Postdoctoral Program in Environmental Chemistry

Institution	Awardee	Department	Area of Interest
		2013	
California Institute of Technology	Robert H. Grubbs	Chemistry	This project will develop the synthesis of rigid block copolymers utilizing ruthenium mediated ring-opening metathesis polymerization and investigate their application as IR reflecting photonic crystals that can be applied as paint. These coatings have potential to positively impact the environment through reducing cooling demand and minimizing emissions.
Colorado State University	Ellen R. Fisher	Chemistry	The combination of tailored membranes, 3D scaffolds with biocidal agents and in situ water shear constitutes a novel approach for high performance, low fouling water filters with extended lifetimes. This represents a key advance in addressing global needs for durable, inexpensive methods of decontaminating polluted waters without negative environmental impact.
Cornell University	Poul B. Petersen	Chemistry and Chemical Biology	Using new experimental approach based on surface-specific spectroscopy, we will systematically untangle the complexity of dye-sensitized solar cells to gain a detailed understanding of the charge injection process and how it depends on the dye-TiO2 surface structure and electrolyte composition.
Georgia Institute of Technology	Athanasios Nenes	School of Earth and Atmospheric Sciences	The impact of airborne microbes on clouds and climate, their adaptability to the harsh atmospheric conditions, and their response to atmospheric processes are completely unknown. A comprehensive and integrated strategy is proposed to understand the cloud-forming potential of microbe s that integrates in-situ sampling, laboratory experiments and climate model parameterization development.
Massachusetts Institute of Technology	Mircea Dinca	Chemistry	Conductive metal-organic frameworks (MOFs) are a long-sought-after class of materials with the potential to transform sustainable energy technologies. This proposal focuses on the synthesis of conductive MOFs as new materials for next-generation photovoltaic devices.
Northwestern University	Elad Harel	Chemistry	Solar energy has the potential to provide a clean and inexpensive form of renewable energy, but high efficiency remains a major, unsolved problem . A promising approach is multiexciton generation (MEG) in which multiple electron-hole pairs are produced by a single photon. A novel experimental approach is proposed to perform the first direct measurement of MEG in semiconductor nanocrystals.
The University of North Carolina at Chapel Hill	Jason D. Surratt	Environmental Sciences and Engineering	Isoprene is the single largest source of secondary organic aerosol (SOA) in Earth's atmosphere; however, in the southeastern U. S., where isoprene combines with anthropogenic emissions, existing models underestimate observations. We combine organic synthesis and mass spectrometry to parameterize how anthropogenic pollutants enhance isoprene SOA in both laboratory and field studies.

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Institution	Awardee	Department	Area of Interest
University of Delaware	Joel Rosenthal	Chemistry and Biochemistry	A combination of electrochemical and spectroscopic methods will elucidate the pathway by which a Bismuth-Carbon Monoxide Evolving Catalyst (Bi-CMEC) activates CO2 at low overpotential. We will also develop mixed metal architectures such as Zn/Bi-CMEC and Cu/Bi-CMEC. These bimetallic platforms are expected to be more active and energy efficient CO2 reduction catalysts.
2012			
Brandeis University	Christine Thomas	Chemistry	Coupling the activation of sigma bonds in small molecule substrates with controlled multi-electron and multi-proton transfer will be addressed with a catalyst design strategy incorporating an early and late transition metal into a single heterobimetallic framework.
California Institute of Technology	Theodor Agapie	Chemistry and Chemical Engineering	Well-defined, earth-abundant metal-oxido clusters containing redox-inactive metals will be synthesized and studied as model complexes for and potential precursors to heterogeneous catalysts for the oxidation of water to dioxygen. The mechanistic insight afforded by these studies will facilitate the design of practical catalysts for artificial photosynthesis.
California Institute of Technology	John Eiler	Geological and Planetary Sciences	The fellow will develop and apply novel isotopic measurements of atmospheric CO2, to provide new insights into the processes that control its budget and the detailed causes of its variation with time and geographic location, in collaboration with Ralph Keeling who runs the longest continuous program of atmospheric CO2 monitoring.
Massachusetts Institute of Technology	Robert Warren Field	Chemistry	I propose exploration of the impact on environmental chemistry of two revolutionary spectroscopic tools, chirped pulse millimeter-wave spectroscopy and a buffer gas cooled ablation source.
Northwestern University	Tobin J. Marks	Chemistry	I propose to develop concise, atom-economical, and environmentally benign polymerization methodologies for the synthesis of π-conjugated organic photovoltaic polymers. The strategy employs green, direct C-H functionalization reactions that will streamline the discovery and ultimate transition to manufacture, of high-efficiency polymer solar cells as clean, renewable energy sources.
Stanford University	Matthew Kanan	Chemistry	I propose to study the recycling of CO2 into fuel using renewable energy with efficient CO2 electroreduction catalysts, making use of metal nanoparticles derived from oxides which exhibit exceptional CO2 reduction properties. The proposed research will probe mechanism and surface chemistry.
The University of North Carolina at Chapel Hill	Rose M. Cory	Environmental Sciences & Engineering	Tremendous stores of organic carbon frozen in permafrost soils have the potential to double the amount of CO2 in the atmosphere on a timescale similar to human inputs. I will test new evidence suggesting that this carbon is susceptible to dark redox reactions that oxidize dissolved organic matter to CO2.

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Institution	Awardee	Department	Area of Interest
University of California, Berkeley	Allen H. Goldstein	Environmental Science, Policy, and Management	I propose a postdoctoral program to study atmospheric transformations of biogenic volatile organic compound emissions and the interactions between these compounds and anthropogenic emissions to form aerosols in polluted and clean environments.
University of Pennsylvania	Marsha I. Lester	Chemistry	Ozonoylsis of alkenes in the troposphere results in Criegee intermediates, which are synthesized, cooled, isolated, and detected by photoionization in the laboratory. The Dreyfus scholar will obtain the solar spectra of Criegee intermediates, identify their photochemical decay channels, and probe the unimolecular chemistry of vibrationally energized species that generate OH.
2011			
California Institute of Technology	Richard C. Flagan	Chemical Engineering and Environmental Science and Engineering	Particle formation by neutral and ion-mediated heteromolecular nucleation at the CLOUD facility at CERN, measured in the 1 -10 nm size range, using a nano-radial differential mobility analyzer with a multistage condensation particle counter detector.
Colorado School of Mines	Bettina M. Voelker	Chemistry and Geochemistry	Examine dissolved Mn(III) species as an important class of reactive intermediates capable of oxidizing a variety of recalcitrant organic compounds in aquatic environments.
Columbia University	Colin Nuckolls	Chemistry	Photophysical and kinetic properties of semiconductor materials to improve organic photovoltaic materials, collaborating with Brookhaven National Laboaratory, using time-resolved spectroscopy of contorted hexabenzocorone (HBC) materials and their supramolecular complexes with fullerenes in new solar cell architectures.
Georgia Institute of Technology	Michael A. Filler	Chemical and Biomolecular Engineering	Nanowire-based twinning superlattices as a new route to engineer the band structure of Si and achieve a direct band gap in this earth-abundant materials system. To be studied with in-situ infrared spectroscopy.
Harvard University	Eric N. Jacobsen	Chemistry and Chemical Biology	A direct, enantioselective, catalytic method for the alpha-alkylation of aldehydes as a green alternative for accessing these structures
Massachusetts Institute of Technology	Timothy M. Swager	Chemistry	Functionalization of novel scalable graphene with transition metals and nanoparticles for hydrogen gas storage and as a support for electrocatalytic materials for clean energy production.
Northwestern University	SonBinh T. Nguyen	Chemistry	The application of metal-organic frameworks (MOFs) for the remediation, sensing, and catalytic destruction of environmental contaminants.
University of Illinois at Urbana-Champaign	Robert J. M. Hudson	Natural Resources and Environmental Sciences	A new method to detect MeHg in two careful intercomparison studies to chemically characterize the putative strong MeHg complex(es) that would explain the difference between previous methods.
Yale University	Alanna Schepartz	Chemistry	Development of a robust peptide catalyst for the efficient hydrolysis of glycosidic bonds in cellulose that streamlines the production of renewable energy from cellulosic waste biomass.

Postdoctoral Program in Environmental Chemistry

Institution	Awardee	Department	Area of Interest
2010			
Columbia University	V. Faye McNeill	Chemical Engineering	Probe aerosol particle surfaces in situ using the nonlinear optical techniques of second harmonic generation and vibrational sum frequency generation. Detect organic material at the gas-particle interface, the solvation state, and the electronic and vibrational spectra of interfacial molecules.
Harvard Medical School	Jon Clardy	Biological Chemistry & Molecular Pharmacology	Bacteria and fungi compete for limited resources in soils in the degradation of complex organic compounds to support their metabolic processes. PTMs mediate this competition. Exploration of the broad environmental relevance of PTMs and their possible role(s) in the potency of certain bacterial biocontrol agents, green alternatives to synthetic antifungal agents.
Northwestern University	Dick Co	Chemistry	Using femtosecond stimulated Raman spectroscopy, a study of the ultrafast structural dynamics of interfacial photoinduced electron transfer reactions in hybrid semiconductor quantum dots, critical in solar energy conversion devices.
Stanford University	Zhenan Bao	Chemical Engineering	A new molecular design concept for polymer solar cells: controlled interaction to achieve nanostructure and “uni-directional” electron transfer to minimize charge recombination processes.
The University of Chicago	Elisabeth Moyer	Geophysical Sciences	Fundamental uncertainties in ice formation at the cold temperatures of the tropical tropopause will be explored with a new infrared spectrometer in a cloud simulation chamber in Germany. Inhibition of ice nucleation and growth at cold temperatures and the effects of pollutant-derived coatings on aerosols will be studied. The measurement target, the isotopic composition of water vapor, is a novel tracer for microphysical research.
University of California, Berkeley	Michelle Chang	Chemistry	Advanced biofuel synthesis will address fundamental questions of how chemistry is controlled in living cells with the goal of subsequent mix and match green alternatives for sustainable synthesis.
University of California, Los Angeles	Xiangfeng Duan	Chemistry and Biochemistry	Water splitting multi-heterostructures will be designed and synthesized to integrate a nanoscale photovoltaic device with two redox catalysts, to form freestanding photoelectrochemical nanodevices that can function as highly efficient and stable photocatalysts for artificial photosynthesis and solar fuel generation.
University of Washington, Seattle	Karen Goldberg	Chemistry	Catalysts to efficiently convert large scale quantities of lignocellulosic biomass, an abundant and sustainable source of chemicals and fuels, to useful organic compounds are proposed to promote the depolymerization of ligninocellulose through the selective hydrogenolysis of C-O bonds. Novel metal complexes will be synthesized, characterized and screened for their ability to promote this transformation.

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Institution	Awardee	Department	Area of Interest
		2009	
California Institute of Technology	Robert Grubbs	Chemistry and Chemical Engineering	Develop catalysts for the anti-Markovnikov addition of water to unactivated olefins, using water directly as a 'green' feed-stock, and a mixed-valence bimetallic complex as catalyst, representing a green technology for a highly important process.
California Institute of Technology	Alex Sessions	Geological and Planetary Sciences	Develop and employ a novel ICP-MS system to measure the 34S/32S ratios of dissolved inorganic sulfur species with picomole sensitivity to understand S-isotopic fractionations of bacterial sulfate reduction, one of the key redox reactions in the global sulfur cycle.
Massachusetts Institute of Technology	Daniel Nocera	Chemistry	Water splitting into dioxygen and dihydrogen, catalyzed by transition metal complexes, provides the most efficient way to store solar energy. We are seeking molecular species of the right electronic structure that target coupling of two oxos.
Northwestern University	Emily Weiss	Chemistry	Identify and characterize non-radiative pathways for dissipation of energy within photoexcited semiconductor quantum dots (QDs), as a function of the chemical structure of the organic surfactant on the surface of the QD, using transient absorption and transient four-wave mixing spectroscopies.
Rice University	Robert Griffin	Civil and Environmental Engineering	Multi-disciplinary (laboratory-, field-, and computationally based) studies of important heterogeneous reactions of atmospheric importance, e.g., reactions that convert nitric to nitrous acid, and generation of radicals that participate in ozone formation.
University of California, Berkeley	Jean Frechet	Chemistry	Dye-sensitized solar cells with tandem energy relay systems, a novel design concept for enhancing photovoltaic performance.
University of California, Berkeley	Jeffrey Long	Chemistry	Metal-organic frameworks with high surface areas will be investigated for capture by selective binding of CO2 over N2 and H2O from power plant flue streams.
University of California, Los Angeles	James Bowie	Chemistry and Biochemistry	To develop a sustainable alternative fuel by creating a direct, one-step biochemical pathway to biodiesel production in microorganisms.

Postdoctoral Program in Environmental Chemistry

Institution	Awardee	Department	Area of Interest
		2008	
California Institute of Technology	Paul O. Wennberg	Divisions of Engineering and Applied Science and Geological and Planetary Sciences	To develop and apply new methods in spectroscopy and mass spectrometry to examine the formation of organic peroxides from the gas-phase recombination of peroxy radicals, an important contributor to the formation of atmospheric aerosol.
Georgia Institute of Technology	Christopher W. Jones	Chemical & Biomolecular Engineering	To develop a new method to capture CO2 from power-plant flue gas, combining recently developed organic/inorganic hybrid sorbents in a fundamentally new capture process.
Harvard University	Roy G. Gordon	Chemistry and Chemical Biology	Vapor deposition of tin(II) sulfide films and characterization of their optical, electronic and doping properties to facilitate engineering of inexpensive and widely available thin-film solar cells.
Massachusetts Institute of Technology	Jesse H. Kroll	Civil and Environmental Engineering	Develop and utilize a new technique for measuring the concentrations, properties, and transformations of semivolatile organic compounds to provide new insights into the chemical transformations of organic matter in the environment.
Massachusetts Institute of Technology	Stephen J. Lippard	Chemistry	Polymanganese clusters will be constructed as synthetic models to mimic features of Photosystem II and possibly lead to a new catalyst for conversion of solar energy to chemical energy.
Princeton University	Yueh-Lin Loo	Chemical Engineering	Towards the design of low-cost, stable, and efficient organic solar cells via the development of well-defined chemically-modified organic-organic and organic-metal interfaces.
The University of Wisconsin, Madison	Shannon S. Stahl	Chemistry	Use of molecular oxygen as a stoichiometric oxidant to minimize the formation of chemical byproducts and waste in catalysis.
Yale University	Gary Brudvig	Chemistry	High-valent oxo-Mn species supported on TiO2 nanoparticles for water splitting catalysis.

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Institution	Awardee	Department	Area of Interest
2007			
California Institute of Technology	Nathan S. Lewis	Chemistry	Iron-Based, Earth Abundant, Photoelectrochemical Cells for Solar Energy Capture and Conversion
Harvard University	Theodore A. Betley	Chemistry and Chemical Biology	Designing Polymetallic Reaction Sites: New Strategies for Small Molecule Activation Catalysts as a Means for Chemical Energy Conversion
Massachusetts Institute of Technology	Andrei Tokmakoff	Chemistry	Mechanistic studies of biomimetic proton-coupled electron transfer compounds, using ultrafast two-dimensional infrared spectroscopy, as a key to the development of artificial photo-catalysts for water splitting.
Purdue University	Paul Shepson	Purdue Climate Change Research Center	Computational and Laboratory Studies of Arctic Sea Ice Halogen Chemistr
The Johns Hopkins University	Alan T. Stone	Geography & Environmental Engineering	Towards Predictive Modeling of Electron Transfer at Mineral/Water Interfaces, to Help Understand Environmentally Relevant Metal Oxidation State Changes
The University of Chicago	Chuan He	Chemistry	Engineering Proteins that Selectively Recognize Nuclear Waste
The University of Chicago	Robert J. Keenan	Biochemistry & Molecular Biology	Reprogramming Metabolic Pathways for the Biological Production of High Value Chemicals from Renewable Resources
University of Washington, Seattle	Daniel R. Gamelin	Chemistry	Mesoporous Oxide Tandem Photoelectrochemical Cells for Efficient Water Splitting
2006			
California Institute of Technology	Dianne K. Newman	Biology and Geological and Planetary Science	Mechanism of phototrophic Fe(II)-oxidation as a mechanism for metabolic depositing of ancient iron ores
Harvard University	Scot T. Martin	Division of Engineering and Applied Sciences	Tandem differential mobility measurements of mixed organic-sulfate particles of controlled and variable chemical properties, and their phase transitions
Harvard University	Eric N. Jacobsen	Chemistry and Chemical Biology	Design of greener chemical reactions with small molecules as efficient organocatalysts
Princeton University	Daniel M. Sigman	Geosciences	An isotopic study of denitrifiers and their respiratory nitrate reductases to understand the apparent ocean N inbalance

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Institution	Awardee	Department	Area of Interest
The University of Chicago	Norbert F. Scherer	Chemistry and the James Franck Institute	Novel noble metal clusters for enhanced light harvesting, photocatalytic activity, and multi-electron chemistry (H2 formation)
The University of Chicago	Hisashi Yamamoto	Chemistry	Develop a super Bronsted acid catalyst for a green chemistry alternative to metals in halogenated solvents
The University of Wisconsin, Madison	Frank N. Keutsch	Chemistry	High sensitivity in situ measurements and modeling of formaldehyde and (methyl) glyoxal photochemistry
University of California, Berkeley	Ronald Cohen	Chemistry	Atmospheric chemistry of reactive nitrogen: ozone aerosols and biosphere-atmosphere exchange
University of California, San Diego	Kimberly A. Prather	Chemistry and Biochemistry and Scripps Insitution of Oceanography	Size resolved chemistry of aerosol particles ejected from the ocean and their effects on clouds
University of Washington, Seattle	Joel A. Thornton	Atmospheric Sciences	Elucidating the sources, transformations, and chemical and climate impacts of particulate organic matter using CIMS
2005			
Arizona State University	Ariel Anbar	Chemistry & Biochemistry	Isotopic compositions of bioessential and toxic metals in nature
California Institute of Technology	Jonas C. Peters	Chemistry and Chemical Engineering	Synthesis of efficient catalysts for solar water splitting systems
California Institute of Technology	John Eiler	Geological and Planetary Sciences	Fingerprinting of carbon dioxide isotopes and their distribution in nature
Carnegie Mellon University	Neil M. Donahue	Chemistry and Chemical Engineering	Oxidation pathways linking aerosols and their chemical precursors for human health and climate
Massachusetts Institute of Technology	Daniel G. Nocera	Chemistry	The chemistry of energy generation through solar power looking at O-O bond formation by radical coupling mechanisms
Princeton University	Anne M.L. Kraepiel	Chemistry	Molybdenum speciation with bioavailability and its effect on nitrogen fixation
University of California, Berkeley	Kevin R. Wilson	Chemical Sciences	Free radical reactions on catalytic surfaces related to aerosols and climate

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Institution	Awardee	Department	Area of Interest
University of California, Berkeley	Kristie A. Boering	Chemistry and Earth & Planetary Science	Molecular beam and isotopic studies of chemical mechanisms related to sources and sinks of major greenhouse gases
University of Colorado	G. Barney Ellison	Chemistry and Biochemistry	Molecular processes that underlie oxidation of organic aerosols with a novel mass spectrometer
University of Illinois at Chicago	Neil C. Sturchio	Earth and Environmental Sciences	Mapping of historical climate patterns using magneto-optical trap methods on radio Kr isotopes
2004			
California Institute of Technology	Janet G. Hering	Environmental Science & Engineering	Use of Vapor-phase Synthesized Iron(0) Nanoparticles to Examine Nanoscale Reactivity
Indiana University	Philip S. Stevens	School of Public and Environmental Affairs	Influence of Biogenic Emissions on Atmospheric Chemistry: Investigations of Free-Radical Chemistry in Forest Environments
Northwestern University	Franz M. Geiger	Chemistry and Institute for Environmental Catalysis	Chemical Binding and Heterogeneous Reactions of Environmentally Relevant Molecules at Liquid-solid and Gas-solid Interfaces
The Johns Hopkins University	David P. Goldberg	Chemistry	Design, Synthesis and Application of Transition Metal Catalysts for Environmental Dehalogenation Chemistry
The Ohio State University	Heather Allen	Chemistry	Atmospheric Aerosol Chemistry and Liquid Surfaces: Condensed-Phase Organics and Hydroxyl Radical Reactions
The Pennsylvania State University	William H. Brune	Meteorology	Investigating the Sensitivity of Atmospheric Ozone Formation to Nitrogen Oxides and Hydrocarbons
University of California, Irvine	Sergey Nizkorodov	Chemistry	Earth Atmospheric Environment: From Molecular Level Understanding to Global Scale Air Pollution Modeling
University of California, San Diego	Mark H. Thiemens	Chemistry and Biochemistry	New Mass Independent Isotope Effects to Study Global Atmospheric Chemistry, Climate Change, and the Origin of Life and the Solar System
University of Pennsylvania	Marsha I. Lester	Chemistry	Novel Studies of NOx Chemistry in the Atmosphere and on Catalytic Surfaces

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Institution	Awardee	Department	Area of Interest
2003			
Georgia Institute of Technology	Paul H. Wine	Chemistry & Biochemistry	Atmospheric Chemistry in Low Temperature Environments
State University of New York at Stony Brook	Clare P. Grey	Chemistry	Sequestration of Pollutants in Natural and Engineered Systems
The University of Wisconsin, Madison	Gilbert M. Nathanson	Chemistry	Surfactant Control of Heterogeneous Reactions in the Atmosphere
University of Connecticut	Britt A. Holmen	Civil & Environmental Engineering	Fine and Ultrafine Airborne Particles: Environmental Processes Affecting Particle Physical and Chemical Properties
University of North Carolina	Tomas Baer	Chemistry	Spectroscopic and Mass Spectrometric Studies of Organics in Tropospheric Aerosols
2002			
Iowa State University	William S. Jenks	Chemistry	Desulfurization of Gasoline and Diesel Fuels by Extraction/Adsorption of Dibenzothiophenes
Princeton University	G. Charles Dismukes	Chemistry	Links Between the Carbon and Oxygen Biogeochemical Cycles of the Earth Through Oxygenic Photosynthetic Organisms.
University of California, Davis	Anthony Wexler	Mechanical and Aeronautical Engineering	Atmospheric Aerosol Chemistry
University of Minnesota	Deborah L. Swackhamer	Environmental & Occupational Health	Environmental Estrogens and Antibacterials in Aquatic Systems: Occurrence, Persistence and Fate
University of Oklahoma	David A. Sabatini	Civil Engineering and Environmental Science	Natural and Anthropogenic Ground-Water Contamination: Engineered Remediation Technologies, Pollutant Natural Attenuation, and Technologies for Pollution Avoidance
Woods Hole Oceanographic Institution	Christopher M. Reddy	Marine Chemistry and Geochemistry	Molecular Isotope Approach for Identifying Bioaccumulating Halogenated Organic Compounds in Marine Biota

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Institution	Awardee	Department	Area of Interest
2001			
Carnegie Mellon University	Spyros N. Pandis	Chemical Engineering	The Carnegie Mellon University Air Quality group (Professors Pandis, Donahue, Davidson, Adams, and Robinson) proposes to train a Ph.D. chemist or chemical engineer. Available projects include fundamental investigations of gas and heterogeneous atmospheric chemistry, development of new instrumentation for atmospheric particulate matter measurements, development and evaluation of state-of-the-art numerical models for urban, regional, and global air quality, development of new source-apportionment and emission control design techniques, and finally studies of the impacts of air pollution.
Columbia University	George W. Flynn	Chemistry	The formation of the Columbia Earth Institute, the Environmental Molecular Sciences Institute, and the Superfund "Arsenic Project" at Columbia University has created a unique opportunity for a post-doctoral fellow to contribute to and broaden our knowledge of the fundamental, interdisciplinary scientific issues surrounding Arsenic related problems in ground water. This proposal requests support for such a fellow to study these issues in an interdisciplinary project.
Georgia Institute of Technology	Julia Kubanek	School of Biology and School of Chemistry and Biochemistry	In marine environments, chemical signals are critical to biotic processes such as feeding, competition, mate recognition, and habitat choice, directly affecting organisms and also producing a cascade of indirect effects on ecosystems. Chemically-mediated interactions in planktonic systems involving harmful and toxic algae and zooplankton will be explored. Available projects include discovery of microalgal chemical defenses and zooplankton mate attractants, and pursuit of the environmental fate of biotoxins in food webs.
Massachusetts Institute of Technology	Jeffrey A. Steinfeld	Chemistry	M.I.T. will recruit a Dreyfus Postdoctoral fellow to work in an interdisciplinary, chemistry-focused environmental research program. Available research topics include atmospheric chemistry, advanced techniques for environmental monitoring, fate and transport of toxic chemicals in groundwater, and life cycle analysis of chemical processes. The Fellow will be part of a group of graduate and postdoctoral students working on complex multi-dimensional environmental issues.
The Johns Hopkins University	Gerald J. Meyer	Chemistry	Ground water contaminated with organohalides represent an enormous environmental problem. This proposal seeks to train a postdoctoral associate in organohalide remediation. The research objective is to obtain a molecular-level understanding of organohalide remediation from which "greener" chemical processes can be developed. Research projects include organohalide remediation with zero-valent iron, electron beams, biomimetic macrocycles, excited states, and nanostructured materials.

Postdoctoral Program in Environmental Chemistry

Institution	Awardee	Department	Area of Interest
The Ohio State University	Patrick G. Hatcher	Chemistry	Drs. Patrick G. Hatcher and Samuel J. Traina, co-Directors for the NSF-sponsored Ohio State Environmental Molecular Science Institute (EMSI), seek to establish a Camille and Henry Dreyfus postdoctoral associateship in environmental chemistry as a part of the EMSI at the Ohio State University. This associateship will allow an individual with a strong background in analytical chemistry the opportunity to apply his/her skills to solve challenging questions related to the transformation of naturally occurring organic substances at important atmospheric and/or geomedia interfaces in the environment.
2000			
Columbia University	Koji Nakanishi	Chemistry	In 1996 Columbia University took over management of the Biosphere 2 Center (B2C) and since that time has been transforming the Center into a premiere environmental research facility. The project directors of this proposal have initiated an interdisciplinary environmental chemistry and chemical ecology research and education program at B2C. The postdoctoral fellow will have opportunities for involvement in unique projects made possible by the "one-of-a-kind" facilities at B2C, preparing her/him for a career in environmental research.
Harvard University	Steven Wofsy	Earth and Planetary Science	A post-doctoral student from chemistry will be chosen to work on problems that interface among the core science areas of: 1) atmosphere-biosphere exchange and stratospheric chemistry (Wofsy), 2) atmospheric chemistry modeling and data analysis (Jacob), 3) aquatic chemistry, surface chemistry, aerosols (Martin), 4) atmospheric deposition and tropospheric chemistry (Munger), 5) stratospheric radicals, chemistry-climate interactions, advanced instrumentation, radical kinetics (Anderson).
Northwestern University	Joseph T. Hupp	Chemistry	A Dreyfus Postdoctoral Fellowship in Environmental Chemistry is proposed at the Northwestern Institute for Environmental Catalysis. Several research projects are available which range from the development of aqueous-phase sensors for organic contaminants and aqueous phase detectors for heavy metals to discovery of new environmental friendly synthetic methods. Opportunities for the educational enrichment of the fellow include an extensive seminar program, participation in teaching advanced courses in environmental sciences, development of grades 6-12 science curriculum to include environmental chemistry, and participation in the training of middle and high school teachers.
Rice University	Robert F. Curl	Chemistry	Three research groups involving faculty in Chemistry, Electrical & Computer Engineering, Ecology & Evolutionary Biology, and Environmental Science & Engineering are collaborating on application of laser-based infrared atmospheric monitors to environmental issues. These monitors are developed at Rice. They will be used to investigate the concentrations of pollutants particularly formaldehyde in the Houston urban environment and to measure the fluxes from rice cultivation of the global warming gases methane and nitrous oxide.

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Institution	Awardee	Department	Area of Interest
Rutgers, The State University of New Jersey	Barbara Turpin	Environmental Sciences	Environmental chemists at Rutgers seek a chemical scientist to expand research on Emissions, Reactivity, Characterization and Deposition of Atmospheric Organic Compounds, receive training in environmental chemistry research and education, and through interactions with academic and government agency scientists, be positioned to develop a successful career in environmental chemistry.
Syracuse University	Charles T. Driscoll	Civil and Environmental Engineering	Support is requested for a post-doctoral researcher in environmental chemistry at the Center for Environmental Science and Engineering (CESE) at Syracuse University. CESE research opportunities include a broad variety of well-established projects associated with terrestrial and aquatic ecosystems in the northeastern U.S. Current projects include the effects of atmospheric emissions of sulfur dioxide; the transport, fate, and bioavailability of mercury; and the effects of human settlement and urbanization on surface water quality.
University of California, Irvine	Ellen R. M. Druffel	Earth System Science	The Department of Earth System Science (ESS), a 13-member, interdisciplinary research program at the University of California, Irvine offers excellent training opportunities in environmental chemistry for a postdoctoral and an undergraduate Dreyfus Fellows. ESS conducts research on interacting natural and anthropogenic factors responsible for global change occurring on timescales of the order of a human lifetime in the Earth's atmosphere, land and oceans.
University of Massachusetts Boston	Curtis R. Olsen	Environmental, Coastal & Ocean Sciences	The University of Massachusetts Boston has created a unique academic infrastructure that promotes interdisciplinary collaborations in environmental research and training among scientists with expertise in single disciplines. Ten innovative research projects are proposed, spanning benign chemical synthesis in the laboratory to quantifying the dispersal, fate, and toxicity of chemical substances in the environment. The Dreyfus postdoctoral scientist will conduct research and coordinate the multi-disciplinary team activities in one of these projects, thereby envisioning how his/her chemical expertise fits within the broad interdisciplinary context of environmental science.

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Institution	Awardee	Department	Area of Interest
1999			
Boston College	Paul Davidovits	Chemistry	
California Institute of Technology	Mitchio Okumura	Chemistry	
Columbia University	George Flynn	Chemistry	
Massachusetts Institute of Technology	Philip M. Gschwend	Civil and Environmental Engineering	
SRI International	Laura T. Iraci	Molecular Physics Laboratory	
State University of New York at Stony Brook	Robert C. Aller	Marine Sciences Research Center	
University of California, Santa Cruz	A. Russell Flegal	Environmental Toxicology	
University of Massachusetts at Dartmouth	Mark A. Altabet	Chemistry & Biochemistry Center for Marine Science and Technology	
Yale University	Gaboury Benoit	School of Forestry and Environmental Studies	

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Institution	Awardee	Department	Area of Interest
1998			
Oregon Graduate Institute of Science and Technology	James F. Pankow	Environmental Science and Engineering	
The University of Chicago	Laurie J. Butler	Chemistry	
The University of Wisconsin, Madison	Thatcher W. Root	Chemical Engineering	
University of California, Irvine	Ralph J. Cicerone	Earth System Science	
University of Colorado	Veronica Vaida	Chemistry and Biochemistry	
University of Minnesota	Jeffrey Roberts	Chemistry	
1997			
Princeton University	George McLendon	Chemistry	
Rutgers, The State University of New Jersey	Steven J. Eisenreich	Environmental Sciences	
The Johns Hopkins University	Charles R. O'Melia	Geography and Environmental Engineering	
University of Denver	Donald H. Stedman	Chemistry	
University of Iowa	Vicki H. Grassian	Chemistry	
University of North Carolina at Chapel Hill	Douglas J. Crawford-Brown	Institute of Environmental Studies	

Postdoctoral Program in Environmental Chemistry

Institution	Awardee	Department	Area of Interest
1996			
California Institute of Technology	John H. Seinfeld	Department of Chemical Engineering	
Harvard University	James G. Anderson	Department of Chemistry and Chemical Biology	
Indiana University	Ronald Hites	Department of Chemistry	
Massachusetts Institute of Technology	Jeffrey I. Steinfeld	Department of Chemistry	
University of California, Irvine	Barbara J. Finlayson-Pitts	Department of Chemistry	
University of Virginia	Janet S. Herman	Department of Environmental Sciences	