseph Fiegl and Bryan McDonnell), 1999-2000.
- Pollution Prevention in the Metal Finishing Industry (Allison McCormick and Tracey Rissman), 1998-1999.
- The Chicago Cumulative Risk Initiative—Mercury Rising (Saba Fatima and Katie Sovik), 1998-1999.
- Lake Calumet Cluster Site: Site Characterization and Use of Experimental Wetlands for Reclamation (Michael Butler and Kim Sopocy), 1998-1999.
- Chicago Cumulative Risk Initiative – Hazard Mapping (Kelly Hirsch and Junaluska Williams), 1998-1999.
- Planting the Seed for Recovery: Altgeld Gardens (Angela Change and Mausami Desai), 1998-1999.
- Regional Air Quality and Chicago's Ground Level Ozone Problem (Terah Luchey and Shanthi Nataraj), 1998-1999.
- Wetland Remediation: Cleaning up the Lake Calumet Cluster Site (Beverly Ahoni), 1998-1999.
- Lake Calumet Cluster Site: An Analysis of Future Remedial Action (Sarah Bender and Ted Ekkers), 1997-1998.
- Risk Assessment and Site Characterization of the Wisconsin Steel Works Site (Emily Fahsl and Matthew Lamb), 1997-1998.
- PAH Contamination at Altgeld Garden's (Kimberly Mertz and Neal Steffan), 1997-1998.
- An Analysis of Natural Attenuation at the United States Steel South Works Site (Lisa Bongiovanni, Sanne Knudsen, Todd Wildermuth), 1996-1997.
- Assessing Wetlands Creation and Landfill Gas Reuse Projects at Site Adjacent to Indian Ridge and Big Marshes (Bob Cummings and Nikki Kryda), 1996-1997.
- Celotex Corporation Superfund Site (Pam Kearfott and Claire Hilger), 1996-1997.
- The Little Village Air Quality Analysis (Jaime Hardt and Kary Hisrich), 1996-1997.

CONSULTING

- LVEJO (MGP site clean up technical assistance)

- Wabashco Co. LLC / Tradewater (Coal-mine methane valorization technology assessment)
- Wetland Research, Inc. (strategies to control common carp)
- Gold Bennett Cera & Sidener LLP (antitrust, general aspects of titania pigments)
- Crowell & Moring, LLP (Intellectual property, photocatalysis patent analysis)
- Industrial Facilities Engineering (Disinfection of public drinking water supplies at a naval base)
- Cochran, Cherry, Givens, Smith & Montgomery, L.L.C. (environmental justice, investigated property and groundwater contamination from landfill in Michigan)
- Munday and Nathan (investigated suspected contamination of groundwater)
- Edward Scanlan Law Office (aquifer and soil contamination by TCE at Lockformer site in Lisle, IL)
- Levy and Leopold Law Office (PAH contamination at CHA facility, Altgeld Gardens, Sauk Village aquifer contamination)
- Sugar Law Center for Economic and Social Justice (Soil contamination and inadequate brownfield cleanup on Detroit public school site)
- City of Thornton, CO ((Organic Characterization & Surface Water Quality for Indirect Potable Reuse, testified before Colorado Water Board on the development of organic carbon control and in Water Court)
- The Wetlands Initiative (Various Restoration Projects along the Illinois and Chicago Rivers; wetland restoration, nutrient dynamics)
- Burlington, WI Giardia outbreak (Expert for Plaintiffs on Water Quality and Drinking Water Treatment)
- Cascino Vaughan, Chicago, IL (Milwaukee Cryptosporidium Outbreak, Expert for Plaintiffs on Coagulation Process and Use of Polymeric Coagulants)
- Employment Research and Development, Inc. Wilmette, IL (accreditation testing)
- Burns and McDonnell Consulting Engineers, Kansas City, MO (Organic Characterization and Surface Water Quality for Drinking Water Treatment)
- Orange County Water District (Organic Characterization and Surface Water Quality for Indirect Water Reuse)
- Safety Kleen (Waste Characterization & Treatment)
- KDF Fluid Treatment, Inc., MI (Pilot Testing Iron Removal Catalyst)
- Midland Resources, Inc., Lawrence, KS (Characterization and Use of Polymeric Iron Coagulant)