



National Ultrahigh-Field NMR
Facility for Solids
Centre national de RMN à
ultrahaut champ pour les solides

Canadian NMR Research News Bulletin #5.3 Summer 2011



Submitted by **Corey Morcombe (Agilent)**

Hello Canadian MR Users:

It's been a little over a year since **Agilent Technologies** completed the acquisition of **Varian, Inc.** and almost 9 months since we became a single legal entity. Many of you may still have questions about who Agilent is and what the acquisition will mean for you as NMR users and the technology as a whole. Our intent here is to begin to answer those questions for you and show you where you can learn more.

Agilent is the world's premier measurement company, providing the broadest range of measurement solutions available. Although a relatively young company, our history goes back to the founding of Silicon Valley at Hewlett-Packard. In 1999 Agilent was spun out of HP. HP kept the computer and printer business along with the name (and the garage where it all started). Agilent retained Chemical Analysis, Life Sciences and Electronic Measurement. You can learn more about Agilent here:

<http://www.agilent.ca/about/companyinfo/>

What does that mean for NMR? The expertise that has been developed and continues to grow at Agilent with respect to generating and analyzing RF signals presents an enormous opportunity for NMR technology. Agilent is committed to being a leader in NMR technology, and is investing heavily in NMR development. One example discussed at ENC is our building of **1 GHz NMR magnets**. Further, Agilent's strength in systems integration and manufacturing lends itself to improvement in every aspect of product development and delivery.

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As Agilent is much larger than Varian, some things are handled differently. Other things stay the same. One area of focus is that of service and parts deliveries. **Mark Fletcher**, our Global Service Manager for Research Products (NMR, MRI, XRD) has been working hard to transform our global service organization. Customer satisfaction is the group's number one priority and we welcome your ongoing feedback directed either to Mark and/or **Brian Tilson**, who remains the Canadian Service Manager. In addition, Agilent conducts a regular customer satisfaction survey, the results indicate a considerable improvement in recent months as our parts availability and probe repair turnaround times continue to improve.

Agilent's remote support and diagnostics capabilities are best-in-class, and we'll now be able to leverage these tools to diagnose and fix problems to get you quickly back on line.

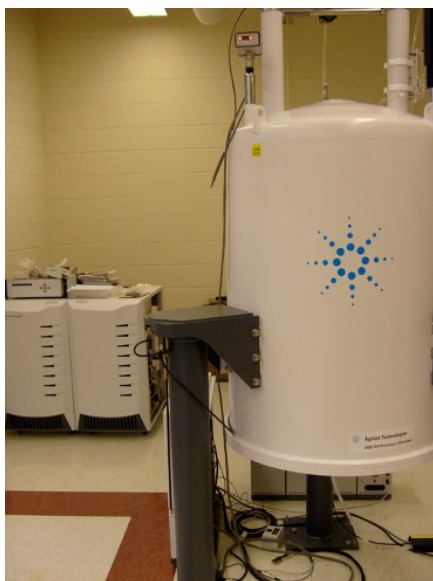
Saying "the sky's the limit" may be a stretch, but you'll be seeing many more of these sorts of tools in the not too distant future.

Customer service has migrated to the Agilent Life Science/Chemical Analysis call centre, **(800)227-9770**, while **AskTAC** remains at the same URL <http://tac2.varianinc.com/>

We continue to expand the team and currently have openings for both engineers and application scientists within the services organization, focused on both NMR and MRI techniques.

One unique aspect of Agilent is its commitment to academic customers, through grant programs, internships, early career professor awards, and leadership programs. Through these initiatives, Agilent provides funds and equipment to support academic research. Agilent also maintains **Agilent Laboratories**, which performs groundbreaking research across many areas of electronic and bio-analytical measurement.

Things that stay the same in Canada are largely the people you have grown accustomed to dealing with. Everyone in the NMR team, from Applications and R&D to Sales and Support, were extended an offer to join Agilent, and we've added several new faces as well. **Corey Morcombe** continues to be your account manager in Canada. Brian and **Claude Major** remain in service, **Ferencs Evanics** has



The first Agilent branded magnet in Canada being installed at the University of Toronto, July 2011. (Photo provided by Tim Burrow)

been added to the service team. In addition to a strong technical background, Ferencs is a BioNMR specialist, adding applications support to the team. We will look to invest further in people as we continue to better the support for our install base.

You can keep up with the rest of our team by checking out our **Magnetic Resonance Blog**. This is where you get a peek under the hood at Agilent NMR with interesting posts about all aspects of NMR technology and our plans for the future <http://www.spinsights.net>

Also, please take a look at our video "**Frontiers in Magnetic Resonance**" to see some familiar faces and learn why we are extremely excited to be part of this organization <http://tinyurl.com/3cjw8gb>

Finally, we will be attending **MOOT** in Toronto this year, and will have a user meeting the day before, on October 21, in conjunction with the opening of the NMR facility of **CSICOMP**. Details will be posted on our blog shortly. We look forward to seeing you there. <http://www.mootnmr.org>

NSERC 2011 Competition Results

Discovery Grants

Scott Kroeker (University of Manitoba) "NMR Spectroscopy of Disordered Solids"

Gang Wu (Queen's University) "Oxygen-17 NMR of biological systems"

Natalie Goto (University of Ottawa) "Solution NMR studies of protein interactions in membranes"

Robert Schurko (University of Windsor) "Solid-state NMR of unreceptive nuclei"

Valerie Booth (Memorial University of Newfoundland) "Nuclear Magnetic Resonance studies of antimicrobial peptides in intact cells"

Discovery Accelerator Supplements

\$120,000 over three years

Gang Wu (Queen's University) "Oxygen-17 NMR of biological systems"

Robert Schurko (University of Windsor) "Solid-state NMR of unreceptive nuclei"

Research Tools and Instruments (RTI)

departmental team projects,
each awarded \$150,000

David Bryce (University of Ottawa) console upgrade for 300 MHz solution NMR instrument at the Department of Chemistry

Gang Wu (Queen's University) to replace two NMR probes at the Queen's NMR Facility

Robert Schurko (University of Windsor) upgrade of the 500 MHz NMR Spectrometer (with additional \$100,000 in matching funds from the University of Windsor)

NSERC Engage Grant

Gang Wu (Queen's University), a \$25,000 grant to establish a research partnership with **Bellus Health Inc.**, a pharmaceutical company based in Laval, Quebec.

CREATE program in Bionanomachines

The Natural Sciences and Engineering Research Council of Canada (NSERC) has announced a six-year \$1.65 million Collaborative Research and Training Experience (CREATE) grant in Bionanomachines led by **Kalle Gehring** at McGill University.

The CREATE Program in Bionanomachines (**CTPB**) is focused on the principles, design, and applications of bionanomachines, which are defined as nanometer scale devices such as enzymes or biomaterials that are derived from living organisms and composed of DNA, RNA, protein, sugars, and/or lipids. Existing bionanomachines touch us every day as improved stain-removing enzymes in laundry detergents to diagnostic tools and therapies for medicine and health.

The CTPB links world-class laboratories from across Canada in the fields of structural biology, biotechnology, supramolecular chemistry, nanotechnology, biophysics and protein engineering. **Summer and graduate studentships** can be held at Concordia University, the Université Laval, McGill University, the University of Calgary, the Université de Montréal, and the Université du Québec à Montréal. Applications for next year are due in **December 2011**.

A full list of mentors and program details can be found on the CTPB web site:

<http://www.bionanomachines.ca> (available September, 2011) or by e-mail <mailto:bionanomachines.med@mcgill.ca>

Another CREATE grant with significant MR content was awarded in 2010 to the **DREAMS** program, Dalhousie Research in Energy, Advanced Materials and Sustainability <http://dreams.irm.dal.ca/>

Submitted by Alan Hume, Martine Monette (Bruker)

News from Bruker Canada

Bruker Ltd. is pleased to announce the hiring of **Joseph Weiss** as our new Technical Sales

Representative for BioSpin in Canada. Joseph completed his M.Sc. degree at the University of Ottawa under the supervision of Dr. David Bryce. His area of research focused on solid-state NMR; specifically studying the chemical shift anisotropy and quadrupolar interactions of half-integer quadrupolar nuclei. Joseph will be located in our Milton, Ontario facility and he will be responsible for the sale of NMR, EPR, and MRI systems and accessories throughout Canada. We welcome Joseph to our team and look forward to continuing to serve the Canadian NMR marketplace.



Bruker Ltd. is also pleased to announce the hiring of **Robin Stein** as a new applications engineer at Bruker Canada.

She is coming from Bruker UK, where she has been an applications scientist for 2 and a half years. Although she has provided general applications support, her background is in solid-state NMR. She did her PhD with Melinda Duer in Cambridge and her post doctoral work with Lyndon Emsley in Lyon, where she looked at high-resolution solid-state proton NMR.



One of the things she appreciated the most about the UK solid-state NMR community is how close-knit it is, so she is very excited about getting to know and provide support for the community in Canada. On a personal note, Robin was born in Canada but has never lived here, so she is looking forward to getting to know the country.

Protecting the food supply

Read a feature story about **Myrna Simpson** (Toronto) and her work with the Agriculture and Agri-Food Canada on carbon sequestration. The story is published in the Spring 2011 issue of *Edge*, Research and Innovation magazine of the University of Toronto.

<http://www.research.utoronto.ca/edge/spring2011/4.html>

Quantum computing: The power of discord

In May 2011, **D-Wave Systems** of Burnaby, B.C. announced the sale of a first commercial quantum computer to Lockheed Martin.

The sale is not without controversy, and has been intensively covered by *Nature* in its News section

<http://www.nature.com/news/2011/110531/full/474018a.html>

and as a *Nature's* News Feature, which explores the basics and future of the quantum computing, including NMR quantum computing, and highlights research in this field by **Raymond Laflamme** (IQC, Waterloo) and his colleagues.

Z. Merali "Quantum computing: The power of discord," *Nature* **474** (2011) 24-26.

<http://dx.doi.org/10.1038/474024a>

NMR Spectroscopy in 2010

Mark Edgar summarizes main technical developments in NMR spectroscopy in 2010, including research by Canadian NMR groups.

M. Edgar "Physical methods and techniques: NMR spectroscopy," *Annu. Rep. Prog. Chem., Sect. B* (2011).

<http://dx.doi.org/10.1039/c1oc90006d>

In memoriam

Laurance David Hall

B. Coxon "Laurance David Hall," *Advances in Carbohydrate Chemistry and Biochemistry* **65** (2011) 10-43.

<http://dx.doi.org/10.1016/B978-0-12-385520-6.00002-9>

"An account is given of the life, scientific contributions, and passing of Laurance David Hall (1938–2009), including his early history and education at the University of Bristol, UK, and the synthesis and NMR spectroscopy of

carbohydrates and other natural products during 20 years of research and teaching at the University of British Columbia in Vancouver, Canada. Lists of graduate students, post-doctoral fellows, and sabbatical visitors are provided for this period."

In memoriam

Anatole Abragam (December 15, 1914 – June 8, 2011), a renowned French physicist who wrote *The Principles of Nuclear Magnetism* and made many significant contributions to the field of nuclear magnetic resonance.

The Notice nécrologique by the French Academy of Sciences (in French)

http://www.academie-sciences.fr/academie/membre/Abragam_Anatole.htm

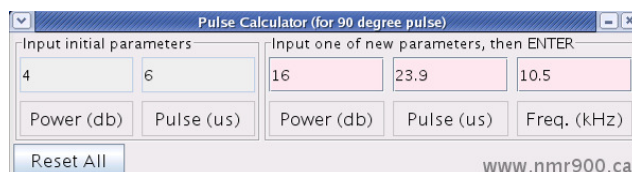
Toxic effects of h-indices

Geoffrey Bodenhausen: Ranking researchers according to their h-index and favoring the 'best' by lavishing grants can have disastrous consequences for science policy. The point has been made forcefully in a recent pamphlet that appeared in *Chimia* and can be downloaded from

<http://www1.chimie.ens.fr/Resonance/Kinship.pdf>

myPulse

Dr. **Eric Ye** (900 NMR Facility/University of Ottawa) has written an applet **myPulse** (*beta version*) to calculate the new 90 pulse length, power level and r.f. frequency based on known initial pulse parameters (us, dB) assuming the linear amplifier response. The applet is written in Python and works in the Bruker's TopSpin environment.



The purpose of this applet is similar to the popular Bruker's **pulse** program, however the initial parameter input is manual, i.e. does not automatically use $p1$ (us) and $p1$ (dB) values from the currently open dataset.

Please enquire if you would like to test this applet and to provide your comments and suggestions.

Email: terskikhv@nrc-cnrc.gc.ca



Dr. Deane D. McIntyre (1957-2011)

It is with great sadness that we share with you the news that Dr. Deane D. McIntyre, Manager of the Bio-NMR Centre at the University of Calgary, passed away suddenly on Friday June 24, 2011. Deane had spent a normal day at work but suffered a heart attack in the evening.

Deane grew up in Bowmanville, Ontario and attended the University of Waterloo where he obtained a Ph.D. in Chemistry working with Dr. Don MacKay. He subsequently worked for a number of years as a post-doctoral fellow in the group of Dr. Otto Strauss at the University of Alberta. In 1987, he became the manager of the new Bio-NMR Centre. Deane was responsible for the management of the facility for all these years. From its humble beginnings with one instrument, Deane played a major role in its expansion to the current facility with four spectrometers. He was totally dedicated to the task and took great pride in having all the instruments running smoothly. Because of his great knowledge of the hardware he was extremely effective in resolving equipment breakdowns. He was also happy to keep the NMR magnets supplied with liquid nitrogen and helium. Over the years he has helped to train generations of graduate students and post-doctoral fellows. As well, he demonstrated the use of the NMR equipment to numerous undergraduate students. Deane was also responsible for all the safety aspects of the facility.

Outside of work Deane had lots of hobbies and interests, including ham radio, collecting coins, stamps and old photography equipment, and also had a keen interest in hockey, history and astronomy. Deane was a unique individual with a lively sense of humor and he will be very deeply missed by all of us who had the privilege of working with him.

Hans J. Vogel,
Director, Bio-NMR Centre
University of Calgary

Recognition



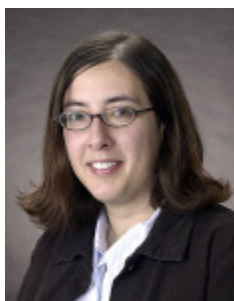
Dr. William J. L. Buyers (NRC Canadian Neutron Beam Centre, Chalk River Laboratories) has been appointed **Officer of the Order of Canada** for his contributions to condensed matter physics, particularly in the field of magnetism. Dr. Buyers is renowned for

his research in quantum magnetism, superconductivity, excitations, novel materials, and nanoscale magnetic layers.

<http://www.cins.ca/people/buyers/>

Read the press release by NRC (photo credit) <http://www.nrc-cnrc.gc.ca/eng/news/cnbc/2011/07/07/buyers-oc.html>

William J.L. Buyers and Zahra Yamani, "Quantum Magnetism and Superconductivity," *Physics In Canada* **5** (2006) 257-264. (A review of neutron scattering research at Chalk River Laboratories on quantum spin systems) <http://arxiv.org/ftp/cond-mat/papers/0702/0702024.pdf>



Myrna Simpson (University of Toronto) has been promoted to the rank of **Full Professor** (Environmental Chemistry) starting July 1, 2011.

Myrna received a BSc (Chemistry & Mathematical Sciences) and a PhD (Environmental Soil

Chemistry) from the University of Alberta. Myrna joined the University of Toronto in 2002 after a 2.5 year postdoctoral fellowship with Prof. Patrick Hatcher in the Department of Chemistry at the Ohio State University.

Myrna's research in environmental and analytical chemistry involves the development and application of molecular-level analytical tools to improve the fundamental understanding of soil environmental processes. In particular her group is using advanced mass spectrometry (MS) and nuclear magnetic resonance (NMR) methods to characterize, monitor and predict the fate of soil organic matter components in various environments. In 2010 she was awarded the SETAC/Royal Society of Chemistry Award in Environmental Science for "outstanding contributions that

have advanced the understanding or development of environmental systems, technologies, methodologies or other relevant research in the environmental sciences".

In addition to teaching and research, Myrna acts as the Associate Director of the Environmental NMR Centre of the Department of Physical and Environmental Sciences, the University of Toronto.

For more information visit:

<http://www.utoronto.ca/~msimpson>

Photo credit: University of Toronto

Prof. **Roderick Wasylshen** (University of Alberta) has been awarded the **2011 EAS Award** for Outstanding Achievements in Magnetic Resonance. The Eastern Analytical Symposium (EAS) awards honour analytical chemists who have distinguished career achievements and advanced their fields by superior work in developing theory, techniques or instrumentation.

The 2011 EAS awards will be presented at the **50th Eastern Analytical Symposium and Exposition**, November 14-17, 2011, Somerset, New Jersey. The NMR award session is organized by Cecil Dybowski (Delaware), and will include talks by John Ripmeester (NRC Canada), Marek Pruski (Ames Laboratory), Karl Mueller (PNL), Robert Schurko (Windsor), Gang Wu (Queen's), David Bryce (Ottawa), and Roderick Wasylshen (Alberta).

For more information: <http://www.eas.org/>

Robert Schurko (Windsor) was awarded an *Erasmus Mundus Master Course fellowship* for "Advanced Spectroscopy in Chemistry." He used this award to spend a month in the laboratory of J.P. Amoureux at the University of Lille in northern France, and also had occasion to visit NMR groups around the area, including Dominique Massiot (Orleans), Lyndon Emsley (Lyon) and Clare Grey (Cambridge).

Jasmine Viger-Gravel (Bryce lab, University of Ottawa) has won second prize in the Physical, Theoretical, and Computational Division graduate poster competition at the **94th Canadian Chemistry Conference** held in Montreal in June 2011, for her poster entitled "Solid-State NMR Analysis of Halogen Bonding Involving Thiocyanates and Selenocyanates"

NMR Theses Recently Defended

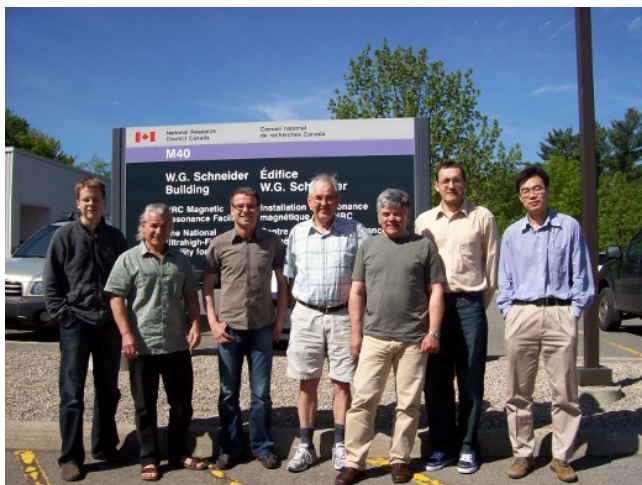
Renee Webber (University of Guelph), June 2011

Supervisors: Prof. Glenn Penner

Ph.D. thesis: "An NMR Spectroscopic and Quantum Chemical Investigation of Hydrogen Bonding In Solids"

External Examiner: Prof. Gang Wu (Queen's University)

On the move



Rod Wasylishen was spending his sabbatical (February-June 2011) in Ottawa, at NRC's Steacie Institute for Molecular Sciences and the National Ultrahigh-Field NMR Facility for Solids.

Photo (L-R): Luke O'Dell, Jamie Bennett, Andreas Brinkmann, Rod Wasylishen, Igor Moudrakovski, Victor Terskikh, Eric Ye.

Ritesh Kumar joined the Bryce lab (Ottawa) as an intern for summer 2011 with a prestigious INSPIRE Scholarship (DST, Government of India).

Nuiok Dicaire has joined the Bryce lab and is the winner of a uOttawa Undergraduate Research Scholarship.

Matthew Leclerc and **Omar Anjum** (NSERC USRA) have joined the Bryce lab for summer 2011.

After finishing his Ph.D. in the Wasylishen group (Alberta) and spending two years as a Postdoctoral Fellow at Leiden University (the Netherlands) **Fu Chen** has joined the Ames Laboratory (Iowa) as a Research Associate.

News from Gang Wu's laboratory

Cindy Li finished her 4th year honour research project entitled "¹¹B and ¹⁷O NMR studies of enzyme-inhibitor complexes".

Dr. **Jianfeng (Peter) Zhu**, after spending three years as a postdoctoral fellow in our group, will be taking up a new position as the NMR Facility Manager in the Department of Physics, University of Oulu, Finland. We wish Peter and his family all the best in their transatlantic move.

the 900 NMR Facility News

NMR Facility Annual Report 2010-2011

Dear NMR Facility Users, we are preparing our 2010-2011 Annual Report and we would like to receive the following information from you:

1) a brief progress report for each of your research projects. Please prepare a separate report for each project, regardless of whether the project has ended or not. Each report should illustrate for non-NMR specialists major project findings and should normally not exceed one-two pages (text and figures). Selected progress reports will be included in the printed version of the Annual Report.

2) 2010-2011 research publications featuring results from the 900 instrument (published, accepted, submitted)

3) theses and similar works by your students in 2010-2011 using the 900 results (indicate name of the student, department, title of thesis, date of the defense)

4) any other relevant information you may consider useful including in our report

On behalf of the Facility Steering Committee,
Victor Terskikh

Email: terskikhv@nrc-cnrc.gc.ca

2009-2010 Annual Report



The 2009/10 Annual Report of the National Ultrahigh-Field NMR Facility for Solids is available in print and for download at http://nmr900.ca/annual_e.html

Upcoming NMR Events



The Seventh International Conference on Borate Glasses, Crystals and Melts will be held in Halifax from **August 21-25, 2011**. This is the first time this triennial meeting will be held in Canada, with previous locations including Japan, Italy, Bulgaria, UK and USA. The meeting will have a strong solid-state NMR component, as members of the organizing committee include Joe Zwanziger (conference chair), Randy Youngman, Sabyasachi Sen and Scott Kroeker. Invited speakers include Hellmut Eckert and Sung Keun Lee.

For more information and to register:
<http://www.regonline.com/borate7>



Dear Colleagues,

We are pleased to announce that online registration is now open for the MOOT XXIV NMR Symposium which will be taking place **October 22-23, 2011** in Toronto, Ontario, hosted at the Hospital for Sick Children and the University of Toronto. Details are available on the conference website,

<http://www.mootnmr.org>

Abstracts for both oral and poster presentations can be submitted online during the registration process.

The MOOT NMR Symposium has traditionally been a meeting bringing together NMR spectroscopists from across Ontario, Quebec, and more recently the Maritimes and the nearby United States. This trainee-oriented meeting aims to give blossoming researchers the opportunity to present their research to the close-knit Canadian NMR community. Talks and posters will be held at the Hospital for Sick

Children, located in the Discovery District of downtown Toronto, and the banquet will be held at historic Hart House on the University of Toronto campus.

In addition, **Agilent Technologies** will be holding a day long symposium and mixer the day before this year's MOOT (Oct. 21). More information regarding the agenda and location for this symposium will be posted soon and available on <http://www.spinsights.net>

We are working to arrange conference pricing for accommodation at a local hotel, and will update the website with this information as soon as it is available (estimate beginning of July). **Porter Airlines** offers a 20% discount on all fare classes for attendees traveling to Toronto for the MOOT NMR Symposium.

If you have any questions or comments, please send a message to mootnmr@gmail.com, or contact Simon Sharpe (ssharpe@sickkids.ca).

We look forward to seeing you in October!

Sharpe lab

Molecular Structure and Function Programme,
Hospital for Sick Children / Department of
Biochemistry, University of Toronto

NMR Winter School at CEA Saclay, France

Experiments and Modelling in Structural NMR

November 28 - December 2, 2011, INSTN -
CEA Saclay, France (20 km South of Paris)

Registration deadline: October 30, 2011

The aim of the school is to provide basic understanding on the coupling of theoretical Modelling and Simulation methods to the Experiments in structural NMR, for biology and material science. This school will therefore cover liquid, oriented media and solid-state NMR approaches.


The School is composed of Seminars in the morning and Practical Training (experimental and computational sessions) in the afternoon involving both the theoretical and experimental aspects. The school covers several topics in the field of structural NMR. In the first part, following an introduction on general principles,

the basic knowledge in isotropic and anisotropic media is given. The second part deals with the structural studies of biological systems and materials, while the third gives an overview of some advanced concepts including Hyper-polarization, Fast NMR and Diffusion process.

For more information and to download the School Flyer:
<http://www-instn.cea.fr/-2011-Events-.html#NMR>

ICMRM11 - MR microscopy conference

August 14-18, 2011, Beijing, China
<http://www.cup.edu.cn/icrm11/>

 **NANUC 2011 NMR BootCamp**
Biomolecular NMR Training Course

August 15-20, 2011, Edmonton, AB
http://www.nanuc.ca/nmrbootcamp/2011_NMR_BootCamp/Welcome.html

 **Borate 7**
7th International Conference on Borate Glasses, Crystals and Melts

August 21-25, 2011, Halifax, Canada
<http://www.regonline.com/borate7>

EUROMAR 2011

August 21-25, 2011, Frankfurt, Germany
<http://euromar2011.org/>

7th Alpine Conference on Solid-State NMR

September 11-15, 2011, Chamonix, France
<http://www.alpine-conference.org>

SMASH 2011 Small Molecule NMR Conference


September 18-21, 2011, Chamonix, France
<http://www.smashnmr.org/>

Agilent NMR Symposium

October 21, 2011, Toronto, Canada
<http://www.spinsights.net>

MOOT XXIV NMR Symposium

October 22-23, 2011, Toronto, Canada
<http://www.mootnmr.org>

 **CSCHE 2011**, the 61st Canadian Chemical Engineering Conference

October 23-26, 2011, London, Ontario, Canada
<http://www.csche2011.ca>

50th Eastern Analytical Symposium and Exposition

November 14-17, 2011, Somerset, New Jersey
<http://www.eas.org/>

NMR Winter School at CEA Saclay:
Experiment and modelling in Structural NMR

November 28 - December 2, 2011, INSTN - CEA Saclay, France
Registration deadline October 30, 2011
<http://www-instn.cea.fr/-2011-Events-.html#NMR>

Biophysical Society 56th Annual Meeting


February 25-29, 2012, San Diego, California
<http://www.biophysics.org/2012meeting>

53rd ENC

April 15-20, 2012, Miami, FL
<http://www.enc-conference.org/>

20th ISMRM Scientific Meeting and Exhibition of the International Society for Magnetic Resonance in Medicine

May 5-11, 2012, Melbourne, Australia
<http://www.ismrm.org>

 **CSC 2012**, the 95th Canadian Chemistry Conference and Exhibition,

May 26-30, 2012, Calgary, Alberta, Canada
<http://www.csc2012.ca/>

EUROMAR 2012

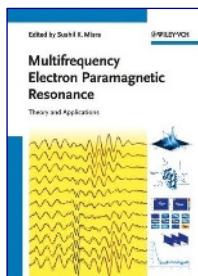
July 1-5, 2012, Dublin, Ireland
<http://euromar2012.org>

SMASH 2012 Small Molecule NMR Conference

September 9-12, 2012, Providence, Rhode Island, USA
<http://www.smashnmr.org/>

New MR Books

Multifrequency Electron Paramagnetic Resonance: Theory and Applications



edited by **Sushil K. Misra**
Hardcover: 1056 pages
Publisher: Wiley-VCH; June, 2011
Language: English
ISBN: 978-3527407798

<http://www.amazon.com/dp/3527407790>
<http://www.amazon.ca/dp/3527407790>

Wiley: "Filling the gap for a systematic, authoritative, and up-to-date review of this cutting-edge technique, this book covers both low and high frequency EPR, emphasizing the importance of adopting the multifrequency approach to study paramagnetic systems in full detail by using the EPR method. In so doing, it discusses not only the underlying theory and applications, but also all recent advances - with a final section devoted to future perspectives."

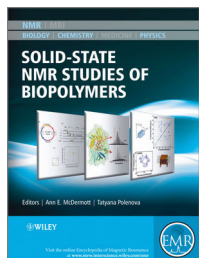
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<http://tinyurl.com/3qu7n5h>

From the book cover (PDF file)

<http://tinyurl.com/3mmlvcn>

Web: Prof. Sushil K. Misra, Department of Physics, Concordia University
<http://physics.concordia.ca/facultyandresearch/bios/misra.php>



Solid State NMR Studies of Biopolymers

Anne E. McDermott (Editor)
Tatyana Polenova (Editor)
Hardcover: 592 pages
Publisher: Wiley; October 2010

Language: English
ISBN: 978-0470721223

<http://www.amazon.com/dp/0470721227/>
<http://www.amazon.ca/dp/0470721227/>

NMR Jobs and Vacancies

Technical University Darmstadt, Germany (Research Fellow)

http://nmr900.ca/nmr_jobs.html#tud

University of New South Wales, Sydney (Research Scientist, Solid-State NMR Spectroscopy)

http://nmr900.ca/nmr_jobs.html#unsw

Claflin University, Orangeburg, SC (Facility Manager)

http://nmr900.ca/nmr_jobs.html#sc

University of Illinois Urbana Champaign (NMR Specialist)

http://nmr900.ca/nmr_jobs.html#uiuc

University of Texas at El Paso (Instrumentation Specialist)

http://nmr900.ca/nmr_jobs.html#utep

University of Nebraska Lincoln (Facility Director)

http://nmr900.ca/nmr_jobs.html#unl

Oklahoma State University (NMR Spectroscopist)

http://nmr900.ca/nmr_jobs.html#osu

Listings of NMR jobs and vacancies

Canadian NMR Jobs

http://nmr900.ca/nmr_jobs.html

NMR Wiki

<http://nmrwiki.org/wiki/index.php?title=Category:Jobs>

NMR jobs on the NMR Information Server

<http://www.spincore.com/nmrjobs/>

AMPERE mailing list

<https://listes.sc.univ-paris-diderot.fr/sympa/info/nmr>

NMR jobs on SpectroscopyNow.com

<http://www.spectroscopynow.com/coi/cda/list.cda?type=Job&chld=0>

FG-MR Jobs

<http://fgmrjobs.blogspot.com/>

Canadian NMR Research Highlights

Cover article in *Chemistry - A European Journal*

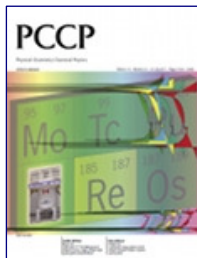


H.N. Hunter, N. Hadei, V. Blagojevic, P. Patschinski, G.T. Achonduh, S. Avola, D.K. Bohme, M.G. Organ, "Identification of a Higher-Order Organozincate Intermediate Involved in Negishi Cross-Coupling Reactions by Mass

Spectrometry and NMR Spectroscopy," *Chemistry - A European Journal* **17** (2011) 7845-7851. **(Cover article)**

<http://dx.doi.org/10.1002/chem.201190141>

Cover article in *Physical Chemistry Chemical Physics*



C.M. Widdifield, A.D. Bain, and D.L. Bryce, "Definitive Solid-State $^{185/187}\text{Re}$ NMR Spectral Evidence for and Analysis of the Origin of High-Order Quadrupole-Induced Effects for $I = 5/2$," *Physical Chemistry Chemical Physics* **13**

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<http://dx.doi.org/10.1039/c1cp20572b>

This is **the tenth cover article** featuring results obtained using resources of the National Ultrahigh-Field NMR Facility for Solids. For the complete list of publications http://nmr900.ca/publications_e.html

NMR investigations of metabolomics



Special issue of *Journal of Biomolecular NMR* guest edited by **Brian D. Sykes** (University of Alberta), volume 49, numbers 3-4, April 2011.

B.D. Sykes, *Journal of Biomolecular NMR* **49** (2011) 163-164. **(Editorial)**

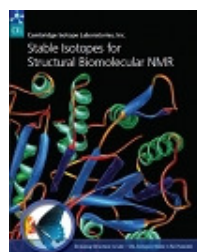
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G.E. Duggan, B.J. Miller, F.R. Jirik, H.J. Vogel, "Metabolic profiling of vitamin C deficiency in Gulo $^{-/-}$ mice using proton NMR spectroscopy," *Journal of Biomolecular NMR* **49** (2011) 165-173.

<http://dx.doi.org/10.1007/s10858-011-9485-5>

P. Mercier, M.J. Lewis, D. Chang, D. Baker, D.S. Wishart, "Towards automatic metabolomic profiling of high-resolution one-dimensional proton NMR spectra," *Journal of Biomolecular NMR* **49** (2011) 307-323.

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Stable Isotopes for Structural Biomolecular NMR

Cambridge Isotope Laboratories (CIL) made

available a series of application notes on the use of stable

isotopes in Biomolecular NMR. These application notes were written by some of the world's leading researchers in the field, including several Canadian scientists.

Lewis Kay (University of Toronto) "Alanine Probes of Supra-Molecular Structure and Dynamics", page 9.

Leonid S. Brown and Vladimir Ladizhansky (University of Guelph) "*Pichia pastoris* as a Eukaryotic Protein Isotope-Labeling System", pages 14-15.

Ying Fan, Lichi Shi, Vladimir Ladizhansky and Leonid S. Brown (University of Guelph) "Uniform Isotope Labeling of Eukaryotic Proteins in Methylotrophic Yeast for High-Resolution NMR Studies - Extension to Membrane Proteins", Application Note 26, pages 71-74.

Recent research by **Gang Wu's** group (Queen's University) is cited as an example of advanced ^{17}O NMR spectroscopy in large protein-ligand complexes in solution and in the solid state, " ^{17}O NMR reagents", page 34.

These application notes are available for download as a PDF file (5.1MB) "*Stable Isotopes for Structural Biomolecular NMR Catalog*" at:

http://www.isotope.com/cil/literature/research_literature/index.cfm



Encyclopedia of Magnetic Resonance: new entries

D.L. Bryce, C.M. Widdifield, R.P. Chapman and R.J. Attrell, "Chlorine, Bromine, and Iodine Solid-State NMR", *Encyclopedia of Magnetic Resonance* (2011).

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A.D. Bain "Radiofrequency Pulses: Response of Nuclear Spins", *Encyclopedia of Magnetic Resonance* (2011).

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G.J. Schrobilgen and M. Gerken, "Noble Gas Elements", *Encyclopedia of Magnetic Resonance* (2011).

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Progress in NMR Spectroscopy



J.L. Kitevski-LeBlanca and R.S. Prosser, "Current Applications of ¹⁹F NMR to Studies of Protein Structure and Dynamics," *Progress in Nuclear Magnetic Resonance Spectroscopy* (2011) accepted.

(Invited Review)

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G. Wu and J. Zhu "NMR studies of alkali metal ions in organic and biological solids," *Progress in Nuclear Magnetic Resonance Spectroscopy* (2011) online. **(Invited Review)**

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L.A. O'Dell "Direct Detection of Nitrogen-14 in Solid-State NMR Spectroscopy," *Progress in Nuclear Magnetic Resonance Spectroscopy* (2011) online. **(Invited Review)**

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A.D. Bain and B. Berno, "Liouvillians in NMR: the Direct Method Revisited," *Progress in Nuclear Magnetic Resonance Spectroscopy* (2011) online. **(Invited Review)**

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Paper in Angewandte Chemie

C.S. Sit, M.J. van Belkum, R.T. McKay, R.W. Worobo, J.C. Vederas, "The 3D Solution Structure of Thurincin H, a Bacteriocin with Four Sulfur to alpha-Carbon Crosslinks," *Angewandte Chemie International Edition* (2011) online.

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S.J. Takayama, G. Ukpabi, M.E.P. Murphy, A.G. Mauk, "Electronic properties of the highly ruffled heme bound to the heme degrading enzyme IsdI," *Proc. Natl. Acad. Sci. USA* (2011) online.

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H. Kato, H. van Ingen, B.-R. Zhou, H. Feng, M. Bustin, L.E. Kay, and Y. Bai, "Architecture of the high mobility group nucleosomal protein 2-nucleosome complex as revealed by methyl-based NMR," *Proc. Natl. Acad. Sci. USA* **108** (2011) 12283-12288.

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Recent NMR Publications

We are listing here most recent NMR publications by Canadian research groups as they appear on the www.nmr900.ca website. Although we are doing our best keeping track of your publications, this list should not be considered complete. You are encouraged to let us know of your recent publications as they become available.

Memorial University of Newfoundland

M. Sarker, D. Jackman, and V. Booth, "Lung Surfactant Protein A (SP-A) Interactions with Model Lung Surfactant Lipids and an SP-B Fragment," *Biochemistry* **50** (2011) 4867-4876. <http://dx.doi.org/10.1021/bi200167d>

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J.L. MacDonald, U. Werner-Zwanziger, B. Chen, J.W. Zwanziger, D. Forgeron, "A ^{43}Ca and ^{13}C NMR Study of the Chemical Interaction Between Poly(ethylene-vinylacetate) and White Cement During Hydration," *Solid State Nuclear Magnetic Resonance* (2011) accepted. <http://dx.doi.org/10.1016/j.ssnmr.2011.07.001>

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D.L. MacLellan, D. Mataij, A. Doucett, W. Huang, C. Langlois, G. Trottier, I.W. Burton, J.A. Walter and T.K. Karakach, "Alterations in urinary metabolites due to unilateral ureteral obstruction in a rodent model," *Molecular BioSystems* **7** (2011) 2181-2188. <http://dx.doi.org/10.1039/c1mb05080j>

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D.L. MacLellan, D. Mataij, A. Doucett, W. Huang, C. Langlois, G. Trottier, I.W. Burton, J.A. Walter and T.K. Karakach, "Alterations in urinary metabolites due to unilateral ureteral obstruction in a rodent model," *Molecular BioSystems* **7** (2011) 2181-2188. <http://dx.doi.org/10.1039/c1mb05080j>

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