

QChem Chronicles

Fall 1999 Issue No. 7

NEW NMR EQUIPMENT

Three new state-of-the-art NMR spectrometers utilizing the Silicon Graphics O2 as host computer have now been installed in the chemistry department. All of the new spectrometers are equipped with pulsed field gradients and have all the hardware and software necessary for modern multi-dimensional, multi-nuclear multi-resonance experiments. The new spectrometers

are all Bruker digital Avance systems; the 500 MHz and 400 MHz spectrometers are equipped with variable temperature capability and accessories to run solid samples.

Using those spectrometers, it is now possible to record COSY (Correlated Spectroscopy) in a very short period of time. This very useful experiment detects proton to proton interactions through scalar coupling in only 5 minutes! Another very useful experiment that can be run quickly is called HMQC (Heteronuclear Multiple Quantum Correlation), which provides the correlation of protons to their directly attached carbon (also a 5 minute experiment!).

Using these very powerful 2D experiments and others, it is now possible to obtain full structure assignment in small amounts of time and on small amounts of material.

NMR web pages have been posted. The address is: <http://www.chem.queensu.ca/nmr/nmr/index.htm>



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New Chemistry Building

The proposed new Chemistry Complex is moving ahead and on schedule. In October of 1998, the Board of Trustees allocated \$2.25M to the project so that drawings can be completed to the point of tender.

Since that time, many committees and people have been working very hard behind the scenes to complete the schematics for the new complex. A lengthy and thorough consultation with faculty and staff enabled sign-off on the schematics at the end of April, 1999, triggering the working drawing phase which will be completed by the end of December, 1999. Tendering for the project should commence in January, 2000, with a final project completion date set for December, 2001.

The new complex will be located to the immediate west of Stirling Hall, and will be physically connected with Physics via a subterranean link. This link will comprise the service element of the Department with all major instrumentation and services located here. Immediately above the link will be the Administration Wing of the new complex, and joined to this will be the laboratory block, running North-South from Queen's Crescent to Stuart Street. Undergraduate labs will occupy levels 1 and 2 of the lab block, while levels 3-5 will house research. The new building will have lounge space for undergrads and grads, as well as a Departmental Lounge that everyone will be welcome to use.

The building will truly be state of the art in Canada upon its completion. Lab vacuum will be achieved using compressed air systems, thus avoiding any environmental concerns about using water aspiration. Air handling systems will be second to none in the country, combining energy efficiency with the highest possible safety standards. A/V and data systems proposed for use in the undergraduate labs will enable the Department to deliver its programs using the latest technologies.

A Note from Stan Brown

The past year has seen a number of important and timely events for the Chemistry Department. We welcomed to the Department three individuals. In July of 1998, Dr. Victor Snieckus joined us as the first holder of the Bader Chair in Organic Chemistry, and he has rapidly established his research group on the fifth floor of the Frost wing. In November of 1998, the University held an Inauguration Day for the Bader Chair with invited speakers being Dr. Tom Brzustowski, the President of NSERC, Dr. Robert Young, Acting Head of Research and Vice President of Medicinal Chemistry, Merck Frosst Canada, and the person who endowed the Chair, Dr. Alfred Bader. In September, Dr. Francoise Sauriol joined the Department as the Instrument Manager in charge of the major instruments such as NMR's, mass spectrometers, and X-ray diffractometer. The newly acquired

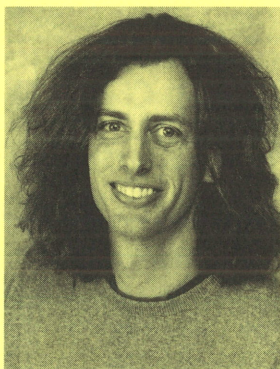
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Hans-Peter Look

HANS-PETER LOOCK obtained his "Diplom-Ingenieur" degree in Chemical Engineering and Chemistry in 1991 from the Technical University of Darmstadt, Germany. He then joined the Department of Chemistry at the University of Victoria as the first graduate student of Dr. Charles Qian, with whom he worked on the photodissociation dynamics of Cl_2 , BrCl , ClNO and BrNO . Peter Loock received his Ph.D. in 1996 and moved on to undertake post-doctoral studies at the Steacie Institute for Molecular Sciences of the National Research Council in Ottawa. With Benoit Simard he worked in the Molecular Spectroscopy Group on the laser spectroscopy of numerous metal-ligand systems (NbC , YO , TiO , YbCCH and others). As an experimental physical

chemist, Peter Loock joined the Department of Chemistry at Queen's University in January, 1999.

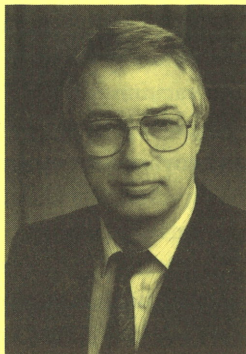
His research will be focussed on the photodissociation dynamics of molecular systems of atmospheric importance. He intends to use a newly developed imaging technique combined with laser spectroscopic and molecular beam techniques to study these systems in unprecedented detail.



AWARDS TO FACULTY

This year, three of our older generation colleagues were the recipients of University or national awards. Congratulations!

MICHAEL BAIRD received one of the 1999 Queen's University Prizes for Excellence in Research for major contributions arising in recent years. His research focuses on the chemistry of a number of well-known metals including titanium, chromium, iron, platinum and gold. He has particular interest in the application of compounds of these metals to industrial processes. In addition, he is currently investigating possible applications of anti-cancer drugs. His work thus encompasses the breadth of science from basic research to medical and industrial applications.

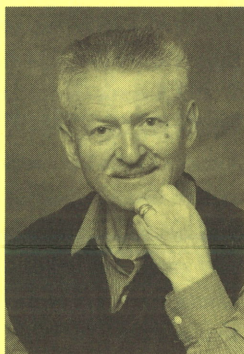


His research has produced more than 200 publications and numerous invitations to present lectures and seminars. He was the recipient of an Alexander von Humboldt Fellowship in 1975, Fellowship in the Chemical Institute of Canada in 1978, the Alcan Award of the Canadian Society for Chemistry in 1986,

and a two-time winner of the chemistry department Student Council Prize for Excellence in Teaching.

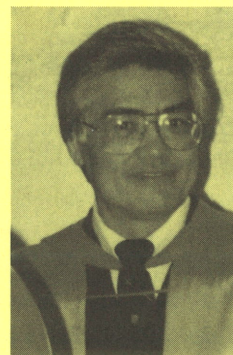
ERWIN BUNCEL is the recipient of the R.U. Lemieux Award in Organic Chemistry for 1999 from the Canadian Society for Chemistry. This is awarded to an organic chemist who has made a distinguished contribution to any area of Organic Chemistry while working in Canada.

Erwin has contributed to a number of areas of organic chemistry with the aid of over 50 graduate students and an equal number of postdoctoral fellows, has authored or co-authored over 250 papers, 20 chapters and reviews, 2 books and edited 15 monographs. He has also become strongly involved with developing countries and is the Canadian representative on the CHEMRAWN (Chemical Research Applied to World



Needs) Committee of IUPAC. Recently, he was honoured through the publication of a Special Issue of the Canadian Journal of Chemistry.

JEFFREY WAN has been awarded the Federation of Chinese Canadian Professionals Award of Merit for 1998. The Award of Merit is presented to distinguished Chinese Canadians who have made exceptional achievements in their profession or outstanding contributions towards the Chinese Canadian community. Dr. Wan has an international reputation as a pioneer in the field of microwave-induced chemical reactions. He has received many awards over his distinguished career including Queen's Prize for Excellence in Research and the Alberta Oil Sands Inventor's Award.



UNDERGRADUATE AND GRADUATE STUDENT NEWS

Congratulations to the following recipients of NSERC, OGS, and OGSST scholarships, fellowships, and research awards for 1999-2000:

NSERC Undergraduate Student Research Awards: **Patrick Ang, Jennifer Clarke, Aly Dossa, Beth Gillies, Laura Hampel, Scott Hartley, Drew Heyding, Todd Hoare, Andrea Hook, Jennifer Louie, Todd McDonald, Ngan Nguyen, Benjamin Smith, Stefanie Smith and Joanne Treacy.**

NSERC Postgraduate Scholarships: **Michael Burchell, Michael Carter,**

Kirsten Exall, Kenneth Maly and Benjamin Smith.

NSERC Postdoctoral Fellowships: **Travis Fridgen and Susan Swansburg.**

OGS Postgraduate Scholarships: **Heidi Chen, Dennis Hore and Simon Reid.**

OGSST Postgraduate Scholarships: **Cristina Cojocariu, Gheorghe Cojocariu, Stephen MacNeil and Adam McCubbin.**

James Ashenhurst was the winner of the William P. Doolan Prize in Chemistry, awarded to the top laboratory

demonstrator in the first-year chemistry laboratories. Kirsten Exall received the award for the best student poster at the annual meeting of the Ontario Section of the American Water Works Association, held in Niagara Falls. Patrick Ang was awarded third prize for his oral presentation at the 27th Southwestern Ontario Undergraduate Student Chemistry Conference in Guelph.

Neish Competition: The 1999 Neish Competition was held on April 8 at Queen's University. The winner of this year's competition was Kirsten Wallace.

OTHER NEWS

Graduate Student News

Graduate student activities this past year were greatly enhanced by the influx of new students owing to the addition of the Snieckus' lab to the department. This year's recreation began in July with Ali Berkin and others organizing the Annual Chemistry Golf Tournament at Westbrook Golf Club. The win was captured by Stan Brown's team with a score of one under par. Other summertime sporting events included the Grad League soccer and softball teams. The chemistry women joined the pathology department to form a soccer team that made it to the semifinals, losing to the biochemists. The men's soccer team, played well ending the season in third place out of ten teams. In the semifinals, they lost to psychology, but the men's team had a satisfying season beating chemical engineering twice. This year the chemistry grads, coordinated by Matt Fraser, banded with history grads to form a

softball team in the Coed Recreational Grad Softball League. Although the record for the summer was not as impressive as in the past, everyone enjoyed the time away from the lab. The Annual Chemistry Holiday Party in December, organized by a group of graduate students, was well received with over 100 people attending, including professors, staff, and students. The winter also included a chemistry entry into the Intramural Hockey League. The team, organized by Pat Causey, had a 10-6 record, placing second in their division. At the beginning of April, a number of graduate students from our department participated as judges in the 28th Annual Frontenac, Lennox, and Addington Science Fair, learning about such topics as "Wood Energy", "Radiation and Cancer", and "Matter and Change of State". It has been a busy year for all. Good luck to the chemistry athletes in the coming year!

Departmental Student Council

During the past academic year the Departmental Student Council (DSC) was very active. This year we started out with a Big Bang, the Barbecue that was hosted by the DSC for all the chemistry graduates, undergraduates and faculty members. November was the National chemistry week. This week was celebrated by an amazing pub crawl for all the students. At the same time the DSC organized a week of presentations especially designed for elementary school students as an introduction to the World of Chemistry. The DSC members spent the whole week visiting the neighbourhood elementary schools and promoting the National Chemistry Week. In November we also dined and wine dined with the graduates, undergraduates and faculty at the Grad Club. In the month of February the Chemistry DSC along with Dr. Horton and Dr. Cann hosted an INFO night for 1st and 2nd year students who were considering further studies in chemistry. At the Banquet a farewell gift (Painting of Kingston) was presented from the graduating class and the DSC to the head of the Chemistry Department.

News from the CIC

Vedene H. Smith, Jr. has been elected vice-president of the Chemical Institute of Canada for the term 1999-2000. Don Weaver has been elected to the board of the CSC representing the Biological and Medicinal Chemistry Division.

Congratulations

Professor **Gary vanLoon** received the Award for Teaching Excellence in Chemistry from the Graduating Class of 1999 in March.

We've Heard From ...

Chris Barrett (Ph.D. 1997)

- currently is a NSERC postdoctoral fellow at Massachusetts Institute of Technology; has accepted an Assistant Professor position at McGill University in Montreal, starting Jan. 2000
- e-mail: chris@monosparc.mit.edu

Jian Ping Chen

- works at IBM Almaden Research Center near San Jose, California

Biswajit Choudhury

- has a position at Ballard Power Systems, Inc. in Burnaby, B.C.

Peter Randle (M.Sc. 1975)

- e-mail: peter_randle@computer.org voicemail and fax: 44171-919-4416

Sumita Ranganathan (Ph.D. 1998)

- is a Post-Doctoral Researcher at Rhodia/CNRS/Princeton University
- e-mail: srangana@us.rhodia.com
- tel: 609-860-4501

Qi Su

- has moved to Tucson, Arizona, where she works for SIDDCO

Haixin Yang (Ph.D. 1992)

- has moved to DuPont Photopolymer and Electronic Materials in Research Triangle Park, North Carolina and can be contacted at: Haixin.Yang@usa.dupont.com

William Zhu

- works for Johnson Polymer-Johnson Wax Professional in Sturtevant, WI

Please write and let us know what's new with you and what is your preferred way for us to stay in touch with you....

Bruker 500, 300, and upgraded 400 MHz NMR machines, financed through a major installation grant from NSERC, have now all been installed and we are proud to say that the NMR facility is now one of the finest in Canada. In January, 1999, we welcomed Dr. Peter Loock to the Department as an assistant professor specializing in gas phase physical chemistry of laser induced molecular dissociations. Peter received substantial grant monies from NSERC in the most recent competition to undertake his research and is quickly setting up his lab.

In July of 1999, Dr. Albert Norris and Dr. Jeff Wan have retired. We wish them well in their future endeavors.

Over the course of the last four years, the Department of Chemistry has been struggling with the impact of substantial budget reductions on its programs. The most important impact of budget reductions for our programming was a reorganization of the administrative structure for the Engineering Chemistry program. As many of you know, Engineering Chemistry previously was wholly

funded and administered by the Faculty of Arts and Science as an accredited Engineering Program. Reductions in faculty numbers and funding made it clear that the department could no longer guarantee the number of professional engineers required to ensure the engineering accreditation of the program by the Canadian Engineering Accreditation Board (CEAB). In June of 1998, we established a partnership between the Department of Chemistry and the Department of Chemical Engineering for the future delivery of this program. Administrative details for the purposes of engineering accreditation by the CEAB will be the responsibility of the Department of Chemical Engineering. The Department of Chemistry will assume responsibility for the accreditation of the program as a chemistry one by the Canadian Society for Chemistry which requires a large component of chemistry courses and laboratory work. While the bulk of the engineering science and design components of the program will be borne by the Department of Chemical Engineer-

ing, both departments will bear responsibility for curriculum development and ensuring the high scientific and pedagogical quality that this program enjoys. I am pleased to say that through the determined efforts of a great many people in both departments, the new Engineering Chemistry structure will allow this program to flourish well into the next century.

This last year has seen increasing activity over the new chemistry building which will be situated west of Stirling Hall on Queen's Crescent. We have now completed the schematic drawings and are proceeding to the technical drawings which are expected to be completed by the end of the year. If all goes well, the entire project should be completed by early spring of 2002. Once the department moves from its present site in the Gordon/Frost Complex, the plan is to renovate Gordon Hall for office use for another department in the University, and to demolish the Frost wing, converting it into green space.