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Major Professional Interests

Physical Chemistry, Environmental Chemistry

Education

Technische Universität Berlin, Germany	Chemistry	B.S. equivalent, 1994
Georgetown University, Washington, D. C.	Chemistry	PhD with Distinction, 1998

Awards, Honors and Fellowships

- Distinguished Teaching Award, Northwestern University Undergraduate Chemistry Council, 2005
- Camille and Henry Dreyfus Foundation Postdoctoral Research Fellowship in Environmental Chemistry, 2004
- National Science Foundation CAREER Award, 2004-09
- Searle Teaching Scholar, 2005-2006
- NOAA Postdoctoral Fellow in Climate and Global Change, 1999-2001
- Harold N. Glassman Best Thesis Award at the Graduate School of Arts and Science, Georgetown University, 1999
- American Physical Society Graduate Student Award, 1998
- American Geophysical Union Graduate Student Award, 1998
- NASA Predoctoral Fellow in Earth System Sciences, 1996-1998

Employment

- Assistant Professor, Northwestern University, since 2001
- Postdoctoral Fellow with Mario Molina, MIT, 1999-2001
- Predoctoral Fellow with Janice Hicks, Georgetown, 1994-1998

Publications at Northwestern (indicates corresponding author)*

26. "Second Harmonic Generation Phase Measurements of Cr(VI) at Methyl Ester-Functionalized Fused Quartz/Water Interfaces"
Amanda L. Mifflin, Michael J. Musorrafiti, Christopher T. Konek, and Franz M. Geiger*
Submitted to the Journal of Physical Chemistry (2005)
25. "DNA Single Strands Tethered to Fused Quartz/Water Interfaces Studied by Second Harmonic Generation"
Faith C. Boman, Michael J. Musorrafiti, Julianne M. Gibbs, Brian R. Stepp, Anne M. Salazar, SonBinh T. Nguyen, and Franz M. Geiger*
Submitted to the Journal of the American Chemical Society (2005)
24. "Nonlinear Optical Studies of the Agricultural Antibiotic Morantel Interacting with Silica/Water Interfaces"
Christopher C. Konek, Kimberly D. Illg, Hind A. Al-Abadleh, Andrea B. Voges, Grace Yin, Michael J. Musorrafiti, Catherine M. Schmidt, and Franz M. Geiger*
Submitted to the Journal of the American Chemical Society (2005)
23. "Kinetic Studies of Chromium (VI) binding to Carboxylic Acid- and Methyl Ester-Functionalized Silica/Water Interfaces Important in Geochemistry"
Hind A. Al-Abadleh, Amanda L. Mifflin, Michael J. Musorrafiti, and Franz M. Geiger*
Journal of Physical Chemistry B, in press and ASAP Article (2005)
22. "Sedimentation Time Measurements of Soil Particles by Light Scattering and Determination of Chromium, Lead and Iron in Soil Samples via ICP"
Patricia Metthe Todebush and Franz M. Geiger*
Journal of Chemical Education, in press (2005)
21. "Control of Carboxylic Acid and Ester Groups on Chromium (VI) binding to Functionalized Fused Silica/Water Interfaces Studied by Second Harmonic Generation"
Hind A. Al-Abadleh, Amanda L. Mifflin, Paul A. Bertin, SonBinh T. Nguyen, and Franz M. Geiger*
Journal of Physical Chemistry B, 109, 9691-9702 (2005)
20. "Applications of Non-Linear Optical Techniques for Studying Heterogeneous Systems Relevant in the Natural Environment"
Andrea B. Voges, Hind A. Al-Abadleh, and Franz M. Geiger*
Book Chapter in "Environmental Catalysis", V. Grassian, Ed., CRC Press, Boca Raton (2005).
19. "Can kinetics tell us more? Cr(VI) binding to organic adlayers at silica/water interfaces using second harmonic generation and sum frequency generation"
Amanda L. Mifflin, Hind A. Al-Abadleh, Christopher T. Konek, Andrea B. Voges, and Franz M. Geiger*

- Geochimica et Cosmochimica Acta, 69, A23 Suppl. 1, (2005)
18. "Tracking interfacial acidities, charge densities, potential, and energy density at carboxylic acid-functionalized silica/water interfaces using second harmonic generation and sum frequency generation"
Christopher T. Konek, Michael J. Musorrafiti, Andrea B. Voges, Hind A. Al-Abadleh, and Franz M. Geiger*
Geochimica et Cosmochimica Acta, 69, A45 Suppl. 1, (2005)
 17. "Carboxylic Acid and Ester Functionalized Siloxane Scaffolds on Glass Studied by Broadband Sum Frequency Generation"
Andrea B. Voges, Hind A. Al-Abadleh, Paul A. Bertin, SonBinh T. Nguyen, and Franz M. Geiger*
Journal of Physical Chemistry B., 108, 18675-18682 (2004)
 16. "Chromium (VI) Binding to Functionalized Silica/Water Interfaces Studied by Nonlinear Optical Spectroscopy"
Hind A. Al-Abadleh, Andrea B. Voges, Paul A. Bertin, SonBinh T. Nguyen, and Franz M. Geiger*
Journal of the American Chemical Society, 126, 11126-11127 (2004)
 15. "Interfacial Acidities, Charge Densities, Potentials, and Energies of Carboxylic Acid-Functionalized Silica/Water Interfaces Determined by Second Harmonic Generation"
Christopher C. Konek, Michael J. Musorrafiti, Hind A. Al-Abadleh, Paul A. Bertin, SonBinh T. Nguyen, and Franz M. Geiger*
Journal of the American Chemical Society, 126, 11754-11755 (2004)
 14. "Real-time, in situ Surface-specific Studies of Chromate Binding to Silica/Water Interfaces Using Second Harmonic Generation"
Amanda L. Mifflin, Christopher T. Konek, Hind A. Al-Abadleh, and Franz M. Geiger*
Geochimica et Cosmochimica Acta, 68, A163 Suppl. S, (2004)
 13. "Surface Studies of Chromate Binding to Fused Quartz/Water Interfaces"
Amanda L. Mifflin, Katie A. Gerth, Brian M. Weiss, and Franz M. Geiger*
Journal of Physical Chemistry A, 107, 6212-6217 (2003)
 12. "Kinetics of Chromate Adsorption and Desorption at Fused Quartz/Water Interfaces Studied by Second Harmonic Generation"
Amanda L. Mifflin, Katie A. Gerth, and Franz M. Geiger*
Journal of Physical Chemistry A, 107, 9620-9627, (2003)
 11. "Kinetics of Chromate Binding to Quartz/Water Interfaces Studied by Second Harmonic Generation"
Amanda L. Mifflin, Katie A. Gerth, and Franz M. Geiger*
Prepr. Ext. Abstr. American Chemical Society, 43, 948-955 (2003)

Publications from MIT and Georgetown

10. "Hydrogen Chloride-Induced Surface Disorder on Ice"
V. Faye McNeill, Thomas Loerting, Franz M. Geiger, Bernhardt L. Trout, Luisa T. Molina, Mario J. Molina
In Review at Nature, (2005)
9. "Theoretical Study of the Interaction of HCl with Crystalline NAT"
Yves A. Mantz, Franz M. Geiger, Mario M. Molina, Luisa T. Molina, and Bernhardt L. Trout
Journal of Physical Chemistry A, 106, 6972-6981 (2002)
8. "First Principles Studies of HCl Interacting with a Basal Ice Surface"
Yves A. Mantz, Franz M. Geiger, Mario M. Molina*, Luisa T. Molina, and Bernhardt L. Trout
Chemical Physics Letters, 348, 285-292 (2001)
7. "The Interaction of HCl with the (0001) Face of Hexagonal Ice Studied Theoretically via Car-Parrinello molecular dynamics"
Yves A. Mantz, Franz M. Geiger, Mario M. Molina, Luisa T. Molina, and Bernhardt L. Trout
Journal of Physical Chemistry A, 105, 7037-7046 (2001)
6. "The Hydrolysis of Chlorine Nitrate on Ice is Autocatalytic"
Franz M. Geiger, Charles D. Pibel, and Janice M. Hicks
Journal of Physical Chemistry A, 105, 4940-4945 (2001)
5. "First-principles Molecular Dynamics Study of Surface Disorder of the (0001) Face of Hexagonal ice"
Yves A. Mantz, Franz M. Geiger, Mario M. Molina, Luisa T. Molina, and Bernhardt L. Trout
Journal of Chemical Physics, 113, 10733-10743 (2000)
4. "Synthesis and Second-Harmonic Generation Studies of Noncentrosymmetric Gold Nanostructures"
Marie L. Sandrock, Charles D. Pibel, Franz M. Geiger, and Colby A. Foss
Journal of Physical Chemistry B, 103, 2668-2675 (1999)
3. "Second Harmonic Generation Studies of Stratospheric Ozone Depletion Reactions on Ice Surfaces Under Stratospheric Conditions"
Franz M. Geiger, Anthony C. Tridico, and Janice M. Hicks
Feature Article Journal of Physical Chemistry B, 103, 8205-8215 (1999)
2. "Stratospheric Ozone Chemistry on Ice Surfaces"
Franz M. Geiger and Janice M. Hicks

SPIE Conference Proceedings, 3272, 296-302 (1998)

1. "Ab Initio Study of HOCl, HCl, H₂O, and Cl₂ Interacting with Four Water Molecules Mimicking a Hexagonal Ice Surface"
Franz M. Geiger, Janice M. Hicks, and Angel C. de Dios
Journal of Physical Chemistry A, 102, 1514-1521 (1998)

Press Coverage of Research in the Geiger Group

3. "Environmental Science: Reduced Mobility" by Jake Yeston
Science Magazine, April 22, 2005, volume 308.
2. "Metal Stays Put - Study indicates chromium(VI) is less mobile than commonly believed" by Mitch Jacobi
Chemical and Engineering News, April 18, 2005, volume 83.
1. "When a Sticky Pollutant Is a Good Pollutant" by Harold Henderson
The Chicago Reader, December 24, 2004, Section 1.

Invited Talks at Meetings since at Northwestern

14. July, 2006, Gordon Conference on Vibrational Spectroscopy, University of New England, ME, "Environmental Interfaces Studied by Nonlinear Optics"
13. March, 2006, Pittcon, Orlando, FL, "Environmental Interfaces Studied by Nonlinear Optics"
12. March, 2006, ACS Meeting, Atlanta, GA, "Environmental Interfaces Studied by Nonlinear Optics"
11. October, 2005, Engineers for a Sustainable World National Conference, University of Texas, Austin, TX, "Toxic Metals in Ground Water on the Navajo Reservation"
10. August, 2005, ACS Meeting, Washington, DC, "Interfacial acidities and energy densities at carboxylic acid-functionalized silica/water interfaces studied by second harmonic and broadband vibrational sum frequency generation"
9. August, 2005, ACS Meeting, Washington, DC, "Tracking Cr(VI) binding to environmentally important organic adlayers at silica/water interfaces studied by second harmonic and broadband sum frequency generation"
8. June, 2005, Telluride Research Conference on Chemistry and Dynamics in Complex Environments, Telluride, CO, "Environmental Interfaces: How Complex Are They?"
7. May, 2005, Goldschmidt Conference, Moscow, ID, "Surface Processes Studied in Real Time Using Nonlinear Optical Laser Spectroscopy: From Geochemistry to Atmospheric Chemistry"
6. March, 2005, ACS Meeting, San Diego, CA, "Sum Frequency and Second Harmonic Generation Studies of Acid-and Ester-Functionalized Siloxanes at Silica/Air and Silica/Water Interfaces"
5. July 2004, Gordon Conference on Vibrational Spectroscopy, "New Siloxane Scaffolds for Environmental, Biological and Materials Chemistry Studied by SFG", Poster Feature Presentation
4. June 2004, Goldschmidt Conference Copenhagen, Denmark, "Chromate Binding to Organic Adlayers at Silica/Water Interfaces Studied by Second Harmonic Generation"
3. March 2004, ACS Meeting, Anaheim, CA, "Broadband Sum Frequency Studies of Surface-bound Organic Species Relevant to Atmospheric Oxidation Reactions"
2. June 2003, Telluride Science Research Center Workshop on Chemical Reactivity of Aqueous Species at Mineral Surfaces, Telluride, CO, "Real time and in-situ Studies of Chromate Binding to Quartz/Water Interfaces Using Second Harmonic Generation"
1. September 2001, Leipzig, Germany, 2001 European Aerosol Conference (EAC) 2001 and Workshop on Multiphase Atmospheric Chemistry – unable to attend due to INS visa transfer regulations

Invited Talks at Universities since at Northwestern

29. February, 2006, University of Colorado, Boulder, CO, Department of Chemistry, "Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry"
28. February, 2006, Colorado State University, Fort Collins, CO, Department of Chemistry, "Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry"
27. February, 2006, The Johns Hopkins University, Baltimore, MD, Department of Chemistry and Department of Geography and Environmental Sciences, "Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry"
26. December, 2005, University of Wisconsin, Eau Claire, WI, Department of Chemistry, "Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry"
25. November, 2005, University of Illinois, Urbana Champaign, IL, Department of Materials Science and Engineering, "Functionalized Quartz Surfaces and their Study by Second Harmonic and Sum Frequency Generation"
24. November, 2005, California Institute of Technology, Department of Environmental Sciences and Engineering, "Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry"

23. October, 2005, The Pennsylvania State University, State College, PA, "*Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry*"
22. September, 2005, University of Illinois, Urbana Champaign, IL, Department of Chemistry, "*Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry*"
21. May, 2005, University of Michigan, Ann Arbor, MI, Department of Chemistry "*Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry*"
20. March, 2005, Loyola University of Chicago, Chicago, IL, Department of Chemistry, "*Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry*"
19. March, 2005, Georgia Institute of Technology and Emory University, Atlanta, GA, Departments of Chemistry, Physical Chemistry Joint Evening Lecture, "*Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry*"
18. February, 2005, Purdue University, West Lafayette, IN, Department of Chemistry, "*Surface Processes Studied in Real Time Using Nonlinear Optical Laser Spectroscopy: From Geochemistry to Atmospheric Chemistry*"
17. February, 2005, the Ohio State University, Columbus, OH, Department of Chemistry, "*Surface Processes Studied in Real Time Using Nonlinear Optical Laser Spectroscopy: From Geochemistry to Atmospheric Chemistry*"
16. February, 2005, SUNY Stony Brook, NY, Department of Chemistry and Department of Environmental Engineering, "*Surface Processes Studied in Real Time Using Nonlinear Optical Laser Spectroscopy: From Geochemistry to Atmospheric Chemistry*"
15. November, 2004, University of California, Irvine, CA, Department of Chemistry, "*Tracking Environmentally Important Interfacial Problems Using Sum Frequency and Second Harmonic Generation: From Geochemistry to Atmospheric Chemistry*"
14. September, 2004, University of Minnesota, Minneapolis, MN, Department of Chemistry, "*Environmentally Important Interfacial Processes Studied by Second Harmonic and Broadband Sum Frequency Generation: From Geochemistry to Atmospheric Chemistry*"
13. September, 2004, Carleton College, Northfield, MN, Department of Chemistry, "*Nonlinear Optical Laser Studies of Environmentally Important Surfaces and Interfaces: From Geochemistry to Atmospheric Chemistry*"
12. February 2004, University of Iowa, Iowa City, IA, Department of Chemistry, "*Environmentally Important Surfaces and Interfaces Studied by Nonlinear Laser Spectroscopy*"
11. February 2004, University of Wisconsin, Madison, WI, Department of Chemistry, "*Surface Processes Studied in Real Time Using Nonlinear Optical Laser Spectroscopy: From Geochemistry to Atmospheric Chemistry*"
10. January 2004, Chicago Catalysis Club, Chicago, IL, "*Nonlinear Optical Laser Studies of Environmentally Important Surfaces and Interfaces*"
9. October 2003, Wayne State University, Detroit, MI, Department of Chemistry, "*Nonlinear Optical Laser Studies of Environmentally Important Surfaces and Interfaces*"
8. October 2003, Northwestern University, Evanston, IL, Department of Geosciences, "*Investigation of Physical and Chemical Processes at Silica/Water Interfaces Relevant to Chromium Contamination in the Environment*"
7. September 2003, University of Wisconsin, Milwaukee, WI, Department of Chemistry, "*Environmentally Important Surfaces and Interfaces Studied by Nonlinear Laser Spectroscopy*"
6. May 2003, Northwestern University, Evanston, IL, Department of Chemistry, "*Surface Chemistry of the Environment Probed in Real Time with Ultrafast Lasers*"
5. November 2002, Villanova, PA, Graduate Student Recruiting Fair
4. January 2002, Hope College, MI, Department of Chemistry, "*Environmentally Relevant Surfaces and Interfaces Studied in situ and in Real Time Using Nonlinear Optics*"
3. January 2002, Calvin College, MI, Department of Chemistry, "*Environmentally Relevant Surfaces and Interfaces Studied in situ and in Real Time Using Nonlinear Optics*"
2. January 2002, Northwestern University, Department of Civil and Environmental Engineering, "*Environmentally Relevant Surfaces and Interfaces Studied in situ and in Real Time Using Nonlinear Optics*"
1. January 2002, Northwestern University, Institute for Environmental Catalysis, "*Environmentally Relevant Surfaces and Interfaces Studied in situ and in Real Time Using Nonlinear Optics*"

Selected Other Presentations, since at Northwestern

10. 2005 Gordon Conference on Dynamics at Surfaces, "*DNA Studied by Second Harmonic and Sum Frequency Generation*", Faith Boman, Andrea B. Voges, Michael J. Musorrafiti, Grace Yin, Juli Gibbs, Brian Stepp, SonBinh Nguyen, and Franz M. Geiger

9. 2005 Gordon Conference on Dynamics at Surfaces, "*Environmental Interfaces Studied by Second Harmonic and Broadband Sum Frequency Generation*", Amanda L. Mifflin, Andrea B. Voges, Christopher T. Konek, Michael J. Musorrafiti, Hind A. Al-Abadleh, Grace Yin, Kimberly D. Illg, and Franz M. Geiger
8. 2004 Gordon Conference on Chemistry at Interfaces, "*Sum Frequency and Second Harmonic Generation Studies of Organic Adlayers at Silica/Air and Silica/Water Interfaces*", Hind Al-Abadleh, Andrea B. Voges, Christopher T. Konek, Michael J. Musorrafiti, Amanda L. Mifflin, and Franz M. Geiger
7. 2004 Gordon Conference on Water and Aqueous Solutions, "*Sum Frequency and Second Harmonic Generation Studies of Acid- and Ester-Functionalized Siloxanes at the Silica/Air and Silica/Water Interfaces*", Andrea B. Voges, Christopher T. Konek, Hind Al-Abadleh, Michael J. Musorrafiti, Amanda L. Mifflin, and Franz M. Geiger
6. 2004, Gordon Conference on Vibrational Spectroscopy, "New Siloxane Scaffolds for Environmental, Biological and Materials Chemistry Studied by SFG", Andrea B. Voges, Christopher T. Konek, Hind Al-Abadleh, Michael J. Musorrafiti, Amanda L. Mifflin, and Franz M. Geiger
5. 2004 Gordon Conference on Environmental Sciences: Water, "*Second Harmonic and Sum Frequency Studies of Chromium (VI) Interaction with Organic Adlayers on Silica/Water Interfaces*", Hind Al-Abadleh, Christopher T. Konek, Michael J. Musorrafiti, Amanda L. Mifflin, Andrea B. Voges, and Franz M. Geiger
4. 2003 Gordon Conference on Electronic Spectroscopy and Dynamics, "*Nonlinear Optical Studies of NO₂ Interacting with Brown Soot*", Andrea B. Voges, Jasmy A. Methipara and Franz M. Geiger
3. 2003 Gordon Conference on Electronic Spectroscopy and Dynamics, "*Broadband Vibrational Sum Frequency Studies of Organic Molecules Adsorbed to Glass*", Andrea B. Voges, Jasmy A. Methipara and Franz M. Geiger
2. 2003 Gordon Conference on Dynamics at Surfaces, "*Real-time, in situ Surface-Specific Studies of Chromate Binding to Fused Quartz/Water Interfaces Using Second Harmonic Generation*", Amanda L. Mifflin, Katie A. Gerth, Brian M. Weiss and Franz M. Geiger
1. 2003 Gordon Conference on Atmospheric Chemistry, "*Nonlinear Optical Studies of NO₂ Interacting with Brown Soot*", Andrea B. Voges, Jasmy A. Methipara and Franz M. Geiger

Peer-Review and Related Activities

Reviewer for the following agencies and programs

12. The National Science Foundation, Division of Physical Chemistry CAREER Program
11. The National Science Foundation, Division of Geochemistry
10. The National Science Foundation, Division of Analytical and Surface Chemistry
9. The National Science Foundation, Division of Chemistry Special Programs
8. The National Science Foundation, Division of Astronomy and Astrophysics
7. The National Science Foundation, Division of Atmospheric Sciences
6. US Army Research Office, Chemistry
5. The Petroleum Research Fund Type G and AC Programs
4. Natural Sciences and Engineering Research Council of Canada, Accelerator Grants for Exceptional New Opportunities
3. Canadian Foundation for Climate and Atmospheric Sciences
2. Embassy of France in the United States Office for Science and Technology Chateaubriand Scientific Scholarship
1. Fonds zur Foerderung der Wissenschaftlichen Forschung, Austria

Reviewer for the following journals

8. Environmental Science and Technology
7. Physical Chemistry Chemical Physics
6. Chemical Reviews
5. The Journal of Physical Chemistry A
4. The Journal of Physical Chemistry B
3. The Journal of the American Chemical Society
2. The Journal of Chemical Physics
1. Chemical Physics Letters

Professional Affiliations

5. American Chemical Society
4. American Physical Society
3. American Association for the Advancement of Science
2. American Geophysical Union
1. Union of Concerned Scientists

Service

16. September 2006, San Francisco, CA, National ACS Meeting, Division of Colloid and Surface Chemistry: "Environmental Interfaces" Symposium, **Organizer/Chair**.
15. August 2005, Gordon Research Conference on Dynamics at Interfaces, Andover, NH, **Discussion Leader**.

14. August 2005, Washington, DC, **Session Chair** in the Division of Experimental Physical Chemistry, symposium by Howard Fairbrother, John Morris, and Gang-yu Liu, Organizers and Chairs, and **Session Chair** in the Division of Geochemistry, symposium by James Kubicki, Christopher Hadad, and Richard Reeder, Organizers and Chairs, and **Session Chair** in the Division of Environmental Chemistry, symposium by Bernadette Donovan-Merkert, Organizer and Chair.
13. March 2005, San Diego, CA, **Session Chair** in the Division of Experimental Physical Chemistry, symposium by Peggy O'Day and Karl Mueller, Organizers and Chairs.
12. March 2005, Los Angeles, CA, APS March Meeting, Environmental Surface Science Focus Session, **Organizer/Chair**.
11. October 2004, Peoria, IL, Regional Great Lakes ACS Meeting: Analytical Chemistry: Surface Processes in the Environment, **Organizer/Chair**.
10. September 2004, Philadelphia, PA, National ACS Meeting: **Session Chair** in the Division of Experimental Physical Chemistry, symposium by Gil Nathanson and Ben Schwartz, Organizers and Chairs.
9. Two nuggets at the NSF chemistry website: <http://www.nsf.gov/mps/divisions/che/nuggets/nuggets.htm>.
8. Raised money from BP Chemicals for two annual Graduate Student Awards for Excellence in Environmental Research, \$1,000 each.
7. Since 2003: Navajo Drinking Water Quality Project, developed by the Geiger group, focusing on the Red Valley Community, AZ, on the Navajo Nation. Host of freshman Joseph Hoover, who assesses water pitcher filtration efficiencies towards metal contaminant in artesian wells on the Navajo Nation.
6. Host of one minority undergraduate student (Omar Abdullah) and two teacher interns (Scot Ankeney and Sussan Oladipo) during the summer '03 and '05 Research Experience for Students and Teachers and MRI programs at the Northwestern MRSEC. Scot was involved in webpage development and data analysis concerning drinking water quality assessment obtained from the US EPA's Abandoned Uranium Mine Project on the Navajo Nation, Sussan developed a high-school level laboratory on ferrofluids.
5. Host for two summer months in '02 for a Columbia University Langmuir Fellow (Brian Weiss). Host for six months in '03 for a graduate student from France (Olivier Favez, Ecole Normale Supérieure, Paris). Host to Anne Salazar (senior, U Minnesota) during the summer 2005 REST program.
4. Scientific Judge in a Global Change Outreach Program funded by the United Nations Association of the United States of America and the Business Council for the United Nations at the 2002 National High School Essay Contest of the United Nations together with The Global Chicago Center of The Chicago Council of Foreign Relations, 116 S. Michigan Avenue, 10th floor, Chicago, IL 60603 (Judged essays by 30 students from five Chicago High Schools).
3. March 2002, Indianapolis, IN: American Physical Society March Meeting, Special Focus Session Ice: Surface Structure and Dynamics, **Organizer/Chair**.
2. August 2001, Chicago, IL, National ACS Meeting: **Session Chair** in the Physical Chemistry Division, Physical Chemistry of Gas-Particle Interactions organized by J. T. Roberts and V. H. Grassian.
1. Contact Scientist, Museum of Science, Boston: Science-By-Mail Programs 1) Imaging, 2) Destination Mars and 3) Science Magic (two sessions, 8 students each), 1999-2000, and 1999 MIT Summer Research Program (<http://web.mit.edu/gso/recruitment/summer.html>), worked with one fellow, Victor Clark)

Research Support (Past)

3. NO_x Chemistry on Metal Oxide Surfaces Studied by Nonlinear Optical Spectroscopies **Shell Corp.**, administered through NSF/DOE-Institute for Environmental Catalysis (IEC), 09/02-09/04 Franz Geiger, PI, \$25,000.
2. Nonlinear Optical Studies of Heterogeneous Nitrogen Conversion Reactions on Carbon Surfaces **ACS Petroleum Research Fund**, 9/02-8/05 Franz Geiger, PI, \$35,000.
1. Predoctoral Earth Systems Science (ESS) Fellowship to Andrea B. Voges **NASA**, 09/02-08/05 Franz Geiger, PI, \$72,000.

Research Support (Current)

7. Dreyfus Postdoctoral Research Fellowship in Environmental Chemistry **Camille and Henry Dreyfus Foundation**, 08/04-07/06 Franz Geiger, PI, two co-investigators, \$120,000.
6. CAREER: Investigation of Physical and Chemical Processes at Liquid/Solid Interfaces Relevant to Chromium Contamination in the Environment **NSF-CHEM**, 01/04-12/09 Franz Geiger, PI, \$537,585.
5. Predoctoral Science to Achieve Results (STAR) Fellowship to Amanda L. Mifflin **EPA**, 09/05-08/08 Franz Geiger, PI, \$111,000.
4. Influence of Organic Adlayers on Metal Binding to Liquid/Solid Interfaces

- NSF Nanoscale Science and Engineering Center (NSEC), 01/04-09/0-5, C. A. Mirkin, Director
Co-PI, \$106,516, for Geiger Group.
3. Support for Speakers and Attendees at the "Environmental Interfaces" focus session at the 2005 March Meeting of the American Physical Society
DOE, 02/05-01/06
Franz Geiger, PI, \$2,500, and matching funds from BP, Cargill, Ocean Optics, Spectra Physics, and Extrel.
 2. Northwestern University Institute for Environmental Catalysis Renewal,
NSF/DOE-IEC 9/02-8/07, P. C. Stair, Director
Co-PI, \$172,699 for Geiger Group.
 1. **Northwestern University** Startup Funds.

Research Support (Pending)

3. Heterogeneous Organic Oxidation Reactions of Atmospheric Importance Studied by Broadband Vibrational Sum Frequency and Second Harmonic Generation
NSF-ATM, 10/05-09/08
Franz Geiger, PI, \$357,817.
2. How Biogeochemically Important Organic Adlayers at Mineral/Water Interfaces Control the Binding and Transport of Organic Arsenicals
NSF-GEO, 09/05-08/08
Franz Geiger, PI, \$337,817.
1. Surface Charge Densities and Acidities of Biogeochemically Important Organic Adlayers at Mineral/Water Interfaces Studied by Nonlinear Optics
DOE, 09/05-08/08
Franz Geiger, PI, \$320,000.

Teaching Activities at Northwestern

Fall 2002, Fall 2003, and Fall 2004: **Freshman chemistry**, 150-200 students, co-taught with Professor Mark Ratner. Developed two modules on atmospheric and soil science, developed a soil science laboratory using inductively coupled plasma spectrometry, to appear October 2005 in the *Journal of Chemical Education*.

Spring 2002, Spring 2003, Spring 2004, and Spring 2005: **Statistical Thermodynamics and Kinetics**, capstone course in the physical chemistry sequence at Northwestern, 30 students.

Winter 2002, Winter 2003, and Winter 2004: Short course on **Ultrashort Laser Pulses and Nonlinear Optics** (up to 30 participants).

Current Graduate Students and Postdoctoral Researchers

9. One new postdoc and graduate student to start in the Fall of 2005
8. Dr. Hind Al Abadleh (postdoc, now Assistant Professor of Chemistry at Wilfred Laurier University)
7. Andrea Voges (4th year)
6. Amanda Mifflin (4th year)
5. Catherine Schmidt (3rd year)
4. Christopher Konek (3rd year)
3. Michael Musorrafiti (3rd year)
2. Faith Boman (2nd year)
1. Grace Yin (1st year)

Undergraduate Students

8. One new undergraduate student to start in the Fall of 2005
7. Benjamin Schenkel (WCAS '07)
6. Joseph Hoover (WCAS '07)
5. Lindsay Marko (WCAS '06)
4. Rachel Pike (WCAS '06)
3. David Ostrowski (starting graduate school in Chemistry at UT Austin this Fall)
2. Katie Gerth (now pursuing a chemistry PhD at UC Boulder/JILA)
1. Jasmy Methipara (Masters in Chemistry from UCSD with Kim Prather)