

Spring 1999

The Adolph C. and Mary Sprague Miller Institute for Basic Research in Science
University of California, Berkeley

Volume 1, Issue 1

Miller Institute News



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Welcome to the Miller Institute Newsletter. This publication is designed to provide an overview of the events and news stories that happen at the Miller Institute. It is being distributed to all current members, alumni for the past two years, UC Berkeley Department Chairs, and the Miller Institute Advisory Board. Alumni who pass the two year mark will continue to receive the newsletter only upon request.

The anticipated publication schedule is three times a year, with newsletters printed on approximately January 1st, May 1st, and August 20th. They will be distributed in campus mail. Features of the newsletter will include information on recently given awards and highlights of a current member's research.

The newsletter is designed to keep Miller Institute members and the campus community informed about current and future research at the Institute. Also included will be deadline dates for upcoming competitions, talk schedules for lunches and dinners, and information on any special events.

We request your assistance in keeping our "Recent Members' Publications," and "Awards and Honors" columns current. If you have published materials while under the sponsorship of the Miller Institute, or received any kind of award or honor, please let us know so we may include it in our upcoming issue. Information may be sent by e-mail to millerinstitute@berkeley.edu.

Miller Fellow Focus: Jonas Peters



When asked to describe his research, Miller Fellow Jonas Peters speaks of metal complexes within chemically unusual environments. As a first year postdoctoral fellow in chemistry working with Professor T. Don Tilley, he spends most of his time in the lab, developing inorganic methods to generate novel molecules. "On a typical day, I'll walk into

work and, in an environment which painstakingly excludes undesirable oxygen and moisture, begin to probe chemical reactions in the hope of finding novel chemical behavior".

Most of Peters' research is exploratory - he synthesizes transition metals, and

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Recent Miller Institute Awards



Visiting Miller Professorships

The Executive Committee and Advisory Board of the Miller Institute have granted awards to the following Visiting Miller Professors. Their terms range from fourteen days to one semester during the 1999-2000 academic year:

Astronomy Prof. Gilles Chabrier, Ecole Normale Supérieure de Lyon

Chemical Eng. Prof. John Nicholas, Pacific Northwest National Laboratory
Prof. Raisa Talroze, Russian Academy of Sciences

Chemistry Prof. Vlasta Bonacic-Koutecky, Berlin University
Prof. Francis DiSalvo, Cornell University (also in Physics)
Prof. John Simons, University of Oxford

Civil & Env. Eng. Prof. Ove Ditlevson, Technical University of Denmark

EECS Prof. Eva Tardos, Cornell University

Geology & Geophy. Prof. Richard Gordon, Rice University
Prof. Andrew Knoll, Harvard University

Integrative Biology Prof. Amnand de Ricqlès, Collège de France (also in Museum of Paleontology) Prof. Dale Haidvogel, Rutgers University

Linguistics Prof. Donca Stenide, UCLA

Mathematics Prof. Dror Bar-Natan, Hebrew University of Giv'at Ram
Prof. Barry Johnson, University of Newcastle
Prof. Albert Schwarz, UC Davis

MCB Prof. Stephen Hedrick, UC San Diego
Prof. Gregory Petsko, Brandeis University

Physics Prof. Manuel Cardona, Max Planck Institute für Festkörperforschung
Prof. Ivan Deutsch, University of New Mexico
Prof. Maurice Goldhaber, Brookhaven National Laboratory
Prof. Peter Wyder, Grenoble High Magnetic Field Laboratory

Psychology Prof. Frank Sulloway, MIT

Public Health Prof. A.W. Van der Vaart, The Netherlands Free University

Annual Interdisciplinary Symposium

The Miller Institute will hold its third annual Interdisciplinary Symposium at the Marconi Center in Tomales Bay, Marin County, from June 4 - 6, 1999.

The Miller Institute Annual Interdisciplinary Symposium is a unique forum where scientists from around the world gather to hear professional talks on cutting edge scientific topics. There is scheduled time for formal discussion, as well as free time and meals when informal discussion often takes place.

A full slate of speakers is scheduled for Saturday, including talks from Physics Professor Eric Cornell of JILA, University of Colorado; Molecular Biology Professor Mary Claire King of the University of Washington; Professor Steve Smale of the

City University of Hong Kong and UC Berkeley; Professor Baldomero Olivera of the University of Utah; and Professor Jack Horner of Montana State University.

Sunday morning's program will include talks from Chemistry Professor Daniel Nocera of MIT, and Geophysics Professor Hiroo Kanamori of Caltech. Current Miller Fellows will also be making short presentations on their research throughout the weekend.

A shuttle bus will be leaving the Berkeley campus on Friday, June 4th at approximately 3:00 p.m., and will return on Sunday afternoon. Please contact the Miller Institute office for more information on transportation.



Spring Tuesday Lunch Talks

May

- 4 - Santosh Vempala, Miller Fellow, EECS
- 11 - Susan Owen, Miller Fellow, Geology & Geophysics
- 18 - Martin Halpern, Miller Professor, Physics
- 25 - Last indoor lunch

Beginning in June, informal lunches will be held outside, weather permitting, on the south patio adjacent to the Faculty Club. Formal talks will resume in September. All lunches are open to Miller Institute members only.

**Watch for the
2000-2002
Call for
Nominations
for
Miller
Fellowships
this month**

The Miller Institute would like to thank Maggie Frantz for initiating this Newsletter.

Miller Professorships

The Executive Committee and Advisory Board also granted fourteen new Miller Professor awards. Terms will be either one or two semesters in length during the 1999-2000 academic year:

Astronomy Professor Jack Welch (also in EECS)

Chemical Engineering Professor Anup Chakraborty (also in Chemistry)

Chemistry Professor David Chandler
Professor Daniel Neunark

EECS Professor Edward Lee
Professor Umesh Vazirani

Mathematics Professor William Arveson
Professor Alberto Grünbaum
Professor Martin Scharlemann (from UCSB)

MCB Professor Zach Cande
Professor Jeremy Throner

Mechanical Eng. Professor Costas Grigoriopoulos

Physics Professor Chris McKee

Plant & Micro. Bio. Professor John Taylor

Miller Fellowships

The Executive Committee also granted ten new Miller Fellowships for a two-year term, beginning August 1, 1999:

Astronomy Jim Hermstein, Ph.D. Harvard University

Chemistry Birgit Effe, Ph.D. Ohio State Univ. (also in Chemical Engineering)
Matthew Francis, Ph.D. Harvard University

ESPM Philip Starks, Ph.D. Cornell University

Geology/Geophysics Mark Jellinek, Ph.D. The Australian National University

Integrative Biology Thomas Juenger, Ph.D. University of Chicago
Adam Summers, Ph.D. University of Massachusetts

Mathematics Tamas Hausel, Ph.D. University of Cambridge
Alexander Postnikov, Ph.D. MIT

Physics Philip Kim, Ph.D. Harvard University

Members' Recent Publications

Visiting Miller Professor Alexandre Kirillov wrote a paper entitled "The Merits and Demerits of the Orbit Method" during his Spring 1999 term with the Institute. It is due to be published by *BAMS* this summer.

During her Fall 1998 term **Miller Professor Carla D'Antonio** had a prolific semester with the Miller Institute in the fall of 1998, completing three papers: "Exotic Grasses Slow Invasion of an N Fixing Tree in to a Hawaiian Woodland," with M.C. Mack, submitted to *Biological Invasions*; "Elton Revisited: A Critical Examination of the Relationship Between Biological Diversity and Community Invasibility," with J. Levine, submitted to *Oikos*; and "Plant Invasions The Role of Mutualisms," with D.M. Richardson, N. Allsopp, S.J. Milton, and M. Rejmanek, submitted to *Biological Invasions*.

Visiting Miller Professor Jean Taylor completed work on a paper to be published in *The Journal of Statistical Physics* entitled "A Variational Approach to Crystalline Triple Junction Motion".

Miller Professor Raymond Chiao published two papers during his Fall 1998 term with the Miller Institute: "Reality and Locality: Which Should We Abandon?", with J.C. Garrison, to be published in *The Foundations of Physics*; and "Tunneling Times and Superluminality: a Tutorial," to be published by the AIP conference proceedings for the Lake Garda workshop on "Mysteries, Puzzles, and Paradoxes in Quantum Mechanics," edited by R. Bonifacio.

Miller Fellow Focus: Jonas Peters

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metal complexes and studies their chemical behavior. In an evacuated environment, or one under nitrogen or argon, he chemically combines compounds and then uses a host of spectroscopic measurements to probe the reaction products. One of his most recent projects involves the design and synthesis of a novel series of phosphine ligands for exploratory late metal chemistry. The ultimate goal of this research bears on fundamental carbon, hydrogen and silicon bond activating processes.

Even when the end goals of his research are not met, Peters explains that the process of synthesizing inorganic metals has the intrinsic value of generating new building blocks and preparative methods for future chemists. "Even if you don't end up isolating your desired target molecule, the countless offshoots of the process of chemical synthesis provide a foundation for our entire discipline." The discovery of new compounds, chemical transformations, and characterizational methods may turn

out to be key ingredients for chemists working in only marginally related areas. Thus, Peters stresses that producing "imaginative and reproducible recipes for preparative methodology" is essential to his work in inorganic synthesis. Dr. Peters received his Ph.D. in Chemistry in 1998 from MIT, and joined the Miller Institute last fall. He will be leaving his Miller Fellowship a year early to begin an Assistant Professorship in the Department of Chemistry at CalTech in August.

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Awards & Honors

Former Miller Professor **John Clarke** was recently awarded the national Academy of Sciences' Comstock Prize in Physics. The prize was in honor of his development of superconducting quantum interference devices, used for scientific measurements involving electricity, magnetism, and electro- magnetic waves.

Former Miller Professor **Eugene Haller** is the co-recipient of the James C. McGroddy Price for New Materials endowed by IBM, from the American Physical Society. The prize was established to "recognize and encourage outstanding achievement in the science and application of new materials."

Professor **Jeremy Thorne**, a 1999-2000 Miller Professor in the Department of Molecular and Cell Biology, was recently elected a fellow in the American Association for the Advancement of Sciences (AAAS). The AAAS is the largest Scientific organization in the United States.

Please help us keep this column updated by sharing the news of any recent awards or honors.

