

# Molecular Dynamics News

number 96, August 1998

MDN is an informal newsletter of coming attractions and current events in the world of reaction dynamics and associated phenomena. It is produced without profit through the support of its subscribers\* and patrons. Please renew your subscription by using the form at the bottom of this page.

The format for MDN is

- a Announcements of *open positions* (faculty and postdoctoral).
- b Information about *papers*, whether accepted or not, which are available for distribution. Please state in separate lines: *Title. Journal* (If ms. has been accepted - otherwise state *unpublished*). *Author(s). Address.* (Star author to whom correspondence should be addressed and whose mailing address is given.) In a separate final line provide a *one-sentence punch line*. Please follow this format.
- c Announcements of *conferences, topical meetings, etc.* Availability of *special materials* (e.g., annual reports, computer programs, experimental designs and tips, etc.). *Progress* (or activity) *reports* about work which is not yet published but which may be of interest to our community.
- d Electronic mail addresses and FAX numbers.

MDN is edited by Prof. Vincenzo Aquilanti, Dipartimento di Chimica dell' Università, 06123 Perugia, Italy (electronic mail: AQUILA@HERMES.CHM.UNIPG.IT) and Prof. Roger W. Anderson, Dept. of Chemistry, University of California, Santa Cruz, CA 95064, U.S.A. (electronic mail: ANDERSO@CATS.UCSC.EDU).

Send all material for issue 97 to Prof. V. Aquilanti (**You are encouraged to use electronic mail: AQUILA@HERMES.CHM.UNIPG.IT**). (Please keep line length less than 75 characters.) Editing time will be saved if submissions correspond to the formats found in this issue (#96). The closing date for issue number 97 is October 1, 1998.

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\*1998 Calendar-Year subscription for MDN, (six issues).

**North America: (\$20/year US currency)** : Your check for one or more years should be paid out to The Regents of the University of California. Send it to Roger W. Anderson, and include your name, address, and optional information like email addresses and FAX numbers.

**Elsewhere:** Your check for the equivalent of US \$20/year in any convertible currency should be paid out and sent to Prof. V. Aquilanti. **Amount enclosed**

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# ANNOUNCING ELECTRONIC DELIVERY OF MDN

We offer to our subscribers several possibilities for electronic delivery of MDN:

## 1. Electronic mail to subscribers

In this case subscribers tell us if they want the newsletter automatically sent to them by electronic mail. The newsletter can be sent in two forms: raw LaTeX source file, or as a Postscript file. Subscribers may specify the desired form.

## 2. World Wide Web

Now anyone can access the newsletter as a LaTeX, dvi, HTML, pdf or Postscript file. A Web browser such as Mosaic or Netscape with suitable viewers allows people to read the files on their computer screens. Alternatively the files can be downloaded for local viewing or printing. Subscribers choosing this delivery option will receive an email announcement when a new issue is posted. For information you are welcome to visit the Molecular Dynamics News World Wide Web site:

**<http://www.ucsc.edu/mdn>**

We periodically update the home page, and you can find links to Molecular Dynamics News subscribers' home pages at our WWW site. We will add a link to your home page if you send us the address by email or with the subscription form on the cover page of this issue. There is also a list of MDN subscribers that is linked to their email addresses. We appreciate electronic mail with your reactions to this proposal and with updated email addresses. Please send your email messages to MDN@CHEMISTRY.UCSC.EDU We continue to send hardcopy newsletters by mail to subscribers who request this form of delivery.

### **The MDN e-mail list continues, as detailed below**

#### MOLECULAR DYNAMICS NEWS EMAIL LIST

All members of the chemical physics community are invited to join the (free) "molecular-dynamics-news" email list. The "molecular dynamics" in the title is to be interpreted as meaning "dynamical processes in molecules" rather than "classical simulations of molecular motion". The list can be used to distribute details of conferences, vacant academic and postdoctoral positions, changes of address and other news in the Molecular Dynamics field. It also serves as an archive of up-to-date email addresses for people in the field. The list was created by Jeremy Hutson in June 1993 and has now about 1300 members.

Instead of being maintained manually, the list is operated by a system called "mailbase". People can join or leave the list simply by sending messages to the mailbase program, without the list owner needing to do anything. To join the email list, send a message to the Internet address [mailbase@mailbase.ac.uk](mailto:mailbase@mailbase.ac.uk) containing a line of the form:

```
join molecular-dynamics-news John F Kennedy
```

You do not need to tell the program your email address, as it picks it up from the message header. It does need to be told your real name, so that it can maintain a useful list of email addresses.

When you join, you will receive some introductory information on how to circulate information to the molecular-dynamics-news list, and on the mailbase system itself.

If you would like a list of the current members, send a message containing the line  
review molecular-dynamics-news

to the address [mailbase@mailbase.ac.uk](mailto:mailbase@mailbase.ac.uk)

**Note that messages distributed via the e-mail list are not normally printed in the newsletter, unless the Editors receive an explicit request to do so.**

There is also a spectroscopy email list. To join this email list, send a message to the Internet address [mailbase@mailbase.ac.uk](mailto:mailbase@mailbase.ac.uk) containing a line of the form:

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join spectroscopy-group John Kennedy
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## **a. Open Positions**

### **FACULTY**

#### **FACULTY POSITION IN LASER PHYSICS, DEPARTMENT OF PHYSICS, UNIVERSITY OF WATERLOO**

The Department of Physics, University of Waterloo, invites applicants for a tenure-track position at the Assistant Professor level in the field of experimental laser physics, with applications in one or more of the following areas: ultrafast phenomena, materials processing, biomaterials, particle trapping and manipulation, to begin in September 1999. Candidates in all areas of laser physics will be considered. In exceptional cases appointment at a more senior level will be considered. Further information about the Department can be found on our WEB page <http://www.science.uwaterloo.ca/physics>.

Applicants must have a Ph.D. degree, a record of research accomplishments normally achieved through postdoctoral experience, and promise for excellence in teaching. Salary range commensurate with qualifications and experience. Candidates should submit by regular mail a curriculum vitae, an outline of research accomplishments, a brief research plan, and a statement of their teaching goals. Arrangements should be made for three letters of reference to be sent. Materials should be received by November 2, 1998 and addressed to Dr. D. Strickland, Laser Physics Search Committee, Department of Physics, University of Waterloo, Waterloo, Ontario, CANADA, N2L 3G1, TEL: (519) 888-4567, Ext. 6831; E-mail: [PHYSICS@UWATERLOO.CA](mailto:PHYSICS@UWATERLOO.CA).

In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents. The University of Waterloo encourages applications from all qualified individuals, including women, members of visible minorities, native peoples, and persons with disabilities. This appointment is subject to the availability of funds.

#### **PHYSICAL/BIOPHYSICAL CHEMISTRY FACULTY POSITION**

We are pleased to announce that a faculty position in physical/biophysical chemistry is available at the University of Puerto Rico at Rio Piedras. The following ad appeared in Science in May 1998.

The Department of Chemistry of the University of Puerto Rico-Rio Piedras invites applications for a tenure-track position at the Assistant Professor level beginning as early as August 1998. The successful candidate will be expected to develop an active and competitive research program in Ultrafast (fs and/or ps) Spectroscopy applied to biomolecular processes and biomedical problems. Possible areas could include Electron Transfer, Protein Dynamics, and Fast Processes in Photobiology. A generous start-up package, funded by the National Institute of Health through the Research Centers at Minority Institutions Programs, will be made available to the successful candidate. Applicants should have a demonstrated record of scholarship, research experience and a strong interest in fast processes in biochemical systems. In addition, the successful candidate should have a strong interest developing and teaching classes at both the undergraduate and graduate levels. A Ph.D. in chemistry, biochemistry, biophysics or related fields is required. Please submit a complete Curriculum Vitae and publication record, a brief summary (3-5 pages) of research plans and three letters of reference by June 1, 1998 to Reginal Morales, Chair, Department of Chemistry, University of Puerto Rico, P.O. Box 23346, University Station, San Juan, Puerto Rico 00931 (e-mail: [rmorale@upracd.upr.clu.edu](mailto:rmorale@upracd.upr.clu.edu)).

#### **FACULTY POSITION IN EXTRAGALACTIC ASTRONOMY/COSMOLOGY, DEPARTMENT OF PHYSICS, UNIVERSITY OF WATERLOO**

The Department of Physics, University of Waterloo, invites applicants for a tenure-track position at the Assistant Professor level in the area of extragalactic astronomy to begin in September 1999. We are particularly interested in a person who has aptitude with data in the areas of background radiation, large-scale structure of the Universe, or galaxy formation. Outstanding candidates in other areas of

astrophysics and gravitation will also be considered. In exceptional cases appointment at a more senior level will be considered. Further information about the Department can be found on our Web page at <http://www.science.uwaterloo.ca/physics>.

Applicants must have a Ph.D. degree, a record of research accomplishments normally achieved through postdoctoral experience, and promise for excellence in teaching. The salary range will be commensurate with qualifications and experience. Candidates should submit by regular mail a curriculum vitae, an outline of research accomplishments, a brief research plan, and a statement of their teaching goals. Arrangements should be made for three letters of reference to be sent. Materials should be received by November 2, 1998 and addressed to Dr. R.B. Mann, Astrophysics Hiring Committee, Department of Physics, University of Waterloo, Waterloo, Ontario, Canada, N2L 3G1. TEL: (519) 888-4567, Ext. 6831; e-mail: [physics@uwaterloo.ca](mailto:physics@uwaterloo.ca). In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents. The University of Waterloo encourages applications from all qualified individuals, including women, members of visible minorities, native peoples, and persons with disabilities. This appointment is subject to the availability of funds.

### **LECTURESHIP University of Durham**

A lectureship is available in the Department of Chemistry at the University of Durham (Research rating: 5; Teaching assessment rating; excellent). The position is for an initial period of 3 years, extendable for a further 2 years, and with some potential for continuation to a permanent position.

Applicants should have a Ph D in chemistry or physics and research interests in experimental or theoretical physical chemistry or chemical physics. The successful candidate will be required to teach undergraduates in general aspects of physical and theoretical chemistry (including mathematics for chemists) and develop a successful research programme.

Further information about the Department and the University are available via the Department's Web page at <http://www.dur.ac.uk/~dch0www/>

Informal enquiries may be made to Prof. Robin K. Harris (tel. 0191 374 3121) or email [R.K.Harris@durham.ac.uk](mailto:R.K.Harris@durham.ac.uk)

Further details and an application form may be obtained from the Director of Personnel, University of Durham, Old Shire Hall, Durham, DH1 3HP (tel. 0191 374 7258; FAX 0191 374 7253; email [Acad.Recruit@durham.ac.uk](mailto:Acad.Recruit@durham.ac.uk)). The closing date for applications is 16 July 1998.

Enquiries should quote reference no. A804D.

### **Department of Chemistry, YORK UNIVERSITY**

Tenure-track Position in Experimental Physical Chemistry of Materials

Applications are invited for a tenure-track faculty position in experimental physical chemistry, subject to budgetary approval. Candidates should be physical chemists with research interests in some aspect of materials science and have a strong record of accomplishment in a related research area. The successful candidate will be expected to direct an active research programme, and to develop and teach courses at the graduate and undergraduate levels. Qualified candidates will be considered at the Assistant Professor or higher level commensurate with experience. Candidates should provide a curriculum vitae, a statement of research interests and plans for a proposed programme of research, and should arrange for three letters of reference to be sent to: Dr. J.M. Goodings, Chair, Materials Search Committee, York University, 4700 Keele Street, Toronto (North York), Ontario M3J 1P3, Canada. Review of applications will begin November 1, 1998. York University is implementing a policy of employment equity including Affirmative Action for women faculty. Qualified men and women are invited to apply. In accordance with Canadian immigration requirements, this advertisement is directed toward Canadian citizens and permanent residents.

Dr. Chester Sadowski, Chair ([chesters@turing.sci.yorku.ca](mailto:chesters@turing.sci.yorku.ca)) Department of Chemistry Faculty of Pure and Applied Science York University, North York, Ontario, M3J 1P3, Canada Telephone: (416)736-2100

(ext.77714) or (416)736-5246 FAX: (416)736-5936

### **ANNOUNCEMENT OF A FREE CHAIR**

Chair as a lecturer (associate professor) in physics at the Physics Department, Royal Institute of Technology (KTH), Stockholm, Sweden.

The chair is normally appointed for an initial period of three years followed by a permanent appointment without further application. The chair concerns 50% research and supervision of graduate students in modern optics, non-linear optics or laser physics. The remaining 50% concerns undergraduate teaching which is expected to be performed in Swedish when required. The applicant must have a PhD degree in physics and experience of university teaching. Equal weight is put on scientific and pedagogic skills. The applicant is expected to apply for external financing for his/her research. Individual salaries are applied at KTH. Please, give your salary request in the application.

More information concerning the chair is given by the Department Head, Prof. Per Carlson, ph. 46-8-161044, e-mail carlson@msi.se and the professors Klaus Biedermann, ph. 46-8-790 7283, e-mail: kb@optics.kth.se, Ari Friberg, ph. 46-8-790 729; e-mail:atf@optics.kth.se and Stig Stenholm, ph.46-8-790 7269; e-mail: stenholm@atom.kth.se.

The applicant should include the following documents:

1. Curriculum vitae.
2. List of scientific publications documenting the competence.
3. Short description of scientific, pedagogic and administrative activities.
4. Ten publications ranked by the applicant as the best ones.

These items should be packed in three identical packages.

5. One copy of remaining publications in a separate package.

Most lecturers at KTH are male. KTH therefore welcomes applications from females. More information about the Department of Physics can be found at the www-address: <http://www.physics.kth.se> The application should be sent to Department of Physics, Royal Institute of Technology (KTH), SE 10044 Stockholm, Sweden and should arrive before 1998-06-25. Give the ref. number 510-99-98

Dr. Lars-Erik Berg, Atomic and Molecular Physics, Department of Physics, Royal Institute of Technology (KTH), SE-100 44 Stockholm, Sweden Phone +46 8 7907124, FAX +46 8 200430, e-mail: berg@atom.kth.se, <http://www.atom.kth.se/~berg/lasres.html>

### **DEPARTMENT HEAD, MAX-BORN-INSTITUT FOR NONLINEAR OPTICS AND SHORT PULSE SPECTROSCOPY**

This position is expected to begin as early as 1 July 1998, and the candidate is expected to have a high level of competence and scientific creativity in conducting and further developing the interdisciplinary research program. Ability to motivate and guide a research team of presently 25 scientists, research students and technical staff is necessary, as well as evidence that the candidate can provide successful research leadership in an interdisciplinary environment involving other departments of the institute. The salary level for this high level of responsibilities is equivalent to that of a C3 professor in an German university. We expect an active engagement in academic teaching at one of the universities in Berlin or Brandenburg, in attracting external users from academia and industry for co-operative projects using the MBI facilities. The successful candidate is also expected to acquire additional research funding from outside sources.

Requirements: Ideal candidates would be young experimental physicists or physical chemists who have already achieved some international recognition in their field of research and who are familiar with academic teaching ( equivalent to the German 'habilitation'). They should have experience with laser spectroscopic methods and with at least one of the following research areas:

- surface physics/chemistry
- photophysics of large molecules, possibly including biomolecules

- ultrafast physics
- experiments with synchrotron radiation

Applications should be sent to Prof. I.V. Hertel, Director Division A, Max-Born-Institut, Rudower Chaussee 6, D-12489 Berlin, Germany. The applications should include a CV, research plan, summary of accomplishments since the PhD, and a list of professional references.

Tel: (030) 6392-1200, FAX: (030) 6392-1209, e-mail: hertel@mbi-berlin.de

## POST DOCTORAL AND VISITING

### **POSTDOCTORAL POSITIONS, SRI International**

Postdoctoral Fellow positions are available in the Laser-Based Diagnostics Group of the Molecular Physics Laboratory at SRI International in Menlo Park, California. This group has extensive experience in the development of quantitative laser-based measurements in reactive gas phase environments which include flames, plasmas, and the atmosphere. Research activities include quantitative measurements in laboratory flames related to NO<sub>x</sub> pollutants; development of spectroscopic strategies for detection of radicals such as HO<sub>2</sub> and HCO; collisional relaxation measurements to support quantitative laser-based measurement of radical species; and quantitative measurements of radical intermediate species to test the predictions of detailed models of flames and plasmas. The group includes David Crosley, Jay Jeffries, Gregory Smith, Leah Williams, and Jorge Luque. Menlo Park is located on the peninsula side of the San Francisco Bay between San Francisco and San Jose. One postdoctoral position is available immediately to replace a postdoctoral fellow departing for a permanent industrial job and a second postdoctoral position is anticipated. Experience with laser-based detection, chemical kinetics, collision dynamics, and spectroscopy of diatomic and triatomic radicals is desired. Salary for beginning postdoctoral fellows is approximately \$31,500, and increases with prior postdoctoral experience. Interested candidates should send a resume to Jay Jeffries, Molecular Physics Laboratory, SRI International, 333 Ravenswood Ave. Menlo Park, CA 94025 or Jeffries@mplvax.sri.com.

### **POSTDOCTORAL POSITION, Colorado State University**

A postdoctoral position is available to study radical-surface interactions using a unique REMPI/TOFMS apparatus and to study metal-ligand charge transfer reactions using steady-state and time-resolved spectroscopy. The initial focus of the position will be to develop a ns pulsed Nd:YAG laser system for REMPI and transient absorption experiments. The position may eventually specialize in one of these areas. Experience with lasers, preferably ns pulsed and dye laser systems, is required. Additional desirable qualities include inorganic synthesis, knowledge of vacuum systems, and an ability and desire to work with graduate and undergraduate students. Further information on specific projects available may be found at <http://www.chm.colostate.edu/erf> and <http://www.chm.colostate.edu/cme>. Interested individuals should submit a curriculum vitae and names of three references to Prof. Ellen R. Fisher or Prof. C. Michael Elliott, Department of Chemistry, Colorado State University, Fort Collins, CO 80523-1872. Colorado State University is an EEO/AA Employer and strongly encourages applications from women and minorities. Ellen R. Fisher, Department of Chemistry, Assistant Professor of Chemistry, Colorado State University, Fort Collins, CO 80523-1872, (970)-491-5250 (office), (970)-491-1801 (FAX)

### **POSTDOCTORAL POSITION, University of Southern California**

A postdoctoral position is available to work on unimolecular and bimolecular reactions of molecules and radicals using product ion imaging and TOF/REMPI techniques. A short description is given below, and further information about our research can be found in my group's homepage:

<http://www-rcf.usc.edu/~reisler>.

Two machines are currently available, one devoted to crossed beams studies of bimolecular reactions and the other optimized for the production and detection of free radicals. The postdoc will be responsible for

implementing recent improvements in resolution and data acquisition techniques, as well as for the application of the technique to processes important in combustion and in atmospheric chemistry. The ion imaging technique complements several others in our lab, e.g., LIF, IR/UV pumping with high-resolution OPO's, etc.

1. Unimolecular reactions of free radicals (e.g. hydroxymethyl, allyl) are studied using photofragment ion imaging with REMPI detection. Pyrolytic and photolytic production of radicals are implemented. Reactions proceeding via multiple pathways and involving nonadiabatic transitions and isomerization are emphasized, as well as state-specific effects enhanced by using multiple photon and double resonance pumping schemes.
2. Bimolecular Reactions of atoms and radicals are studied using imaging in a crossed molecular beam machine previously used in studies of state-selected collision induced dissociation. The postdoc will study reactions of atoms and radicals important in combustion and atmospheric processes, acquiring state-to-state dynamical information that is important in modeling.

Other related experiments carried out in my lab include:

3. Reactions of atomic carbon in pulsed molecular beams, in which both free and seeded ablation techniques are used to study insertion, abstraction and addition reactions of carbon.
4. Photoinitiated reactions at gas-solid interfaces (in collaboration with Professor Curt Wittig): Interactions of vibrationally excited molecules with oxide surfaces are monitored state-selectively with a variety of laser spectroscopies and using high-resolution OPO's. Other collaborative projects are also encouraged.

Interested candidates with prior experience in laser techniques should send their resume and two letters of reference to: Professor Hanna Reisler, Department of Chemistry, University of Southern California, Los Angeles, CA 90089-0482; E-mail: Reisler@chem1.usc.edu; FAX: (213) 746-4945.

#### **POSTDOCTORAL POSITION, University of Notre Dame**

A postdoctoral position is available in the Hammes-Schiffer research group in the general area of reaction dynamics in complex systems. Projects of interest include:

1. Extensions and applications of the TDSCF-RPH (time-dependent self-consistent-field reaction path Hamiltonian) method (see J. Chem. Phys. 108, 7085 (1998) for more information on this topic).
2. Development and applications of mixed quantum/classical molecular dynamics methods, particularly to proton and hydride transfer reactions and photoexcited reactions in solution and in enzymes.
3. Investigation of solvation dynamics of fundamental organic reactions.

Computer programming experience and a strong background in physical chemistry and chemical physics are required. Funding for this position is available immediately, but the starting date is flexible. The expectation is that the position will be for two years, subject to renewal upon mutual agreement after the first year.

See my web site <http://www.nd.edu/~shammes> for more information.

Please send CV and at least 2 letters of recommendation to Professor Sharon Hammes-Schiffer, Department of Chemistry and Biochemistry, University of Notre Dame, Notre Dame, IN 46556, (219) 631-7434,

#### **POSTDOCTORAL POSITION, Rice University**

A postdoctoral research position for experimental studies of fullerene photophysics is currently available in the group of Prof. Bruce Weisman at Rice University. The research will focus on using time-resolved spectroscopy to explore triplet state properties and processes in fullerenes and related systems of basic and applied interest. Motivated applicants with a background in optical methods, kinetic analysis, or fullerenes are preferred. To apply, please send a cover letter, CV, and arrange for three letters of recommendation to: Prof. R. Bruce Weisman, Department of Chemistry, MS-60, Rice University, 6100 Main Street, Houston, TX 77005.

e-mail inquiries are welcome at [weisman@rice.edu](mailto:weisman@rice.edu) Rice University is an Equal Opportunity / Affirmative Action Employer.

#### **POSTDOCTORAL POSITIONS, Weizmann Institute**

Post-doctoral positions in the field experimental "Coherent Control of Chemical Reactions" have become available in the group of Professor Moshe Shapiro at the Weizmann Institute of Science, Rehovot, Israel. The positions are available within the framework of a center of excellence in Coherence Chemistry at the Weizmann Institute and The Hebrew University, and the German-Israeli DIP project in collaboration with Prof. D. Zafman of the Physics department at the Weizmann Institute.

The experimental work will focus on 2-photon vs. 2-photon phase control of dissociation processes, in continuation of our past demonstration of laser control of electronic degrees of freedom in the Na<sub>2</sub> dissociation process (Phys. Rev. Letters 76: 2886 (1996)).

The candidates will be encouraged (as an option) to also participate in our theoretical work in the topics of: coherent control of chiral synthesis; laser cooling of molecules and laser induced recombination; wavepacket and potential imaging by femtosecond spectroscopy.

Additional details about the group, its activities, and two sample papers, can be found at

<http://chemphys.weizmann.ac.il/~shapiro/home.html>

Interested applicants should contact (electronic mail is preferable): Professor Moshe Shapiro, Department of Chemical Physics, The Weizmann Institute, Rehovot, 76100, Israel  
cfshapir@weizmann.weizmann.ac.il, fax:+972-8-9344123

#### **POSTDOCTORAL POSITION, University of Utah**

A post-doctoral position in the field of molecular dynamics simulations of high-energy and elastomeric materials will be available beginning 1 September 1998. The position will involve development of *ab initio* based potential functions as well as calculation of structural, transport, thermodynamic and mechanical properties of bulk materials and materials interfaces. Efforts will involve algorithm and code development for application on massively parallel platforms. Applicants should have a background in statistical mechanics, molecular dynamics simulations, and code development in FORTRAN. Interested parties should contact Grant D. Smith or Richard H. Boyd, Department of Materials Science and Engineering and Department of Chemical Engineering, University of Utah, Salt Lake City, UT 84112  
gsmith@geoffrey.emro.utah.edu, boyd@poly2.mse.utah.edu

#### **POSTDOCTORAL POSITION, University of Lille**

A postdoctoral position in the field "Heterogeneous chemistry of atmospheric radicals" is available in the group of Pr Jean-Pierre Sawerysyn at the University of Lille (France). The project is focused on the heterogeneous chemistry of XO radicals (X= Br, I) on different solid surfaces of atmospheric aerosol materials. Experiments will be performed using a flow tube combined with a molecular beam mass spectrometric sampling technique as a detection method. Furthermore, the applicant will participate to the development of a new technique for investigating the heterogenous chemistry of atmospheric species on liquid surfaces. Duration : Septembre 98 - July 99 (with possible extension). Interested applicants should send a cv and two letters of recommendations to Jean-Pierre Sawerysyn . E-mail will be fine.

LC3-Laboratoire de Cinétique et Chimie de la Combustion, URA CNRS 876- Université des Sciences et Technologies de LILLE, 59655 VILLENEUVE d'ASCQ Cedex.FRANCE.

email : Jean-Pierre.Sawerysyn@univ-lille1.fr, T: 33.(0)3.20.43.65.62 Fax : 33.(0)3.20.43.69.77

#### **POSTDOCTORAL POSITION, Hebrew University of Jerusalem**

A postdoctoral position is open at the Physical Chemistry department in the Hebrew University of Jerusalem, in the group of Dr. Uri Banin. The topic of research is size dependent spectroscopy and microscopy of semiconductor nanocrystals, and semiconductor cluster-molecules. The successful applicant, should have background and experience in experimental optical spectroscopy of molecules, single molecules or materials, and interest in nanomaterials. The project is a collaboration with a group at the University of Karlsruhe in Germany, and some travel is planned along the course of the work.

Interested parties can contact Dr. Uri Banin, preferably by Email at: banin@chem.ch.huji.ac.il

Dr. Uri Banin, Department of Physical Chemistry, The Hebrew University Of Jerusalem, Jerusalem 91904, Israel, TEL.:972-2-6584515, FAX: 972-2-5618033, <http://chem.ch.huji.ac.il/employee/banin/ibanin.htm>

#### **POSTDOCTORAL POSITIONS, Hanscom Air Force Base**

There are two postdoctoral research positions available in the area of laboratory studies of chemical and physical processes of the upper atmosphere, located at the U.S. Air Force Research Laboratory at Hanscom Air Force Base, near Boston, Massachusetts. The research is conducted in an academic style and results are published in the open literature. However, there is a requirement that the candidate be a U.S. Citizen or Permanent Resident (with a "green card").

We have a Laboratory Scholar Program with an immediate opening, and an NRC Research Associateship Opportunity (number 13.03.24.09) that has an August 15, 1998 application deadline.

Our group performs experiments, develops models, and analyzes field measurements relating to the molecular dynamics and infrared spectra of the upper atmosphere. In our laboratory experiments we measure the rates of formation, excitation and deactivation of infrared-active species, especially in highly vibrationally and rotationally excited states. A unique cryogenic simulation chamber is available for these measurements, in which pulsed laser and electron-beam excitation methods are applied, and infrared emissions are studied in an environment in which the background is effectively suppressed. Advanced infrared detection systems used in this work include Michelson interferometers with high resolution and sensitivity. The data obtained using time-resolved Fourier transform spectroscopy are analyzed using techniques such as nonlinear synthetic spectral fitting and spectral pattern recognition algorithms. For example, we are studying the chemical production of OH radicals in states with high  $v$  and high  $N$ , responsible for pure rotation emissions observed in the atmosphere. We also conduct related laser-based experiments that make use of multiphoton ionization and laser-induced fluorescence to determine state-to-state kinetic properties of a number of species. The results of the laboratory experiments can be analyzed together with the data acquired in rocket-based, Space Shuttle, and satellite experiments, as well as with data from imaging spectrometers. Access to the field measurement data enhances our ability to develop new atmospheric models of the chemically active species we study. The modeled kinetic and radiative processes relate to the energy pathways, temperature structure, and infrared properties of the upper atmosphere.

Please contact Dr. Steve Lipson, U.S. Air Force Research Laboratory (AFRL/VSBM), Hanscom AFB, Massachusetts 01731, Voice (781) 377-3626; Fax (781) 377-8900, E-mail [lipson@plh.af.mil](mailto:lipson@plh.af.mil)

#### **POSTDOCTORAL POSITION, University of California, Davis, CA**

A postdoctoral position is available in my research group to study photoexcited triplet states of biomolecules using ODMR (optically detected magnetic resonance) spectroscopy. A major focus is the NIH-funded investigation of retroviral nucleocapsid protein (NC) binding to nucleic acids. Among the NC proteins actively being studied is NCp7 of HIV-1 and its complexes with various elements of the psi-recognition region of its RNA genome. All retrovirus (except spumavirus) NC proteins incorporate one or two essential CCHC-type zinc-finger sequences that contain highly conserved aromatic amino acids such as tryptophan. These serve as intrinsic spectroscopic probes for ODMR. Retroviral zinc-fingers are promising new targets for attack by antiviral agents that are being studied in a number of laboratories. We maintain active collaborations with biological research groups that provide us with protein and nucleic acid samples. Further information can be found at <http://www-chem.ucdavis.edu/people/maki.html>. If you are interested in being considered for this position please submit a curriculum vitae and the names of three references to Prof. August H. Maki, Department of Chemistry, University of California, Davis, CA 95616, USA.

#### **POSTDOCTORAL POSITION, Columbia University**

I am seeking a postdoctoral researcher for my surface group at Columbia University. The experiments involve energy-resolved measurements of photoreaction of organic molecules on UHV prepared surfaces of

metal oxide and/or semiconductor crystal. The work involves mass spectroscopic detection and/or UV REMPI. The goals are the fundamental chemical physics of light-induced single-crystal surface reactions, but on surfaces with environmental and/or electronic implications. Experience in excimer/dye laser technology and REMPI required; experience in UHV methods and computer control required. Good communication skills essential. Please send resumes to Prof. Richard Osgood, Dept. of Electrical Engineering, 500 West 120th Street, rm. 1322, New York, NY 10027, or send to email address: osgood@columbia.edu. Columbia University is an equal opportunity employer.

**POSTDOCTORAL POSITION, University of Illinois at Chicago**

A post-doctoral position is open in the group of Prof. Robert Gordon at the University of Illinois at Chicago in the areas of coherent control and molecular optics. The research associate may work on either of two projects (or both!). The first project is a continuation of ongoing work described in recent publications in *Science* (270, 77 (1995)) and *Physical Review Letters* (79, 4108 (1997)), in which we demonstrated coherent phase control over the branching between ionization and dissociation of HI and DI. Future experiments will include bond-selective photochemistry and control over the angular distributions of photofragments. A recently completed photofragment imaging machine will be used for some of these experiments. In the second project a tightly focused laser beam will be used to create a "molecular lens" that is capable of focusing and steering a molecular beam. Possible experiments include using the focused molecular beam to create nanostructures on a surface and measurement of the alignment of pendular states using a femtosecond probe.

Candidates for this position should have experience with dye lasers, pulsed molecular beams, and ion optics. The position is open now, and funding is available for more than one year. Please send resumes and arrange for letters of recommendation to be sent to Robert Gordon, Department of Chemistry (m/c 111), University of Illinois at Chicago, 845 W Taylor Street, Chicago, IL 60607-7061.

**POSTDOCTORAL POSITION IN THEORETICAL CHEMISTRY, Indiana University**

A postdoctoral position is available in my group. The research involves combining techniques from statistical mechanics and electronic structure to solve realistic models of chemical systems via computer simulation. Problems of interest range from electron solvation, to the properties of biopolymers to quantum effects in cryogenic systems. The starting date is flexible and the position will be for one year, with yearly extensions possible. Resumes consisting of a CV, a publication list and the address/phone number/email of two references, may be sent to me by either mail or email.

Professor Glenn J. Martyna, Department of Chemistry, Indiana University, Bloomington, IN 47405-4001, Phone: (812)-855-6605, Fax:(812)-855-8300, Email: martyna@martyna1.chem.indiana.edu

**POSTDOCTORAL POSITION, University of California, Los Angeles**

We are looking for creative and self driven individuals to contribute to our rapidly growing research program in COMBINATORIAL CATALYSIS. Specifically we are looking for expertise in LASER SPECTROSCOPY, someone with good experimental skills and preferably experience in single and multi color REMPI, laser fragmentation spectroscopy, time of flight mass spectrometry and Labview. REMPI microelectrode technique has recently been developed in our laboratories to rapidly screen large solid state catalyst libraries (see the upcoming July 23 issue of NATURE).

Molecules of initial interest are organics, organometallics and metals. We currently have an excimer pumped dye laser system and a TOF mass spectrometer. We are also acquiring a tunable solid state laser (OPO).

The candidate is expected to develop laser based ionization/detection schemes to screen gaseous products from solid state catalyst libraries and contribute to the development of a new and exciting field in catalysis. We offer a competitive salary and benefits. Position is available immediately. Please send cv, names of 2-3 references to the address below. If you use e.mail, please send all correspondance in ASCII.

Selim M. Senkan, Professor and Chairman, Department of Chemical Engineering, 5531 Boelter Hall,

University of California, Los Angeles, CA 90095  
Office Tel: 310-206-4106, Dept. Fax : 310-206-4107, E.Mail: senkan@seas.ucla.edu,  
<http://www.chemeng.ucla.edu>

### **POSTDOCTORAL POSITIONS, Mississippi State University**

Two postdoctoral research associate positions will be available in October/November in molecular laser spectroscopy and chemical kinetics (metal oxide formation) at Mississippi State University's Diagnostic Instrumentation & Analysis Laboratory (DIAL). DIAL is a multidisciplinary research and development institute, funded predominantly by the Department of Energy and the National Aeronautics & Space Administration. The major emphasis of our research programs concerns application of modern instrumentation including lasers to environmental, combustion and propulsion problems. Many of the projects have both basic and applied aspects. The research associate for the first project will work on application of laser spectroscopy (especially cavity ring-down spectroscopy, photoionization/time-of-flight mass-spectrometry, and laser-induced fluorescence) to environmental/combustion problems. This position will start in ~October. He/she should have a strong background in laser spectroscopy or a related area. The associate for the second project will work on the kinetics of metal oxide formation, especially at high temperatures. He/she should have experience in kinetics, preferably with flow reactors. Familiarity with use of lasers and mass spectrometers for species detection will be an asset. This position starts in November. The associates can expect a salary of ~\$30-32K per year, plus medical insurance and moving expenses. Interested individuals with appropriate research background should promptly send a cover letter and a cv (preferably by e-mail or fax) and have 2-3 recommendation letters sent directly to: Dr. R.Vasudev, Mississippi State University, Diagnostic Instrumentation & Analysis Laboratory, 205 Research Boulevard, Research & Technology Park, Starkville, MS 39759-9734; Fax:(601)-325-8465; E-mail: [vasudev@dial.msstate.edu](mailto:vasudev@dial.msstate.edu). Evaluation of applications will begin in August.

We are an equal opportunity, affirmative action institution.

Ram Vasudev, Mississippi State University, 205 Research Blvd., Research & Technology Park, Starkville, MS 39759-9734, Phone: (601)-325-0499 (Office), Fax: (601)-325-8465, E-mail: [vasudev@dial.msstate.edu](mailto:vasudev@dial.msstate.edu)

### **POSTDOCTORAL POSITIONS, University of Liverpool**

Two post-doctoral research positions are available, one on Theory and one Experimental, to study the dynamics of dissociation at heterogeneous surfaces at the Surface Science Research Centre, University of Liverpool. This project will combine theoretical modelling techniques with detailed state resolved experiments to investigate the influence of coadsorbates on the poisoning and promotion of reactions at well defined metal surfaces.

The experimental position will employ laser detection and molecular beam techniques to investigate dissociation and recombinative desorption of small molecules at metal surfaces in the presence of a coadsorbate. Applicants should have experience of either UHV surface science techniques or of laser spectroscopy/molecular reaction dynamics.

The theoretical position will involve quantum and classical dynamics simulations of molecular dissociation and scattering; applicants should have experience in a related area.

Further information can be obtained from Dr Andrew Hodgson (Experimental) (0151-794-3536, email: [ahodgson@liv.ac.uk](mailto:ahodgson@liv.ac.uk)) or Professor Stephen Holloway (Theory) (0151-794-3537, email: [stephen@ssci.liv.ac.uk](mailto:stephen@ssci.liv.ac.uk)). Appointment to this position will be according to age and experience. Applicants should send a cv, together with the names of three referees, directly to us or to the Registrar, University of Liverpool, PO Box 147, Liverpool L69 3BX, UK.

Andrew Hodgson ([andrewh@ssci.liv.ac.uk](mailto:andrewh@ssci.liv.ac.uk)), Surface Science Research Centre, University of Liverpool, P.O. Box 147, Liverpool L69 3BX, UK, Tel: 0151-794 3536, FAX: 0151-708 0662,

### **POSTDOCTORAL POSITION, University of Manchester**

### New Theories of Chemical Reactions and Molecular Collisions

Applications are invited for a postdoctoral research associate position funded by the UK Engineering and Physical Sciences Research Council. The research involves the development of novel theories for understanding the dynamics of chemical reactions and molecular collisions. There are two complementary themes to the research:

(a) the dynamics of light atom transfer reactions, which involves computationally intensive scattering calculations. (b) new semiclassical theories for understanding the angular scattering of reactive and inelastic collisions.

Examples of our recent research include: *J. Chem. Phys.* 1998 (108) 5695; *ibid.* 1996 (104) 2297; *J. Chem. Soc. Faraday Trans.* 1997 (93) 709; *J. Comput. Appl. Math.* 1997 (82) 447; *Chem. Phys.* 1996 (207) 461.

Excellent computational facilities are available for the research including supercomputers and workstations. The research on the dynamics of light atom transfer reactions involves collaboration with Professor G C Schatz, Dept. of Chemistry, Northwestern University, Evanston, Illinois, USA, and some travel to the USA is possible.

The appointment is for 2 years. Salary in the range 15159-22785 UK pounds plus membership of the Universities Superannuation Scheme.

Candidates with strengths in either of the above themes (or both) should send their curriculum vitae and names of two referees to:

Professor J.N.L. Connor, Department of Chemistry, University of Manchester, Manchester M13 9PL, England, Tel: (+44)-161-275-4693/4686, Fax: (+44)-161-275-4734, Email: J.N.L.Connor@Manchester.ac.uk

### **POSTDOCTORAL POSITION, Australian National University**

A postdoctoral position will probably be open in our chemical dynamics group from later this year. Our group is interested in a number of aspects of molecular motion and chemical reaction dynamics. The successful candidate will be expected to work on the development of methods for constructing molecular potential energy surfaces [see our recent advances in, for example, *JCP* 102, 5647 (1995); 108, 2424 (1998), 108, 8302 (1998); and *J. Chem. Soc. Far. Trans.* 93, 871 (1997)].

For this position, some experience with ab initio calculations might be useful, but is not essential. Interested applicants should have high quality theoretical ability.

The position is for two years in the first instance, with the possibility of extension to a third year.

Interested candidates are asked to send me a brief Curriculum Vitae and list of publications, via email (collins@rsc.anu.edu.au), or Fax (61 6 249 0750).

Unfortunately, time is short, so interested candidates are asked to contact me as soon as possible, and no later than August 20, 1998. Dr Michael A. Collins, Research School of Chemistry, Australian National University, Canberra. ACT. 0200, Australia

### **POSTDOCTORAL POSITION, Rice University**

Robert F. Curl and Graham P. Glass of the Chemistry Department at Rice University are seeking a Post-doctoral Fellow in the field of infrared laser kinetic spectroscopy of free radicals. In these experiments, a suitable precursor for the radical of interest is flash photolyzed by an excimer laser and the transient infrared absorption of radical produced is observed using a tunable, cw IR laser probe. The probe lasers are a color center laser and a difference frequency source. For somewhat more information see <http://pchem1.rice.edu/FacultyStaff/Curl.html> and its linked page. This position requires extensive experience with lasers and the normal technology of Chemical Physics. Previous experience working with cw tunable lasers preferably Coherent Autoscan Ti:sapphire lasers is desirable. The position is restricted to individuals who have received their doctorates within the last five years. Please send a resume and arrange for two letters of recommendation to be sent to Robert Curl, Chemistry Department, Rice University,

Houston, TX 77005-1892, USA (rfcurl@rice.edu) by August 15, 1998. Rice University is an Affirmative Action/Equal Opportunity Employer.

### **POSTDOCTORAL POSITION, Cambridge University**

There are two major problems in extrapolating data obtained under ultrahigh vacuum (uhv) conditions, using surface science methods, to the study of catalysts under realistic conditions. These problems are commonly referred to as the "structure gap" and the "pressure gap", reflecting the differences in surface structure and ambient pressure, respectively, between practical catalysts operated at elevated pressures and single crystal surfaces studied under uhv conditions.

The aim of this project is to bridge these gaps by using new laser spectroscopic methods that can be used to study the adsorbed species present on the surface of a working single crystal model catalyst in the appropriate reactive atmosphere and at the relevant temperature. Second harmonic generation spectroscopy and sum frequency generation spectroscopy provide us with powerful in situ tools for investigating the structure of the catalyst surface and the vibrational spectra of chemisorbed molecules under reaction conditions.

A postdoctoral position is available for two years in the research group of Dr David Klenerman in the Department of Chemistry, Cambridge University, commencing as soon as possible. Applicants should have a background in laser spectroscopy and some vacuum experience would be useful. The instrumentation required to carry out the project has already been built and successfully tested, including a state-of-the-art tunable picosecond infra-red laser source and uhv and high pressure cells. Our principal objective is to exploit these new methods in the investigation and development of technologically important catalytic systems. To apply please send a CV and the name of two referees to :

Dr. David Klenerman, Department of Chemistry, University of Cambridge, Lensfield Road, CAMBRIDGE CB2 1EW, Tel: 44-1223 336481, fax: 44-1223-336362, email: dk10012@cam.ac.uk.

A Post-doctoral position for work in theoretical chemical dynamics is available at the Air Force Research Laboratory, Hanscom Air Force Base (about 10 miles north of Boston), MA. Successful candidates are expected to calculate cross sections for inelastic and reactive involving atom-molecule or molecule-molecule collisions. Position initially for one year - with a possibility for renewal for another year. Commensurate salary. U.S. citizenship or Green Card required. Reply to: sharma@plh.af.mil.

### **EXPERIMENTALIST (POSTDOC OR YOUNG SCIENTIST) POSITION AT INLN, CNRS, NICE, FRANCE.**

An experiment: we look on platinum wire put into a gas flow, and register hot spots and waves initiated by a laser beam. The challenge is to understand mechanisms of huge losses of noble metal in catalysis, and ways to diminish them. This is closely related to surface science also. Physico-chemical background is helpful but not obligatory. A curious and handy physicist who likes experiment will be successful here.

The position is till September 1999, it will start September 1998, although earlier starting date is negotiable too. The salary is 21 kF a month, for a European PostDoc (not from France: programme Training and Mobility of Researchers), and for a young scientist without PhD - depending on qualification. The fellowship is funded by the EU network "Nonlinear dynamics of spatially extended systems" and is intended for a citizen of a Member State of the European Community or of an Associated State.

Contact:

Prof. Valentin KRINSKY, Institut Non-Lineaire de Nice, U.M.R. C.N.R.S. 6618, Sophia Antipolis, 1361, Route des Lucioles, F-06560 Valbonne, FRANCE

E-mail krinsky@inln.cnrs.fr, Tel: ++33- 4-92-96-73-45, Fax: ++33- 4-93-65-25-17

### **POSTDOCTORAL POSITION, Atmospheric Photochemistry and Chemical Reaction Dynamics**

A postdoctoral position in experimental chemical physics is available beginning June 1, 1998 with Simon North in the Department of Chemistry at Texas A&M University. The successful candidate will participate in

experiments examining vector and scalar correlations in molecular fragmentation using frequency-modulated Doppler spectroscopy, resonance-enhanced multiphoton ionization time-of-flight, and laser-induced fluorescence. The research will focus on the photochemistry of atmospherically relevant molecules and the dissociation dynamics of small free radicals. Additional information can be found on the following homepage (<http://www.chem.tamu.edu/north/home.html>). A Ph.D. in chemical physics, physical chemistry, or physics is required. Preference will be given to candidates who have experience with pulsed and cw lasers, molecular beams, spectroscopy, and vacuum techniques. The position is initially for one year but may be extended for an additional year by mutual consent. The salary is negotiable. Interested candidates should send a cover letter, a curriculum vitae, and have three letters of recommendation sent directly from the referees to:

Prof. Simon W. North, Department of Chemistry, Texas A&M University, P.O. Box 300012, College Station, TX 77842

e-mail: [north@chemvx.tamu.edu](mailto:north@chemvx.tamu.edu), office: (409)-845-4947, Fax: (409)-845-2971

### **POSTDOCTORAL FELLOWSHIP, Institute of Physical Chemistry University of Zurich, Switzerland.**

A postdoctoral fellowship is available as of the 1st June or after in the group of Prof. J.R. Huber to work on one of the following projects: (1) photodissociation processes in molecules and molecular clusters (2) time resolved laser spectroscopy of molecules using the quantum beat method (3) liquid surface photochemistry in high vacuum. The first topic is studied using on a recently constructed REMPI-TOF flight apparatus and particular points of interest include the detailed investigation of energy partitioning and vector correlations in photodissociation processes and the study of cluster specific photochemistry. In the second field a pulsed dye amplifier generates Fourier transform limited nanosecond laser pulses which are then used to investigate intramolecular dynamics and electronic structure in molecules with a particular emphasis on transient species. The third project concerns the analysis of photoproducts ejected from a liquid surface after laser irradiation, using photofragment translational spectroscopy. The successful applicant should have a background in laser spectroscopy. Experience with molecular beam methods, the REMPI technique and/or time resolved spectroscopy would be of advantage.

Further information is available from:

World Wide Web: <http://www.unizh.ch/pci/huber.html>

Prof. J.R. Huber, PCI, Universitat Zurich, Winterthurerstr. 190, CH-8057 Zurich, Switzerland.

E-mail: [huber@pci.unizh.ch](mailto:huber@pci.unizh.ch), Tel: +41 1 635 4461, Fax: +41 1 635 6813

### **POSTDOCTORAL POSITION, UNIVERSITY OF BORDEAUX, FRANCE**

Applications are invited for a postdoctoral position, available immediately at the "Laboratoire de Physico-Chimie Moléculaire" of the "Université Bordeaux I", France. The successful candidate will be working with Dr. Michel Costes and Prof. Christian Naulin on neutral-neutral reactions that might be important in the chemistry of interstellar clouds. Experiments will be conducted on a recently developed crossed-molecular beam apparatus, which allows for scanning the relative translational energy of reactants down to values relevant to the conditions of the interstellar medium. Detection of products will involve vuv laser techniques.

The project is funded by the European Commission under the TMR Network "Astrophysical Chemistry" program which involves eight laboratories. The duration of the fellowship is for 12 months and funds will be provided to allow the candidate to spend up to one month in another laboratory of the network. Net salary will be around 12000 FF/month.

Applicants (Important, to be eligible to this TMR position, you must be a national of one of the European Union States or Associated States, France excluded) with a good background in gas-phase physical-chemistry or laser spectroscopy should submit a CV and the names of two referees to Dr. Michel

Costes, UMR 5803 CNRS-Universite Bordeaux I, Laboratoire de Physico-Chimie Moleculaire, Universite Bordeaux I, 33405 Talence cedex, France. E-mail: costes@cribx1.u-bordeaux.fr.

### **UNIVERSITE DE LAUSANNE, SWITZERLAND: POSTDOCTORAL POSITION, AVAILABLE AUTUMN 1998**

A postdoctoral position in Experimental Physics is available with Professor Majed Chergui at the Institut de Physique Experimentale, Universite de Lausanne, Switzerland. The exact starting date is negotiable. There are several available projects in the laboratory, which is equipped with an OPO nsec laser system and two femtosecond laser systems (one optimized for < 50 fs pulses). Possible projects include spectroscopic and real-time studies of Rydberg wavepackets, photochemistry of molecules in solutions or embedded in inert gas solids and light-induced deformations in solids. We also envisage to develop new detection schemes for condensed phase systems in relation to the nanosecond and/or the femtosecond experiments. The candidate will have to do some teaching and knowledge of french is desirable, but not a condition. In addition, he/she has the possibility to prepare for the equivalent of a habilitation. A PhD in physics or chemical physics is required. Experience with femtosecond and/or nanosecond lasers is highly desirable. The initial appointment will be for one year, but an extension of one or more years is possible. Interested applicants should send a resume and arrange to have two letters of reference sent to:

Prof. Majed CHERGUI, Institut de Physique Experimentale, Faculte des Sciences, BSP, Universite de Lausanne, Ch-1015 Lausanne, Switzerland

Further information is available through:

tel.: (21) 692 3660 (secr.), Fax.: (21) 692 3635 or 3605, email: Majed.Chergui@ipe.unil.ch,  
<http://www.unil.ch/ipe/>

### **POSTDOCTORAL POSITION IN ATMOSPHERIC CHEMISTRY AT THE UNIVERSITY OF LEEDS**

Postdoctoral research associate position available to work within the atmospheric field monitoring group on a project involving a field instrument (FAGE) for the detection of OH and HO<sub>2</sub> radicals in the troposphere using laser-induced fluorescence. The appointment is for up to 2 years, starting as soon as convenient. The project will involve collaborative field work, instrument development (including the detection of other small radicals in the atmosphere by LIF) and the use of FAGE to study other applications in chemical kinetics and dynamics. Candidates must have a PhD in a relevant discipline (e.g. Physical Chemistry, Chemical Physics or Physics) and experience in the use of laser systems is highly desirable. Further information is available from Dr. Dwayne Heard, Tel. + 44 (0) 113 233 6471; fax +44 (0) 113 233 6565; email [dwayneh@chem.leeds.ac.uk](mailto:dwayneh@chem.leeds.ac.uk) and the following web sites:

<http://www.chem.leeds.ac.uk/Atmospheric/Field/fage/fage.html>

<http://www.chem.leeds.ac.uk/>

Interested applicants should send a detailed curriculum vitae, together with the names, phone numbers and e-mail addresses of two referees, to Dr. D. E. Heard, School of Chemistry, University of Leeds, Leeds LS2 9JT, UK, and arrange for their two referees to send supporting letters of recommendation (email preferred).

## **b. Preprints**

### **State-to-state cross sections for the $C + O_2 \rightarrow CO + O$ reaction at kinetic energies between 4.4 and 90 meV**

C.R. Acad. Sci. Paris, Serie II c, submitted

M. Costes, C. Naulin

UMR 5803 CNRS-Universite Bordeaux I, LPCM Universite Bordeaux I, 33405 Talence cedex, France

These are the first results from a newly developed crossed beam apparatus, which allows neutral-neutral reactions to be studied at kinetic energies relevant of the conditions of the interstellar medium. The cross section of CO(X, v=17)

exhibits a threshold near 40 meV which identifies  $\text{CO}(X) + \text{O}(^1\text{D}_2)$  as the main reactive channel. The cross sections of  $\text{CO}(X, v=15-16)$  decrease with kinetic energy as expected for a reaction without a potential energy barrier.

### **Control of Time-Dependent Nonadiabatic Processes by an External Field**

Phys. Rev. Lett.

Y. Teranishi and H. Nakamura\*

Department of Theor. Stud. Inst. for Molec. Science, Myodaiji, Okazaki 444-8585, Japan

A new idea of controlling nonadiabatic transitions is proposed. The basic principle is to sweep an external field at each level crossing to make the overall transition probability from any initial state to any desirable final state equal to unity. The recently completed semiclassical theory enables us to deal with the problem analytically.

### **Ultrafast photodissociation dynamics of electronically excited $\text{CF}_2\text{I}_2$ molecules.**

Chemical Physics Letters

W. Radloff, P. Farmanara, V. Stert, E. Schreiber and J.R. Huber\*

Physical Chemistry Institute, University of Zurich, Winterthurerstr. 190, CH 8057 Zurich, Switzerland

Using the femtosecond pump-probe technique in combination with REMPI-TOF, the  $\text{CF}_2\text{I}_2$  photodissociation dynamics at 267 nm (probed at 400 nm) was studied.

### **Resonance enhanced multiphoton ionization time-of-flight study of $\text{CF}_2\text{I}_2$ photodissociation.**

Journal of Chemical Physics

K. Bergmann, R.T. Carter, G.E. Hall and J.R. Huber\*

Physical Chemistry Institute, University of Zurich, Winterthurerstr. 190, CH 8057 Zurich, Switzerland

The photodissociation of  $\text{CF}_2\text{I}_2$  was investigated by probing the ground state and spin-orbit excited iodine product channels using the REMPI-TOF technique following excitation at 248, 266 and 304 nm.

### **Body Frames and Frame Singularities for Three-Atom Systems**

Phys. Rev. A

R.G. Littlejohn\*, K.A. Mitchell, V. Aquilanti and S. Cavalli

Department of Physics, University of California, Berkeley, California 94720, USA

This paper presents a geometrical analysis of the meaning of body frame conventions and their singularities in three-particle systems. Special attention is devoted to the principal axis frame and a certain version of the Eckart frame, and to the topological inevitability of frame singularities.

### **Internal Spaces, Kinematic Rotations and Body Frames for Four-Atom Systems**

Phys. Rev. A

R.G. Littlejohn\*, K.A. Mitchell, M. Reinsch, V. Aquilanti and S. Cavalli

Department of Physics, University of California, Berkeley, California 94720, USA

This paper examines body frames in four-atom systems, building on a geometrical analysis of the nine-dimensional configuration space and the six-dimensional internal space. Kinematic rotations are an important tool in this analysis. A central role is played by the "kinetic cube", the shapes of all asymmetric top shapes related by kinematic rotations.

## **c. Conferences**

### **1. PRAHA98, 15th INTERNATIONAL CONFERENCE ON HIGH RESOLUTION MOLECULAR SPECTROSCOPY**

Prague, Czech Republic, August 30 - September 3, 1998

You should preregister before January 1, 1998.

INVITED SPEAKERS:

LINDA R. BROWN, Jet Propulsion Laboratory, Pasadena, California, U.S.A. Laboratory spectroscopy for planetary remote sensing.

HANS BUERGER, Bergische Universitaet - GH Wuppertal, Wuppertal, Germany Detecting spectra of new molecules: synergism with theory.

ALAN CARRINGTON, University of Southampton, Southampton, UK. Microwave spectroscopy at the dissociation limit.

ROBERT F. CURL, Rice University, Houston, Texas, U.S.A. The fullerenes from the viewpoint of thirteen years.

HAUKE HARDER, Universitaet Kiel, Kiel, Germany. Multiple fitting of perturbation-allowed rotational spectra of symmetric top molecules.

MARTINA HAVENITH-NEWEN, Universitaet Bonn, Bonn, Germany. Infrared spectroscopy of van der Waals clusters.

FRANCOIS HERLEMONT, Universite des Sciences et Technologies de Lille, Lille, France. High resolution spectroscopy with a tunable sideband CO<sub>2</sub> laser.

BRIAN J. HOWARD, Oxford University, Oxford, UK High resolution spectroscopic studies of open-shell van der Waals complexes: a sensitive probe of molecular interactions.

JAN MAKAREWICZ, Adam Mickiewicz University, Poznan, Poland Quantum mechanical and semiclassical description of ro-vibrational dynamics of floppy molecules.

TAKESHI OKA, University of Chicago, Chicago, Illinois, U.S.A. High resolution infrared spectroscopy in molecular astrophysics: Observation of H<sub>3</sub><sup>+</sup> in various astronomical objects.

TREVOR J. SEARS, Brookhaven National Laboratory, Upton, New York, U.S.A. Transient frequency modulation spectroscopy of molecular free radicals.

MIKHAIL Yu. TRET'YAKOV, Institute of Applied Physics, Russian Academy of Sciences, Nizhnii Novgorod, Russia. Spectroscopy in the terahertz region: new developments of experimental techniques.

The conference will be held in Prague-Troja [approx. 5 km north of Wenceslas Square and less than 1 km from the Metro (subway/underground) station Nadrazi Holesovice], in buildings of the Charles University. The local organization will be undertaken by the J. Heyrovsky Institute of Physical Chemistry in the Academy of Sciences of the Czech Republic, Prague. In 1998, the Charles University celebrates the 650th anniversary of its foundation on April 7th, 1348, and the PRAHA98 meeting will form part of this celebration.

Note also that the conference "EUCMOS XXIV: 24th European Congress on Molecular Spectroscopy" will take place in Prague August 23-28, 1998, that is during the week before PRAHA98. Further information is available from the World Wide Web at <http://staff.vscht.cz/eucmos/xxiv/>.

There will be 12 invited lectures. Contributions, which will be presented partly as posters and partly as contributed lectures, are invited in the fields of:

Observation, measurement, and analysis of high resolution rotational, vibrational, or electronic spectra of molecules (radicals, ions, complexes, clusters, ...) in the gas phase or in matrices.

Experimental techniques for observing such spectra. Theory assisting the prediction, simulation, and interpretation of them. Applications in related fields such as the physics and chemistry of the atmospheres of planets and cool stars, the physics and chemistry of the interstellar medium, chemical kinetics, etc.

Deadline for final registration and submission of abstracts: May 1st 1998.

Deadline for final reservation of accommodations: May 1st 1998

The conference has a home page on the World Wide Web with URL

<http://www.chem.uni-wuppertal.de/conference/>

ftp server: ——— The conference has an ftp server at [wcpj2.chemie.uni-wuppertal.de](ftp://wcpj2.chemie.uni-wuppertal.de) (132.195.9.35)

Use "ftp" or "anonymous" as user id and enter your complete e-mail address as password. The conference files are in the directory pub/praha98. The ASCII file read.me gives a list of the available files and describes their contents.

Preregistration: You should preregister (i.e., signal your intent to participate in the conference and/or request the second circular) before January 1st 1998. We would much prefer you to use the fill-out-form of our

WWW home page for preregistration. This is not only convenient for you, it also represents by far the easiest way for us to process your data.

## **2. MOLECULAR PHYSICS OF STRUCTURE AND CHANGE**

Lunteren, The Netherlands, September 2-4, 1998

The 3rd European Meeting of the Molecular Beams and Dynamics Group will be held in Lunteren, The Netherlands from September 2 till September 4 1998 and will be organized by the Section Atomic Physics and Quantum Electronics of the Dutch Physical Society.

Sponsors are the Dutch Physical Society (NNV) and the Foundation for Fundamental Research on Matter (FOM). The British Council in The Netherlands and the Faraday Division of the Royal Society of Chemistry has allocated funds to support the travel of young scientists from the U.K. to the meeting.

### **ADVISORY COMMITTEE**

W.J. van der Zande (AMOLF, organizer), B.J. Whitaker (Leeds, organizer), M.N.R. Ashfold (Bristol), A.J. Orr-Ewing (Bristol), K.L. Reid (Nottingham), K. Bergmann (Kaiserslautern), D.H. (Nijmegen), M. Vrakking (AMOLF)

### **AIM OF THE MEETING**

A particular aim of the meeting is to provide a forum for graduate students and postdoctoral researchers (as well as more senior scientists) to meet, learn, exchange knowledge, present results and establish new contacts, in an informal setting. The format of the meeting will be similar to that of the previous European meetings of the Molecular Beams and Dynamics Group in Orsay (1992) and Kaiserslautern (1995), with a strong emphasis on contributions from graduate students and interactions between the participants.

The scientific programme, which will run from 18.00 hours on Wednesday September 2 till 18.00 hours on Friday September 4, includes all aspects of molecular structure and molecular dynamics in the gas phase, at interfaces and in liquids. Sessions will be opened by an overview lecture from a distinguished scientist, who will concentrate on unresolved issues in the field. Short presentations will be selected from contributions from younger scientists, among which a few hot topics will be chosen for a longer contribution. Poster sessions will be scheduled for additional presentations. We hope that all participants will be willing to present their work. Discussion will be encouraged explicitly by allocating ample discussion time during the oral sessions.

**INVITED SPEAKERS** Dr. A.J. Orr-Ewing (Bristol): Predissociation dynamics using cavity ring-down spectroscopy

Professor D.H. Parker (Nijmegen): Velocity Imaging studies of diatomic molecule photodissociation

Professor J. Vigue (Toulouse): Index of refraction of gases for atomic waves: measurements and calculations

Professor L. Wöste (Berlin): Real Time observation of structural changes in small molecules by means of femtosecond spectroscopy

### **HOW TO APPLY:**

The meeting format and anticipated spirit of the conference, as well as the available facilities, limits the number of participants to 100. Early application is thus recommended.

The application should include: A tentative title of the anticipated contribution dealing with a research topic within the general scope of the meeting. Please indicate a preference for oral/poster. (A one page -camera ready- abstract is due by June 1, 1998). \* Your postal address, \* Your e-mail address, \* A fax number (if available), If you are applying for a travel bursary you must also include a brief supporting statement from your supervisor.

Send your application to MBDG Secretary: Ms. Magda Speijers, Molecular and Laser Physics University of Nijmegen PO Box: 9010 NL 6500 GL Nijmegen The Netherlands (Magdas@sci.kun.nl)

### **TRAVEL:**

Lunteren is situated near the geographic centre of The Netherlands. The conference center is within walking distance (15 min.) of the local train station of Lunteren and is situated in a quiet, wooded area. The travel

time by train from major train stations in The Netherlands such as Schiphol, Amsterdam, Rotterdam and Nijmegen is roughly 1.5 hours. De Blije Werelt can be found on internet <http://www.blijewerelt.nl/> with detailed information on location and travel.

#### ACCOMMODATION AND REGISTRATION:

A fee of Dfl. 350,- will apply to all participants to cover the cost of the book of abstracts, and full room and board for two days. Fee must be paid upon arrival at the conference. The conference starts with a dinner on Wednesday September 2 and ends before dinner on September 4.

#### TRAVEL SUPPORT:

It is expected that most participants will cover their expenses from funds provided by their institutions. However, young scientists from the U.K. may apply for partial support from funds made available by the British Council in the Netherlands and the Faraday Council. Interested and eligible candidates should contact Dr. B.J. Whitaker, Secretary of the MBDG, University of Leeds, Leeds LS2 9JT, U.K. by post, fax (44 113 233 6565) or, preferably, by e-mail ([benw@chem.leeds.ac.uk](mailto:benw@chem.leeds.ac.uk)).

#### THE SECOND ANNOUNCEMENT:

The second announcement which will contain the final program, will be sent out early August to all those who have applied. Applicants will be contacted by the advisory committee concerning their placement in the oral or poster program by e-mail as soon as possible.

#### CONFERENCE SECRETARIAT:

All correspondence (except as specified otherwise above) should be sent to:  
MBDG Conference Secretariat, Ms. Magda Speijers, Prof. W.J. van der Zande, Molecular and Laser Physics, University Nijmegen, PO Box: 9010, NL 6500 GL Nijmegen, The Netherlands  
[Magdas@sci.kun.nl](mailto:Magdas@sci.kun.nl)

#### DATES AND DEADLINES:

Apply as soon as possible, but no later than June 1, 1998 Abstracts due by June 1, 1998 A second announcement and final programme will be sent out early July

### **3. MOLEC XII Conference**

Bristol, UK, 6-11 September 1998

Preliminary announcement

The 12th European Conference on Low Energy Molecular Collisions will be held in Bristol, UK, from 6 to 11 September 1998. Requests to be included in the conference mailing list may be made through the conference Web page (<http://www.tlchm.bris.ac.uk/molec/molec.htm>).

The Web page will be updated periodically as the program is finalised. Professor J.C. Polanyi has agreed to give a keynote lecture at the conference.

For further details contact Gabriel Balint-Kurti ([Gabriel.Balint-Kurti@Bristol.ac.uk](mailto:Gabriel.Balint-Kurti@Bristol.ac.uk)).

### **4. 15th International Symposium on Gas Kinetics**

Bilbao, Spain, 6-10 September 1998.

Announcement of the keynote speakers are given in the mailed first circular and in the web page (<http://www.vc.ehu.es/gaskin98>)

Further details from Prof. F. Castano ([qfpcalf@lgdx02.lg.ehu.es](mailto:qfpcalf@lgdx02.lg.ehu.es)) or from the Gas Kinetics Group Secretary, Dr J.M.C. Plane, E-mail: [j.plane@uea.ac.uk](mailto:j.plane@uea.ac.uk)

The Secretary, 15th International Symposium on Gas Kinetics, Universidad del Pais Vasco, Departamento Quimica Fisica, Facultad de Ciencias, Apartado 644, E-48080 Bilbao, Spain, Fax: +34 (9)4 4648500, E-mail: [gaskin98@vc.ehu.es](mailto:gaskin98@vc.ehu.es)

### **5. THE SIXTH BRIJUNI CONFERENCE: END OF CENTURY STATE OF SCIENCE**

Brijuni (Brioni) Island, Croatia, 7-11 September 1998

The VI-th conference on the island Brioni will cover the state of art of physics and chemistry (physical). More detailed information about the topics covered, speakers and the site can be obtained at the web-site address <http://www.irb.hr/~dbosanac> . Otherwise the information can also be obtained directly from S. Danko Bosanac at [DBOSANAC@FAUST.IRB.HR](mailto:DBOSANAC@FAUST.IRB.HR)

## **6. WORKSHOP ON ELECTRON TRANSMISSION THROUGH MOLECULES AND MOLECULAR INTERFACES**

Maagan, Sea of the Galilee, Israel, December 13-17, 1998

Organizers:

Ron Naaman, Department of Chemical Physics, Weizmann Institute of Science, 76100 Rehovot, Israel, Phone 972 89342367, Fax 972 89344123, email: [cinaaman@wis.weizmann.ac.il](mailto:cinaaman@wis.weizmann.ac.il)

Abraham Nitzan, School of Chemistry, Tel Aviv University, Tel Aviv 69978, Israel, Phone 972 36408904, Fax 972 364089293, email: [nitzan@chemib4.tau.ac.il](mailto:nitzan@chemib4.tau.ac.il)

The goal of the workshop is to bring together experimentalists and theoreticians working on the problem of electron transfer and electron transmission at interfaces, giving particular attention to the interrelationship between interface structure and dynamics and its electron transmission properties.

The program will consist of invited and contributed lectures and a poster presentation

List of Invited Speakers (provisional)

U. Banin, Jerusalem, I. Benjamin, Santa Cruz, D. Cahen, Rehovot, S. Datta, Purdue, C. Dekker, Delft, Y. Eichen, Haifa, D. Evans, Albuquerque, M. Gratzel, Lausanne, C.B. Harris, Berkeley, I. Hertel, Berlin, Y. Imry, Rehovot, C. Joachim, Toulouse, J. Jortner, Tel Aviv, A.A. Kornyshev, Juelich, A.M. Kuznetsov, Moscow, V. Mujica, Caracas, R. Naaman, Rehovot, A. Nitzan, Tel Aviv, A.J. Nozik, Golden, Co, M. Ratner, Northwestern, Y. Rosenwaks, Tel Aviv, S. Roth, Stuttgart, L. Sanche, Sherbrooke, W. Schmickler, Ulm, U. Sivan, Haifa, N. Ueno, Chiba, D. Waldeck, Pittsburgh, P.S. Weiss, University Park, I. Willner, Jerusalem, M. Wolf, Berlin, A. Yacoby, Rehovot,

### **CALL FOR PAPERS**

Participants are invited to submit abstracts. Abstracts should be submitted either by e-mail or by airmail (on a plain white paper 21.5x28 cm with 2.5 cm margin on all sides). The entire abstract, including title, authors, affiliations, tables and references, may not exceed one page. Deadline for submission of abstracts is September 15, 1998. Please indicate clearly with each submission the name, complete address including telephone, fax and e-mail of the presenting author.

Send abstracts either by E-mail to: [cinaaman@wis.weizmann.ac.il](mailto:cinaaman@wis.weizmann.ac.il), or by airmail to: Ron Naaman, Department of Chemical Physics, Weizmann Institute of Science, 76100 Rehovot, Israel.

## **7. THE 5th GORDON CONFERENCE ON GAS PHASE ION CHEMISTRY**

Ventura, California, Feb. 28 - March 5, 1999

The 5th Gordon Conference on Gas Phase Ion Chemistry will be held in Ventura, CA on Feb. 28 - March 5, 1999 The full conference program is now on the web at:

<http://www.unc.edu/depts/chemistry/gordon/index.html>

If this conference is of interest to you, please add this address to your bookmarks.

Tomas Baer, Conference Chair, Kenan Professor of Chemistry, Chemistry Department, University of North Carolina, Chapel Hill, NC 27599-3290, [Baer@unc.edu](mailto:Baer@unc.edu), <http://net.chem.unc.edu/faculty/tb/cftb01.html>

## **8. 18<sup>th</sup> International Symposium on Molecular Beams 1999**

Ameland, The Netherlands, May 30 - June 4, 1999

Chairmen: Steven Stolte (VU Amsterdam) and Gerard Meijer (KU Nijmegen)

A Web-page is being prepared and will be announced in the next issue of MDN and on the department home-page: <http://www-mlf.sci.kun.nl/mlf/>

### **9. COMET XVI (XVI International Conference on Molecular Energy Transfer)**

Assisi, Italy, 20-25 June, 1999

Piergiorgio Casavecchia (Chair) and Antonio Laganà (Co-Chair).

Dipartimento di Chimica, Università di Perugia, 06123 Perugia, Italy.

A Web-page is being prepared at the URL address:

<http://www.chm.unipg.it/chimgen/mb/cong/comet.html>

### **10. STEREOCHEMISTRY AND CONTROL IN MOLECULAR REACTION DYNAMICS**

Bretton Hall, University of Leeds, 5-7 July 1999

Faraday Discussion No 113 will be held at Bretton Hall, University of Leeds, 5-7 July 1999 on the theme of "Stereochemistry and Control in Molecular Reaction Dynamics". The Discussion will focus on comparing frequency, temporal and phase control strategies to probe elementary chemical processes. Further details are available at

<http://www.chem.leeds.ac.uk/faraday113/>

Experimental and theoretical papers will be particularly welcome in the following areas:

\* High resolution studies (both frequency and time resolved) of molecular photodissociation of photoinitiated processes

\* Control of reactivity via collision energy, selective vibration of reagents, or reagent alignment

\* Demonstrations of active or coherent control of chemical processes

At this time we are seeking Titles and Abstracts of about 300 words. The DEADLINE for submission of these proposed contributions is FRIDAY 29 MAY 1998. They should be sent to Dr. BJ Whitaker, School of Chemistry, University of Leeds, LS2 9JT and may be in any form - manuscript, fax, whatever but electronic attachments will be particularly cherished. Papers should be concerned with new, unpublished work. The full proceedings of the Discussion will be published late in 1999, but papers accepted for discussion will be circulated to all participants before the meeting in July 1999. Those unfamiliar with the unique format of Faraday Discussions can obtain more information from the URL above.

Benjamin J Whitaker, School of Chemistry, University of Leeds, Leeds, LS2 9JT, UK

email: [benw@chem.leeds.ac.uk](mailto:benw@chem.leeds.ac.uk), tel: (44) 113 233 6580, fax: (44) 113 233 6565

### **11. THE 1999 DYNAMICS OF MOLECULAR COLLISIONS CONFERENCE**

Split Rock Resort in Lake Harmony, Pennsylvania, USA, July 18-23, 1999

James J. Valentini, Chair, 1999 Dynamics of Molecular Collisions Conference

### **12. ICPEAC XXI**

July 22 - 27, 1999, Sendai, Japan

The twenty first meeting of the International Conference on the Physics of Electronic and Atomic Collisions will be held July 22 - 27, 1999 (Thursday - Tuesday) in Sendai, Japan. Sendai is the economic and cultural center of the Tohoku (north- eastern) region of Japan. It is located near the ocean 200 miles north of Tokyo

Further information may be obtained from Prof. Michio Matsuzawa, Applied Physics & Chemistry,

University of Electro-Communications, Tokyo, 182-8585, Japan. Fax: 81-424-43-5505 e-mail

[michio@pc.uec.ac.jp](mailto:michio@pc.uec.ac.jp) Homepage: <http://power1.pc.uec.ac.jp/Sendai>

## Special announcement

To the memory of

**Professor Roger Grice**

(1941 - 1998)

A meeting will be held on the afternoon of Monday 14th September 1998 in the Chemistry Department, Manchester University. This meeting will include recollections and scientific contributions related to Roger's work and provide the opportunity for Roger's former students, colleagues, collaborators and friends to commemorate his scientific achievements and remember his life.

The meeting will be preceded by a buffet lunch and will be attended by members of the family. It is also planned to launch an appeal to establish a prize or scholarship in Roger's memory at this time.

If you wish further details of the meeting, please contact

Dr J C Whitehead

Chemistry Department

Manchester University

Manchester M13 9PL.

(Tel: 0161-275 4692; Fax: 0161- 275 4598; e-mail: j.c.whitehead@man.ac.uk)

Sponsored by the Molecular Beams and Dynamics Group of the Royal Society of Chemistry.

## SPECIAL MATERIALS

### BOOKS

#### **Companion to Angular Momentum**

We are pleased to announce that "Companion to Angular Momentum" by Valeria Kleiman, Robert J. Gordon, Hongkun Park, and Richard N. Zare will be published in North America on August 7, 1998 by John Wiley & Sons, Inc.

Facts about this book: "Companion to Angular Momentum" will contain the complete solutions to all of the problem sets contained in Zare's "Angular Momentum: Understanding Spatial Aspects in Chemistry and Physics." This companion book is intended to aid the reader to overcome difficulties encountered in learning angular momentum theory by supplying detailed illustrations of the solution methods with an emphasis on those aspects that are often not immediately apparent. Step-by-step explanations are provided to save the reader from the large amount of time often needed to fill in missing gaps that are usually found between the steps of illustrations in textbooks. Corrections are listed for all known errors in the second printing of "Angular Momentum." The book is about 200 pages in length with a 8 1/2 x 11 trim paper cover. Tentative Price: \$ 29.95 U. S. Dollars. ISBN: 0-471-19249-X

Ordering Information: To order this book, you may call Wiley customer service, at 1-800-Call-Wiley; email, Custserv@Wiley.com; or visit their website, at <http://www.wiley.com>.

You may also contact Terry Dionisio by fax at (212) 850-8888 for more information.

#### **Modern Methods for Multidimensional Dynamics Computations in Chemistry**

Modern Methods for Multidimensional Dynamics Computations in Chemistry, edited by D. L. Thompson was published by World Scientific, April 1998 (ISBN: 981-02-3342-6).

This volume describes theoretical methods for treating chemical dynamics problems ranging from gas-phase bimolecular reactions to complex processes in condensed phases.

Further information can be obtained from: <http://www.wspc.com.sg>