

POSTDOCTORAL PROGRAM IN ENVIRONMENTAL CHEMISTRY

ANNOUNCEMENT OF FELLOWSHIP OPPORTUNITIES

The 2010 awardees and their institutions are listed below. The award of \$120,000 includes a stipend of \$45,000 per year for 2 years for the Postdoctoral Fellow.

An important program goal is to develop leadership in environmental chemistry. The recipients of the awards listed below will recruit excellent young Ph.D. graduates, including those not trained in the environmental sciences, and provide them with the highest caliber of research experience and broadening education in the environmental chemical sciences. Qualified potential postdoctoral scientists should consider **applying** to one of the selected faculty listed below.

The Foundation anticipates that the postdoctoral research accomplishments will be sufficient for the Fellow to attain a position where high quality independent research related to the environment can be pursued. For additional information about the program see: www.dreyfus.org.

Zhenan Bao *zbao@stanford.edu*
Stanford University
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.

Michelle Chang *mcchang@berkeley.edu*
University of California, Berkeley
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.

Jon Clardy *jon_clardy@hms.harvard.edu*
Harvard Medical School
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. Polycyclic tetramate macrolactams (PTMs) mediate this competition. 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 will be explored.

Dick Co *co@northwestern.edu*
Northwestern University
Chemistry

Using femtosecond stimulated Raman spectroscopy, a study will be made of the ultrafast structural dynamics of interfacial photoinduced electron transfer reactions in hybrid semiconductor quantum dots, critical in solar energy conversion devices.

Xiangfeng Duan *xduan@chem.ucla.edu*
University of California, Los Angeles
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.

Karen Goldberg *goldberg@chem.washington.edu*
University of Washington, Seattle
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.

**V. Faye McNeill and
Kenneth Eisenthal** *vfm2103@columbia.edu
kbe1@columbia.edu*
Columbia University
Chemical Engineering and Chemistry

Aerosol particle surfaces in situ will be probed using the nonlinear optical techniques of second harmonic generation and vibrational sum frequency generation to detect organic material at the gas-particle interface, the solvation state, and the electronic and vibrational spectra of interfacial molecules.

Elisabeth Moyer *moyer@uchicago.edu*
University of Chicago
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 (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.