

Ottawa Carleton Institute for Physics

L'Institut de physique d'Ottawa

Carleton

2003 Newsletter

The year 2003 was a very active year for the Institute and its 63 members across the areas of research, teaching, and service to the community. The total number of graduate students increased to 84 during the year, up from 76 in 2002.

In the spring of 2003 the Ottawa ATLAS group shipped its second and final calorimeter detector module to CERN. These four ton, \$1m modules were constructed in the Physics Department at Carleton and took three years to build. The modules are tested in an external particle beam at CERN and are then ready for installation in the ATLAS experiment. First data with ATLAS and the 14 TeV centre of mass LHC are expected in 2007.

The SNO project continues to make good progress in the precision measurement of neutrino oscillation parameters. This year the run in which salt was added to the heavy water to enhance the detection of the critical neutral-current reaction (which measures the total neutrino production in the Sun) was completed. The salt was removed successfully using the systems designed and built at Carleton. The final phase of the experiment in which the neutrons from the neutral-current process are detected using proportional counters has now started.

Major funding to allow the expansion of the SNO site to create an International Facility for Underground Science (SNOLAB) was announced this year. The new facility will provide space for 3-4 major new experiments underground as well as surface laboratories to support these new projects. Work to define the requirements and the designs for these facilities progressed well through the year.

Béla Joós was President of the Canadian Association of Physicists for 2003. Among other accomplishments he has, on behalf of CAP, brought to our federal politicians' attention serious concerns about "star wars" research and its implications for Canada.

Zbigniew Stadnik received the 2003 University of Ottawa Excellence in Education Prize.

Profs. Bao and Chen and two other members of their team have obtained a patent for Brillouin spectrum properties of photonics crystal

fibers (PCF) and polarization maintaining fibers (New US Provisional Patent Application, November 2003 - Licensed to Neubrex Co (April 2003)).

Andre Longtin was elected Fellow of the American Physical society for his work on statistical mechanical approaches to sensory coding in the nervous system.

Prof. Bao received the Inventor of the Year Award from the University of Ottawa. She was a member of the International Steering Committee for the First International Conference on Structural Health Monitoring and Intelligent Infrastructure held in Tokyo in November. She was a member of the International Optical Fiber Sensor Technical Program Committee and chair of "Smart structures and field tests". She was on the Program committee for SPIE Smart Structures and Material Annual Conference: Smart sensor technology and measurement systems, San Diego, USA in March 2003. Further, she was appointed Member of NSERC GSC 29 for General Physics. She was also elected to the Research Management Committee of ISIS Canada (NCE program) for 2002-2005.

Ian Cameron passed the certification exam to become a member of the Canadian College of Physicists in Medicine.

Marie D'lorio was appointed Director-General of the Institute for Microstructural Sciences, May 2003. She secured CRTI funding (3.3M\$ over 3years) for Molecular Imprinting for Sensor Applications, together with NRC-IMS (lead Institute), NRC-ICPET, DRDC-Suffield and Memorial University of Newfoundland. She was an Invited speaker at the University of Ottawa Frontiers of Research on Nanotechnology in November. Finally she became the Canadian manager of the NRC-CNRS network on Organic Photonics and Electronics.

Clive Greenstock received the Education and Communication Lifetime Achievement Award from the Canadian Nuclear Society in Toronto in June 2003.

Pawel Hawrylak was the recipient of the 2003 NRC Outstanding Research Achievement Award for the development of "single spin transistor". He was appointed Guest Editor, Special Issue of Solid State Communications, "Advances in studies of electrons in low dimensional systems"(2003), as well as Member of the Program Committee for the 11th International Conference on Modulated Semiconductor Structures in Nara, Japan. Finally he was appointed Associate Editor of the Canadian Journal of Physics.

Ivan L'Heureux also became Associate Editor (Condensed Matter Physics) of the Canadian Journal of Physics.

Gary Slater was Guest Editor (with Marie D'lorio) for a special issue of the journal "Physics in Canada" entitled "Polymer Physics-La Physique des Polymeres" (March-April issue).

Activities at the Institute can be consulted online at <http://www.ocip.carleton.ca>, which has links to the departmental web sites at the University of Ottawa and Carleton University.

Andre Longtin, OCIP Director

Gerald Oakham, Associate Director

2003 OCIP Seminar Series

OCIP - Spring Graduate Student Seminar Symposium – Carleton University – Wednesday, May 21, 2003

- 9:00 – Marek Korkusinski (U) Spin flips in lateral quantum dots: role of exchange and correlations.
- 9:30 – Ziaul Hasan (C) Measurement of X-Ray Differential Scattering Cross Section over a wide range of Momentum Transfer Parameter
- 10:00 – Gary Knight (U) Size effects on conductivity: a centenary subject revisited in the nanoscale
- 10:30 – 11:00 am Coffee Break**
- 11:00 – Patrick Mercier (U) Strong laser field physics – from attochemistry to nuclear spectroscopy
- 11:30 – Dana Mullins (C) Chronomodulation of Topotecan and X-Radiation Therapy
- 12:00 – Graham Ferrier (U) Distributed Brillouin Sensing in Optical Fibres.

OCIP - Fall Graduate Student Seminar – Carleton University – Wednesday, December 3, 2003

- 1:30 – Richard Wassenaar (C) Extravascular density imaging for partial volume correction of PET images
- 2:00 – Brent Doiron (O) Origin and significance of oscillations in feedback neural networks in electric fish
- 2:30 – Juan Para Robles (C) Low-field magnetic resonance imaging using hyperpolarization Xenon
- 3:00 - Coffee Break**
- 3:30 – Etienne Rollin (C) Adding wavelengths shifters in the Sudbury Neutrino Observatory (SNO)
- 4:00 – Qinrong Yu Toward the ultimate performance of Brillouin sensing system – A study on polarization maintained fibers and crosstalk effect.
- 4:30 – Andrew Wind Pinhole SPECT with OSEM-MRP.

OCIP - Christmas Symposium
University of Ottawa – Friday, December 19, 2003

9:30 – Pawel Hawrylak (O) Quantum Hardware.

9:30 – Kirsten Sachs (C) A TPC for TESLA.

10:00 – Augustin Song (U) Exciton relaxation I ionic crystals: a real-time molecular dynamics.

10:30 Coffee Break

11:00 Julia Wallace (C) Magnetic Resonance Imaging of Hyperpolarized Xenon.

11:30 – Rejean Munger (U) Development of an optimal optical correction of the human eye:
 Realistic goal of a marketing hype?

12:00 – Steve Godfrey (U) Physicists find “Rebel” particle.

12:30 – Lunch University Center

2003 Departmental Seminars

Name:	Institute	Title	Date	
Mario Beaudoin	Bandwidth9, Inc., Fremont, CA	MEMS based tunable VCSEL for OC\$* transmission	Jan. 9 th , 2003	O
John Schreiner	Kingston Regional Cancer Centre & Queen’s University	Notes from a small clinic: Conformal radiation therapy research in Co-60 Tomotherapy and gel dosimetry	Jan. 23, 2004	C
Shahraam Afshar	University of Ottawa	Distributed fiber optic sensors based on Brillouin Scattering (What are we doing downstairs!!?)	Jan. 23, 2003	O
Manuella Vincter	University of Alberta	Recent results for HERMES: the state of the art in nucleon spin structure	Jan. 27, 2003	C
Rod Taylor	National Research Council of Canada	Fabrication of nanostructures in glass based upon selective chemical etching	Jan. 30, 2003	O
Andreas Warburton	McGill University	Rare changes in Quark flavour: Measuring the CKM matrix element – Vub	Jan. 3, 2003	C

Szczepan Chelkowski	Université de Sherbrooke	Asymmetries in photo-ionization induced by intense ultrashort lasers	Feb. 6 th , 2003	O
Garry Tarr	Carleton University	RADFETs and radon: Detecting ionizing radiation using commercial CMOS Technology	Feb. 10, 2003	C
Roger Moore	Michigan State University	The D0 detector and the search for supersymmetry	Feb. 17, 2003	C
Ian Thomson	Thomson & Nielsen Electronics Ltd., Ottawa	Principles & Applications of MOSFET radiation sensors in medicine and space.	Feb. 24, 2003	C
Scott Oser	University of Pennsylvania	Neutrino oscillation results from the Sudbury Neutrino Observatory	Feb. 25, 2003	C
CAP – Seminar Thomas Devereaux	University of Waterloo	From colliding atoms to colliding galaxies – The complex dynamics of interacting systems.	Feb. 27, 2003	O
Isabel Trigger	CERN	Desperately seeking SUSY	February 27, 2003	C
Wendy Taylor	SUNY at Stony Brook	Physics with b-Quarks at the Tevatron	Feb. 28, 2003	C
David Sinclair	Carleton University	Scientific Breakthroughs at the Sudbury Neutrino Observatory	Mar. 5, 2003	C
Marie D'lorio	National Research Council	Nanotechnology – An intergration challenge	Mar. 6, 2003	O
Scott Menary	York University	The Physics and status of KaNOE – Kenora off-axis NuMI oscillation experiment	Mar. 10, 2003	C
Steve Robertson	SLAC	Recent rare B decay results from the BaBar experiment	Mar. 12, 2003	C
Michael Cada	University of Ottawa	Optical nonlinear devices	Mar. 13, 2003	O
Dipak Basu	Carleton University	Peaks and troughs in QSO redshift distribution: real or artifact?	Mar. 17, 2003	C
A.B. Shvartsburg	Russian Academy of Science – Russia	Optics of instantaneous waves	Mar. 20, 2003	O
Bruce Campbell	University of Alberta	Constraints on scalar couplings from $\pi \rightarrow 1 \nu$ decay	Mar. 20, 2003	C

Alain Gauvin	Centre Hospitalier de l'Université de Montréal	Implementation of PACS in a large teaching hospital	Mar. 24, 2003	C
Thomas Brabec	University of Ottawa	Ultrafast photonics	Mar. 31, 2003	C
Ken Finkelstein	CHESS, Cornell University	The proposed Cornell – JLab “Energy recovery LINAC” X-ray source	Apr. 3, 2003	O
Paul Corkum	National Research Council	Attosecond science	Apr. 14, 2003	O
Fabrizio Gabbiani	Baylor School of Medicine, Houston, Texas	Biophysical mechanism underlying multiplication and invariance of neural responses	Apr. 25, 2003	O
Paul Johns	Carleton University	Diagnostic information from scattered x rays	May 29, 2003	C
David Waller	Carleton University	Theres NO business like SNO business	Jun. 5, 2003	C
Julia Wallace	Carleton University	MRI	Jun. 12, 2003	C
Richard Hemingway	Carleton University	LEP Physics	Jun. 19, 2003	C
Ferenc Dalnoki-Veress	Carleton University	SNO	Jun. 26, 2003	C
Rama Shanker	Banaras Hindu University, Varanasi, India	Electron impact processes in gaseous – and solid targets at KeV energies	Jul. 10, 2003	O
Mike Donkers	Carleton University	LEP Physics	Jul. 10, 2003	C
Gerald Oakham	Carleton University	ATLAS	Jul. 17, 2003	C
Alain Bellerive	Carleton University	SNO	Jul. 25, 2003	C
John Armitage	Carleton University	Long-period fibre Bragg gratings	Aug. 7, 2003	
Massimo Nespolo	Université Henri Poincaré Nancy 1, France	Long-period mica polytypes: a model for their formation mechanism.	Aug. 12, 2003	O
Benjamin Lindner	University of Ottawa	Some analytical results on stochastic neuron models	September 18, 2003	O

Nialy Roy	University of Ottawa	Designing polymer blends using neural networks genetic algorithms and Markov Chains: an overview	Sept. 25, 2003	O
Paul Johns	Carleton University	Scattered X-rays as a diagnostic tool for medicine	Sept. 29, 2003	C
Jan Michael Rost	Max-Planck Institute for the Physics of Complex Systems, Dresden	Ultrahigh harmonics from laser-assisted ion-atom collisions	Oct. 3, 2003	O
Alain Bellerive	Carleton University	Solar Neutrino Experiments	Oct. 6, 2003	C
Thomas J. Glynn	National University of Ireland, Galway	Laser material processing of advanced materials	Oct. 10, 2003	C
I. Giomataris	DAPNIA-SACLAY	Detector development and new neutrino experiments	Oct. 27, 2003	C
Lufan Zou	University of Ottawa	Photonic crystal fiber for simultaneous interrogation of distributed strain and temperature sensing by Brillouin scattering	Oct. 30, 2003	O
John Schreiner	Kingston Regional Cancer Centre and Queen's University	Gel dosimetry – Historical perspectives and current state	Nov. 3, 2003	C
Viatcheslav (Slava) Izraelian	Fiber Application Systems Technology Inc., Toronto	Polarization effects in optical fibers and specialty fibers for sensors and systems.	Nov. 6, 2003	O
Elena Aprile	Columbia	The XENON dark matter experiment	Nov. 11, 2003	C
Saeed Hadjifaradji	University of Ottawa	The effect of PMD, PDL and CD on fiber optic communication systems; particularly in the study of the eye diagram	Nov. 20, 2003	O
Steve Godfrey	Carleton University, DESY, TRIUMF, CSSM	Around the world with Physics (Weather, wine and kangaroos)	Nov. 24, 2003	C
Mads Kaern	Boston University	Systems Biology: An interdisciplinary Approach to a Biological Research	Nov. 26, 2003	O
Andrzej Czajkowski	University of Ottawa	Optical frequency standards, absolute frequency measurements and femtosecond Combs revolution	Nov. 27, 2003	O
Georges Azuelos	TRIUMF, Université de Montréal	Exotic Physics with ATLAS	Dec. 1, 2003	C

Publications in Refereed Journals and Book Series in 2003

Author(s)	Title	Publication
J. Bracken, X. Bao , B. Chen, L. Chen, X. Chen, W. Huang, E. Ponomarev, Y. Wang, C. Xu	Research and development of PPMGLN wavelength conversion modules	Photons, V. 1, No. 1, 27-31(2003)
L. Chen, S. Hadjifaradji, D. Waddy and X. Bao	Effect of local PMD and PDL polarization direction correlation on the principle state of polarization vector autocorrelation	Optics Express, 11 , 3141-3146 (2003)
L. Zou, X. Bao , L. Chen	Study of the Brillouin scattering spectrum in photonic crystal fiber with Ge-doped core	Opt. Lett, 28 , 2022-2024 (2003)
P. Lu, L. Chen, S. Mihailov, X. Bao	Statistical distribution of pulse broadening/narrowing due to the interaction of PMD and frequency chirp in dispersion-shifted fiber	Opt. Commun. 222 , 243-248 (2003)
S. Afshar, G. Ferrier, X. Bao , L.. Chen	The impact of finite extinction ratio of EOM on the performance of the pump-probe Brillouin sensor system	Optics Letters: 28 , 15. 1418-1420 (2003)
D. Waddy, L. Chen, X. Bao	A dynamic PMD emulator	IEEE Photonics Technology Lett. 15 , No. 4, 534-536 (2003)
P. Lu, L. Chen, X. Bao , S. Mihailov	The use of importance sampling in the study of polarization mode dispersion with polarization dependent loss	Opt. Comm. 215 , 303-307 (2003)
M. Walser and T. Brabec	Semiclassical path integral theory of strong laser field physics	J. Phys. B 36, 3025 (2003)
M. Kitzler, Ch. Fabian, N. Milosevic, A. Scrinzi and T. Brabec	Quantum theory of single subfemtosecond extreme-ultraviolet pulse measurements	J. Opt. Soc. Am. B 20, 591 (2003)
D. Waddy, L. Chen and X. Bao	A Dynamical Polarization Mode Dispersion Emulator	IEEE Photonics Technology Letters Vol. 15 pp. 534-536 (2003)
P. Lu, L. Chen , X. Bao	The Use of Importance Sampling on the	Optics Communications, Vol.

and S.J. Mihailov	Study of Polarization Mode Dispersion with Polarization Dependent Loss	215, pp 303-307 (2003)
P. Lu, L. Chen , S.J. Mihailov and X. Bao	Statistical distribution of pulse broadening/narrowing due to the interaction of polarization mode dispersion and frequency chirp in dispersion-shifted fiber	Optics Communication, Vol. 222 pp 243-248 (2003)
S. Afshar, G. Ferrier, X. Bao and L. Chen	The impact of finite extinction ratio of EOM on the performance of the pump-probe Brillouin sensor system	Opt. Lett. Vol. 28 pp 1418-1420 (2003)
L. Zou, X. Bao and L. Chen	Study of the Brillouin scattering spectrum in photonic crystal fiber with Ge-doped core	Opt. Lett. 28 2022-2024 (2003)
L. Chen , S. Hadjifaradji, D.S. Waddy and X. Bao	Effect of local PMD and PDL direction correlation on the principal state of polarization vector autocorrelation	Optics Express, vol. 23 3141-3146 (2003)
J. Bracken, X. Bao, B. Chen, L. Chen , X.-Z. Chen, W.-P. Huang, E. Ponomarev, Y. Wang and C.-Q. Xu	Research and development of PPMGLN wavelength conversion modules	Photons: Technical Review of the Canadian Institute for Photonic Innovations, Vol. 1, 27-31 (2003)
J.S. Loveday, R.J. Nelmes, D. Klug, J. Tse and S. Desgreniers	Structural Systematics in Clathrates under Pressure	Can. J. Phys. 81: 539 (2003)
Y. Tao and M. D'lorio	Polymer Light Emitting Materials and Devices	Physics in Canada , 59: 145-156 (2003)
M.I.S. Wong, Z.H. Li, Y. Tao and M. D'lorio	Synthesis and Functional Properties of Donor-Acceptor π -conjugated Oligomers	Chemistry of Materials , 15:1198-1203 (2003)
Y. Li, J. Ding, M. Day, Y. Tao, J. Lu and M. D'lorio	Novel Stable Blue-Light-Emitting Oligofluorene Networks Immobilized by Boronic Acid Anhydride Linkages	Chemistry of Materials , 15: 4936-4943 (2003)
F.E. Close and S. Godfrey	Charmonium Hybrid Production in Exclusive B Meson Decays	Phys. Lett. 210-216 (2003)
M.A. Doncheski, S. Godfrey and S-H. Zhu	Measurement of $\tan \eta$ in Associated production in collisions	Phys. Rev. 053001 (2003)
S. Godfrey	Testing the Nature of the χ and States Using Radiative Transitions	Phys. Lett., 254-260 (2003)
S. Godfrey and M.A. Doncheski	Resolved Photon Contributions to Higgs Boson Production in Collisions	Phys. Rev. D67 073021 (2003)

- A. Wensauer, M. Korkusinski, **P. Hawrylak** Theory of spin singlet filling factor two droplet Phys. Rev. B 67, 035325 (2003)
- S. Dickman and **P. Hawrylak** Spin relaxation in a two-electron dot JETP 77, 34 (2003)
- M. Korkusinski, W. Sheng and **P. Hawrylak** Designing quantum systems in self-assembled quantum dots Physica Status Solidi 238, 246 (2003)
- G. Ortner, M. Bayer, A. Larionov, V.B. Timofeev, A. Forchel, Y.B. Lyanda-Geller, T.L. Reinecke, **P. Hawrylak**, S. Fafard, and Z. Wasilewski Fine structure of Excitons in InAs/GaAs Coupled Quantum Dots: A Sensitive Test of Electronic Coupling Phys. Rev. Lett. 90, 086404 (2003)
- M. Bayer, M. Korkusinski, **P. Hawrylak**, T. Gutbrod, M. Michel and A. Forchel Optical Detection of the Aharonov-Bohm Effect on a Charged Particle in a Nanoscale Quantum Ring Phys. Rev. Lett. 90, 186801 (2003)
- M. Pioro-Ladrière, M. Ciorga, J. Lapointe, P. Zawadzki, M. Korkusinski, **P. Hawrylak** and A.S. Sachraida Spin-Blockade Spectroscopy of a Two-Level Artificial Molecule Phys. Rev. Lett. 91, 026803 (2003)
- P. Hawrylak** Hidden symmetry and correlated states of electrons and holes in quantum dots Solid State Comm. 127, 753 (2003)
- S.J. Cheng, W. Sheng, **P. Hawrylak** Theory of excitonic artificial atoms: InGaAs quantum dots in strong magnetic fields Phys. Rev. B68, 235330 (2003)
- P. Borri, W. Langbein, U. Woggon, M. Schwab, M. Bayer, S. Fafard, Z. Wasilewski and **P. Hawrylak** Exciton dephasing in quantum dot molecules Phys. Rev. Lett. 91, 267401 (2003)
- A. Olaya-Castro, M. Korkusinski, **P. Hawrylak**, M. Ivanov Effective Bloch equations for strongly driven modulation of doped quantum wells Phys. Rev. B68, 155305 (2003)
- P. Hawrylak** and M. Korkusinski "Electronic and optical properties of self-assembled quantum dots" in "Single quantum dots: Fundamentals, Applications, and New Concepts" P. Michler, Ed, Topics in Applied Physics, Vol. 90, pp. 25-92, Springer-Verlag (2003)
- A. Sachrajda, **P. Hawrylak** and M. Ciorga Nano-spintronics with lateral quantum dots Chapter 3 in Transport in Quantum Dots, J. Bird, Editor, Kluwer (2003)
- M. Plischke, D. Vernon Model for gelation with explicit solvent Phys. Rev. E., 67, 011401-(1-6), 2003

and B. Joós	effects: Structure and dynamics	
Z. Zhou, B. Joós and P.Y. Lai	Elasticity of randomly diluted central force networks under tension	Phys. Rev. E 68, 055101 (1-4), 2003
L. Fournier and B. Joós	A Lattice Gas Model for the Kinetics of Rupture of Fluid Bilayer Membranes	Phys. Rev. E 67, 051908-(1-11), 2003
S. Katsev and I. L'Heureux	Are Hurst exponents estimated from short or irregular time series meaningful?	Compu. & Geosci 29: 1085-1089 (2003)
A. Longtin	Effect of Noise on Nonlinear Dynamics	Nonlinear Dynamics in Physiology and Medicine. A. Beuter, L. Glass, M.C. Mackey and M. Titcombe, eds. (Springer Verlag, New York, pp. 149-189 (2003)
A. Longtin , C.R. Laing and M.J. Chacron	Correlations and memory in neurodynamical systems	Processes With Long-Range Correlations. Theory and Applications, edited by G. Rangarajan and M. Ding. Lecture Notes in Physics Vol. 621, pp. 286-308 (Springer-Verlag, Berlin, 2003) (invited paper).
J.W. Middleton, M.J. Chacron, B. Lindner and A. Longtin	Firing statistics of a model neuron driven by long-range correlated noise	Phys. Rev. E. 68, 021920 (2003)
C.R. Laing and A. Longtin	Periodic forcing of a model sensory neuron	Phys. Rev. E. 67, 051928 (2003)
M.R. Chacron, A. Longtin and L. Maler	The effects of spontaneous activity, background noise and the stimulus ensemble on information transfer in neurons	Network Comput. Neural Syst. 14, 803-824 (2003)
C.R. Laing and A. Longtin	Dynamics of deterministic and stochastic paired excitatory-inhibitory delayed feedback	Neural Comput. 15, 2779-2822 (2003)
M.J. Chacron, B. Doiron, L. Maler, A. Longtin and J. Bastian	Non-classical receptive field mediated biological switch in a sensory neuron's frequency tuning	Nature 423, 77-81 (May 1 st) 2003
B. Lindner, A. Longtin and A.R. Bulsara	Analytical expressions for rate and CV of a Type I neuron driven by Gaussian white noise	Neural Comput. 15, 1761-1788 (2003)
B. Doiron, M.J. Chacron, L. Maler, A. Longtin , J.	Inhibitory feedback required for network burst responses to communication but not	Nature 421, 539-543. (see News and Views, Nature Neuroscience 6, 212-213 by

Bastian	to prey stimuli.	Fabrizio Gabbiani) (2003)
L. Noonan, B. Doiron, C.R. Laing, A. Longtin	A dynamic dendritic refractory period regulates burst discharge in the electrosensory lobe of weakly electric fish	J. Neurosci. 23 , 1524-1534 (2003)
M.J. Chacron, K. Pakdaman and A. Longtin	Interspike interval correlations, memory, adaptation, and refractoriness in a leaky integrate-and-fire model with threshold fatigue	Neural Comput. 15 , 253-278 (2003)
C.R. Laing, B. Doiron, A. Longtin , R. Turner, L. Noonan and L. Maler	Type I burst excitability	J. Comput. Neurosci. 14 , 329-342 (2003)
C. van der Zee, D. Roberts, D.G. Rancourt , C.P. Slomp	Nanogoethite is the dominant reactive oxyhydroxide phase in lake and marine sediments	Geology 31 (2003) 993-996
J. Scott, S. Gambarotta, G. Yap, D.G. Rancourt	Labile tetranuclear Fe(II) and Co(II) clusters of a dipyrroliide dianion with two diamagnetic ferrous nodes	Organometallics 22 (2003) 2325-2330
A.R. Cross, M. McDonald, J. Parra-Robles and G.E. Santyr	Laser Polarized ^{129}Xe NMR at 1.89 T and 8.5 mT: A Signal-to-Noise Ratio Comparison	<i>J. Magn. Reson.</i> 162 , 241-249 (2003)
J.-F. Mercier, G.W. Slater	Solid Phase DNA Amplification: A Simple Monte Carlo Lattice Model	<i>Biophysical Journal</i> 85 , 2075-2086 (2003)
G.W. Slater , Y. Gratton, M. Kenward, L. McCormick, F. Tessier	Deformation, Stretching and Relaxation of Single Polymer Chains: Fundamentals and Examples	Soft Materials, 1 , 365-391 (2003)
K.D. Dorfman, G.W. Slater , M.G. Gauthier	Generalized Taylor-Aris dispersion analysis of spatially periodic lattice Monte Carlo models: Effect of discrete time	J. Chem. Phys. 119 , 6979-6980 (2003)
Hongdin Zhou, G. W. Slater	A Metric to Search for Relevant Words	Physica A 329 , 309-327 (2003)
G.W. Slater , S. Crisan, M. Pépin, Y. Gratton	Stretching and relaxation of a polymer chain: simple models	Physics in Canada 59 , No. 2 (March-April), 57-66 (2003)
M.G. Gauthier, G. W. Slater	An Exactly Solvable Ogston Model of Gel Electrophoresis X: Application to high-field separation techniques	Electrophoresis 24 , 441-451 (2003)
G. W. Slater , M. Kenward, L.C. McCormick, M.G. Gauthier	Theory of DNA separation by capillary electrophoresis.	INVITED review article in: Current Opinion in Biotechnology 14 , 58-64 (2003)
Z.M. Stadnik , T. Takeuchi, N. Tanaka and		J. Phys. Condens. Matter 15 ,

U. Mizutani		6365 (2003)
A. Sinha, R. Roychoudhury and Y.P. Varshni	Wentzel-Kramers-Brillouin quantization rules for two-dimensional quantum dots	Physica B, 325, 214-223 (2003)
Y.P. Varshni	Spectrum of Helium at High Pressures	Eur. Phys. J. D 22, 229-233 (2003)
Y.P. Varshni	Wavefunctions for the hydrogen atom in a dense plasma	Can. J. Phys. 81, 1243-1248 (2003)

SNO PUBLICATIONS

Carleton Members: A.Bellerive, C.K.Hargrove, R.J.Hemingway, D.Sinclair
X.Dai, F.Dalnoki-Veress, R.Dosanjh, D.Waller
D.Grant, L.Heelan, E.Rollin, O.Simard, G.Tesic
C.Mifflin

A radium assay technique using hydrous titanium oxide adsorbent for the Sudbury Neutrino Observatory. T.C. Andersen et al., Nucl. Instrum. Meth. A501:386-398, 2003

Measurement of radium concentration in water with MN coated beads at the Sudbury Neutrino Observatory. T.C. Andersen et al., Nucl. Instrum. Meth. A501:399-417, 2003

OPAL PUBLICATIONS

Carleton members: A. Bellerive, R.K. Carnegie, M. Donkers, R.J. Hemingway, T. Junk, P. Krieger, H. Mes, K. Sachs, D. Waller

OPAL Collaboration, G. Abbiendi et al.
Search for the Single Production of Doubly-Charged Higgs Bosons and Constraints on their Couplings from Bhabha Scattering, Phys Lett. B577 (2003) 93-108.

OPAL Collaboration, G. Abbiendi et al.
Measurement of Heavy Quark Forward-Backward Asymmetries and Average B Mixing Using Leptons in Hadronic Z Decays, Phys. Lett. B577 (2003) 18-36.

OPAL Collaboration, G. Abbiendi et al.
Measurement of Isolated Prompt Photon Production in Photon-Photon Collisions at $\sqrt{s_{ee}}=183-209$ GeV, Eur. Phys. J. C31 (2003) 491-502.

OPAL Collaboration, G. Abbiendi et al.
Search for pair-produced leptoquarks in e^+e^- interactions at

sqrt(s) = 189 - 209 GeV,
Eur. Phys. J. C31 (2003) 281-305.

OPAL Collaboration, G. Abbiendi et al.
Search for Stable and Long-Lived Massive Charged Particles in e+e-
Collisions at sqrt(s)=183-209 GeV,
Phys. Lett. B572 (2003) 8-20.

OPAL Collaboration, G. Abbiendi et al.
Search for the Standard Model Higgs Boson at LEP,
ALEPH, DELPHI, L3, and OPAL Collaborations,
Phys. Lett. B565 (2003) 61-75.

OPAL Collaboration, G. Abbiendi et al.
Test of non-commutative QED in the process e+e- to gamma gamma at
LEP,
Phys. Lett. B568 (2003) 181-190.

OPAL Collaboration, G. Abbiendi et al.
Bose-Einstein Correlations of Pizero pairs from hadronic Z0 Decays,
Phys. Lett. B559 (2003) 131-143.

OPAL Collaboration, G. Abbiendi et al.
Di-Jet Production in Photon-Photon collisions at sqrt(s)ee from
189 to 209 GeV,
Eur. Phys. J. C31 (2003) 307-325.

OPAL Collaboration, G. Abbiendi et al.
A Measurement of Semileptonic B Decays to Narrow Orbitally-Excited
Charm Mesons,
Eur. Phys. J. C30 (2003) 467-475.

OPAL Collaboration, G. Abbiendi et al.
A measurement of the tau-->mu nu nu branching ratio,
Phys. Lett. B551 (2003) 35-48.

OPAL Collaboration, G. Abbiendi et al.
Search for the Standard Model Higgs Boson with the OPAL Detector
at LEP,
Eur. Phys. J.C26 (2003) 479-503.

OPAL Collaboration, G. Abbiendi et al.
Search for Nearly Mass Degenerate Charginos and Neutralinos at LEP,
Eur. Phys. J. C29 (2003) 479-489.

OPAL Collaboration, G. Abbiendi et al.
Search for a low mass CP-odd Higgs boson in e+e- collisions with
the OPAL detector at LEP2,
Eur. Phys. J. C27 (2003) 483-495.

OPAL Collaboration, G. Abbiendi et al.
Measurement of the Cross-Section for the Process Gamma-Gamma->P
Pbar at sqrt(s)ee=183-189 GeV at LEP,
Eur. Phys. J. C28 (2003) 45-54.

OPAL Collaboration, G. Abbiendi et al.

Multi-Photon Production in e^+e^- Collisions at 181 - 209 GeV,
Eur. Phys.J.C26 (2003) 331-344.

OPAL Collaboration, G. Abbiendi et al.
Charged Particle Momentum Spectra in e^+e^- Annihilation at \sqrt{s}
= 192-209 GeV,
Eur. Phys. J. C27 (2003) 467-481.

OPAL Collaboration, G. Abbiendi et al.
Inclusive Analysis of the b Quark Fragmentation Function in Z
Decays at LEP,
Eur. Phys. J. C29 (2003) 463-478.

OPAL Collaboration, G. Abbiendi et al.
Decay-mode independent searches for new scalar bosons with the
OPAL detector at LEP,
Eur. Phys. J C27 (2003) 311-329.

OPAL Collaboration, G. Abbiendi et al.
Measurement of the Mass of the W Boson in e^+e^- Collisions using
the Fully Leptonic Channel,
Eur. Phys. J. C26 (2003) 321-330.

Publications in Refereed Conference Proceedings in 2003

Author(s)	Title	Conference/Publication
Xiao Bao, S.V. Hoa, X. Bao	Monitoring of cracks and delamination of tapered composites laminates by using embedded extrinsic Fabry-Perot interferometric optical fiber sensors	Cansmart Conference, October 2003, Montreal, Canada
Xiao Bao, S.V. Hoa, and X. Bao	Cracks and delamination detection in composite laminates using embedded fiber optic sensors	Fourth International Workshop on Structural Health Monitoring, July 2003, Stanford, California, US. DES Publications
L. Zou, X. Bao , L. Chen	Novel characteristics of photonics crystal for distributed temperature sensing	Technical Digest of the Optical Fiber Sensor 16, Japan, November, 2003, p. 298-301
L. Zou, G. Ferrier, S. Afshar, X. Bao	Distributed Brillouin scattering sensor as structural health monitoring system for pipeline integrity monitoring	Technical Digest of the Optical Fiber Sensor 16, Japan, October, 2003, p. 806-809
L. Zou, G. Ferrier, S. Afshar, X. Bao	Structural health monitoring of pipeline with distributed Brillouin sensor	First International conference on Structural Health Monitoring and Intelligent Infrastructure, V.1, pp 233-236, Tokyo, Japan, November 13-15, 2003
L. Zou, X. Bao and L. Chen	Distributed temperature sensing using Brillouin scattering in photonic crystal fiber	First International Conference on Structural Health Monitoring and Intelligent Infrastructure, V.1, pp 229-232, Tokyo, Japan, November 13-15, 2003
D. Waddy, L. Chen and X. Bao , D. Harris	Statistics of relative orientation of principal states of polarization in the presence of PMD and PDL	ICAPT (Photonics North), Applications of Photonic Technology, V.6, pp 394-396 (2003)
S. Hadjifaradji, L. Chen, D. Waddy, X. Bao	Directional autocorrelation function of the polarization-mode dispersion vector	ICAPT (Photonics North), Applications of Photonic Technology, V.6, pp 371-376 (2003)
L. Chen, S. Hadjifaradji, X.	Polarization Dependent Loss Autocorrelation in the	ICAPT (Photonics North), Applications of Photonic Technology, V.6 , pp 377-

Bao	Presence of Combined Polarization Mode Dispersion and Polarization Dependent Losses in Optical Fibers	381 (2003)
L. Chen, S. Hadjifaradji, X. Bao	Principal State Vector Autocorrelation in a Fiber Optic System having both Polarization	ICAPT (Photonics North), Applications of Photonic Technology, V.6, pp 382-385 (2003)
S. Hadjifaradji, L. Chen, X. Bao	Analytical Eye Diagram Evaluation due to the Existence of the Polarization Mode Dispersion and Polarization Dependent Loss in Single Mode Fibers	ICAPT (Photonics North), Applications of Photonic Technology, V.6, pp 41-43 (2003)
S. Hadjifaradji, L. Chen, X. Bao	Eye Diagram Evaluation in single mode fibres having polarization mode dispersion, polarization dependent loss and chromatic dispersion	2003 Digest of the LEOS Summer Topical Meetings. TuB4.3, 53-54. IEEE Catalog #: 03TH8701
D. Waddy, L. Chen, X. Bao	Temperature Characteristics of PMD Emulators Using PM Fibers	ICAPT (Photonics North), Applications of Photonic Technology, V.6, pp 321-323 (2003)
L. Zou, X. Bao , L. Chen, D. Liu	Study of Brillouin effects in nonlinear photonics crystal fiber	ICAPT (Photonics North), Applications of Photonic Technology, V.6, pp 284-287 (2003)
L. Chen, O. Chen, S. Hadjifaradji, X. Bao	PMD measurement in a system with PDL/PDG	ICAPT (Photonics North), Applications of Photonic Technology, V.6, pp 386-390 (2003)
D. Waddy, L. Chen, X. Bao	Measurement of Aerial Fiber Galloping Using the State of Polarization	ICAPT (Photonics North), Applications of Photonic Technology, V.6, pp. 391-393 (2003)
K. Al-Qadi, L. Chen, X. Bao	Limitation of the phase shift technique in measuring chromatic dispersion for optical filters	ICAPT (Photonics North), Applications of Photonic Technology, V.6, pp. 74-80 (2003)
D. Waddy, K. Zeng, L. Chen, X. Bao	System Impact of Dynamic PMD Emulation	ICAPT (Photonics North), applications of Photonic Technology, V.6, pp 103-105 (2003)
G.A. Ferrier, S. Afshar V., X. Bao	A New Fitting Method for Spectral Characterization of Brillouin-based Distributed	ICAPT (Photonics North), Applications of Photonic Technology, V.6, pp 512-515 (2003)

Sensors

S. Afshar, G. Ferrier, X. Bao	Impact of EOM extinction ratio on the Brillouin frequency measurement of distributed fiber optic sensors	ICAPT (Photonics North), Applications of Photonic Technology, V.6 , pp 519-522 (2003)
D. Liu, D. Waddy, X. Bao , L. Chen	PMD characterization of photonic crystal fibers	ICAPT (Photonics North), Applications of Photonic Technology, V.6 , pp 316-320 (2003)
D.S. Waddy, D.L. Harris, K. Shimizu, L. Chen, X. Bao , L.G. Kazovsky	The Correlation of Polarization Dependent Loss and Differential Attenuation Slope	CLEO/QELS 2003, Conference in Baltimore, Maryland. June 2003
D.S. Waddy, L. Chen, X. Bao , D.L. Harris	Statistics of Relative Orientation of Principal States of Polarization in the presence of PMD and PDL	ICAPT (Photonics North) 2003
J. Wallace, M. Gherase, L. Bernas, M. Nezamzadeh, I.G. Cameron , A. Cross and G. Santyr	Multi-exponential Analysis of CPMG T2 Decay Curves for ¹²⁹ Xe Dissolved in Perfluoro-octyl Bromide Emulsions: Implications for Hyperpolarized Xenon Agent Development	International Society for Magnetic Resonance in Medicine, Toronto, July 2003
A.M. Smith, P. Fried, M.J. Hogan and I.G. Cameron	An fMRI Investigation of the Effects of Regular Current use of Marijuana on Working Memory	International Cannabinoid Research Society Symposium on the Cannabinoids, June 2003
A.M. Smith, P. Fried, M.J. Hogan and I.G. Cameron	An fMRI Study of the Effects of Prenatal Marijuana Exposure on Visuospatial Working Memory	Organization of Brain Mapping Conference, New York, June 2003
P. Lu, S.J. Mihailov, L. Chen and X. Bao	Importance sampling for polarization mode dispersion and polarization dependent loss	Optical Fiber Communication Conference and Exhibit 2003 Technical Digest MF5
S. Hadjifaradji, L. Chen , D. Waddy and X. Bao	Directional autocorrelation function of the polarization-mode dispersion vector	International Conference on Applications of Photonic Technology, SPIE Vol. 5260 pp. 371-376 (2003)
D. Liu, D.S. Waddy, X. Bao, L. Chen	Temperature-dependent PMD measurement of photonic crystal fibers	International Conference on Applications of Photonic Technology, SPIE Vol. 5260 pp. 316-320 (2003)
D.S. Waddy, L. Chen , X. Bao	Statistics of Relative Orientation of Principal	International Conference on Applications of Photonic Technology,

and D.L. Harris	States of Polarization in the presence of PMD and PDL	SPIE Vol. 5260 pp. 394-396 (2003)
L. Chen , S. Hadjifaradji, D.S. Waddy and X. Bao	Principal State Vector Autocorrelation in a Fiber Optic System having both Polarization mode Dispersion and Polarization Dependent Loss	International Conference on Applications of Photonic Technology, SPIE Vol. 5260 pp. 382-385 (2003)
L. Chen , O. Chen, S. Hadjifaradji and X. Bao	Polarization-mode dispersion Measurement in a system with polarization-dependent loss or gain	International Conference on Applications of Photonic Technology, SPIE Vol. 5260 pp. 386-390 (2003)
L. Chen , S. Hadjifaradji and X. Bao	Polarization Dependent Loss Autocorrelation in the presence of combined Polarization mode dispersion and polarization dependent losses in optical fibers	International Conference on Applications of Photonic Technology, SPIE Vol. 5260 pp. 377-381 (2003)
D.S. Waddy, L. Chen and X. Bao	Measurement of aerial fiber galloping using the state of polarization	International Conference on Applications of Photonic Technology, SPIE Vol. 5260 pp. 391-393 (2003)
D.S. Waddy, L. Chen and X. Bao	Temperature Characteristics of PMD Emulators using PM fibers	International Conference on Applications of Photonic Technology, SPIE Vol. 5260 pp. 321-323 (2003)
D.S. Waddy, K.-C. Zeng, L. Chen and X. Bay	System Impact of Dynamic PMD Emulations	International Conference on Applications of Photonic Technology, SPIE Vol. 5260 pp. 103-105 (2003)
S. Hadjifaradji, L. Chen and X. Bao	Analytical Eye Diagram Evaluation due to the existence of Polarization mode dispersion and Polarization dependent loss in single mode fibers	International Conference on Applications of Photonic Technology, SPIE Vol. 5260 pp. 41-43 (2003)
K. Al-Qadi, L. Chen and X. Bao	Limitation of the phase shift technique in measuring chromatic dispersion for optical filters	International Conference on Applications of Photonic Technology, SPIE Vol. 5260 pp. 74-80 (2003)
D.S. Waddy, D.L. Harris, K. Shimizu, L. Chen , X. Bao and L.G. Kazovsky	The correlation of polarization dependent loss and differential attenuation slope	CLEO/QELS 2003 (Conference on Lasers and Electro Optics/Quantum Electronics and Laser Science Conference) CThT6. Baltimore, Maryland, USA
S. Hadjifaradji, L. Chen and X.	Eye Diagram Evaluation in Single Mode Fibers having	2003 Digest of the LEOS Summer Topical meetings, Session on

Bao	Polarization Mode Dispersion, Polarization Dependent Loss and Chromatic Dispersion	Polarization mode dispersion, pp. 53-54
L. Zou, X. Bao and L. Chen	Novel characteristics of photonics crystal for distributed temperature sensing	Technical Digest of the Optical Fiber Sensor 16, Japan, November 2003, pp. 298-301
L. Zou, X. Bao and L. Chen	Distributed temperature sensing using Brillouin scattering in photonic crystal fiber	First International Conference on Structural Health Monitoring and Intelligent Infrastructure, V. 1 pp. 229-232, Tokyo, Japan, November 13-15 (2003)
L. Zou, X. Bao, L. Chen , D. Lku	Study of Brillouin effects in nonlinear photonics crystal fiber	SPIE Vol. 5260, pp. 284-287 (2003)
G.A. Ferrier, S. V. Afshar, X. Bao, L. Chen	A new fitting method for spectral characterization of Brillouin-based distributed Sensors	SPIE Vol. 5260 pp. 512-515 (2003)
S.V. Afshar, G.A. Ferrier, X. Bao and L. Chen	Impact of EOM extinction ratio on the Brillouin frequency measurement of distributed fiber optic sensors	SPIE Vol. 5260, pp. 519-522 (2003)
S. Desgreniers , R. Flacau, D. Klug and J. Tse	Dense Noble Gas Hydrates: Crystalline Structures	AIRAPT 19 and EHPRG 23, Bordeaux, France (2003)
J.S. Loveday, R.J. Nelmes, D. Klug, J. Tse and S. Desgreniers	Clathrate Hydrates at High Pressure	AIRAPT 19 and EHPRG 23, Bordeaux, France (2003)
B.J. Jarosz , S. St. James	Integrated Temperature Sensor for Determination of Heating Effects by Ultrasound Interstitial Applicator	Proceedings, 20 th IEEE Instrumentation and Measurement Technology Conference, May 20-22, 2003, Vail, CO, pp. 792-796
P.C. Johns	Seminar to the medical imaging research group at Sunnybrook and Women's College Health Sciences Centre/University of Toronto, Toronto	The Physics of X-Ray Scatter Imaging, June 23, 2003
P.C. Johns	Presentation, Workshop on The Present and Future of Cancer Research in Ottawa, Ottawa Hospital Cancer Program	Ottawa Medical Physics Institute (OMPI) – An Introduction – June 19, 2003

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| B. Lindner, and A. Longtin , | Nonrenewal spike trains generated by stochastic neuron models | SPIE Proceedings, Fluctuations and Noise conference, Santa Fe, June 2003 (10 pages) |
| B. Doiron, A. Longtin , and B. Lindner. | Oscillatory network coding of a global stimulus | SPIE Proceedings, Fluctuations and Noise conference, Santa Fe, June 2003 (10 pages) |

Other Conference Presentations and Posters in 2003

Author(s)	Title	Conference
A. Bellerive	Solar neutrino experiments	Invited Review Talk, 21st International Symposium on lepton and photon interactions at high energies, FNAL, 14 August 2003
A. Bellerive	Constraints on neutrino mixing parameters with the SNO data	Invited Talk, PHYSTAT2003 – Statistical problems in particle physics, astrophysics, and cosmology, SLAC, 9 sept. 2003
T. Brabec	Intense laser field workshop	Invited - Ann Arbor, U. of Michigan, June 2003
T. Brabec	Nonlinear wave phenomena	Invited – Moscow, July 2003
T. Brabec	Ultrafast dynamic imaging workshop	Invited - Sherbrooke, Oct. 2003
T. Brabec	Attosecond workshop	Invited - Harvard – Nov. 2003
A. Smith, P. Fried, M. Hogan and I.G. Cameron	The Effects of Prenatal and Current Marijuana Exposure on Response Inhibition: A Functional Magnetic Resonance Imaging Study	3 rd Annual Rotman Research Institute Neuroimaging of Cognitive Function Conference, Toronto, March 2003
R. Flacau, J.S. Tse and S. Desgreniers	Electronic Charge Distribution and Structural Changes at High Density: Maximum Entropy Method and Rietveld Analysis of Synchrotron X-ray Diffraction Data	IUPAC General Assembly, Ottawa, Canada (2003)
S. Desgreniers , R. Flacau, D.D. Klug and J.S. Tse	Dense Noble Gas Hydrates: Phase Stability and Crystalline Structures	SMEC 2003, Florida, USA. March 2003 (invited talk)
J.S. Loveday, R.J. Nelmes, D.D. Klug, J.S. Tse and S. Desgreniers	High Pressure Structural Systematics in the Clathrate Hydrates	SMEC 2003, Florida, USA. March 2003 (invited talk)
M. D'lorio	Dispositifs électroluminescents organiques	Univ. de Montréal, January 10 th , 2003
M. D'lorio	Nanotechnology- an integration challenge	Univ. of Ottawa, 50 th Anniversary of the Faculty of Science – invited talk, March 6 th , 2003
M. D'lorio	MRS Breakfast meeting for Women in materials science and	San Francisco, April 22, 2003

M. D'lorio	engineering Les nanostructures semiconductrices – une fenêtre sur l'information quantique	Univ. Of Ottawa's Frontiers of Research Talks, November 13th, 2003
S. Godfrey	Quarkonium Spectroscopy : Potential Model Predictions, Missing States, and Puzzles and Problems	International Workshop on Heavy Quarkonium, Sept. 20-22, 2003, Fermilab, Chicago
S. Godfrey	Hybrid Quarkonium Phenomenology	2 nd International Workshop on Heavy Quarkonium, Sept. 20-22, 2003, Fermilab, Chicago
O. Martinez, B.J. Jarosz	Power requirements for ultrasound interstitial heating of brain gliomas	COMP/CCPM 49 th Ann. Sci. Mtg., June 5-7, Edmonton, AB, 214-216, 2003 (Abstract in Med. Phys., Vol. 30, 2003)
P.C. Johns , M.P. Wismayer, and R.J. Leclair	Methods of Measuring X-Ray Scatter Cross Sections for Medicine	Poster #14 at the 49 th Annual Meeting of the Canadian Organization of Medical Physicists, Edmonton, Alberta (5-7 June 2003). [Abstract: Medical Physics 30, 1941 (2003)]
M. Wallace, B. Joós and M. Plischke	Reversible gelation in polymer melts with van der wlls interaction	APS Meeting, Austin, TX, March 2003 (Abstract no. P18.003); and CAP Congress, June 2003, Charlottetown, PEI (Abstract no. TU-A3-5, www.cap.ca)
M.J. Chacron, A. Longtin , et al	Sensory coding in electric fish	Neuronal Coding V, Aulla, Italy, September 2003 (invited)
A. Longtin	Deterministic and stochastic dynamics of eye movements during reading" (invited)	Fields Institute, Applications of Mathematics in Medicine, July 2003 (invited)
A. Longtin	Minisymposium: "Delay-differential equations in Biology"	SIAM/CAIMS Annual Joint Meeting, Montreal, June 2003 (invited)
A. Longtin	Minisymposium "Stochastic Modeling in Biology"	SIAM/CAIMS Annual Joint Meeting, Montreal, June 2003 (invited)
A. Longtin	Minisymposium. "Noisy Synchronization"	SIAM Dynamical Systems, Snowbird, Utah, May 2003 (invited)
A. Longtin	Minisymposium. "Dynamics of Nonlinear Systems with Memory"	SIAM, Snowbird, Utah, May 2003 (invited)
M.J. Chacron, A. Longtin , et al	Nonlinear dynamics of electroreceptors	Banff Intern. Res. Station, Banff, Alberta, May, 2003.
B. Doiron, A. Longtin , et al	Oscillations in delayed feedback sensory processing	Banff Intern. Res. Station, Banff, Alberta, May, 2003

A. Longtin (invited)	Learning neural computing from electric fish	Neural Coding Conf., Latsis Brain-and-Mind Inst., École Polytech. Fédérale, Lausanne, Feb. 2003
S. Katsev, I. L'Heureux and D.G. Rancourt	Numerical Models of phosphorus releases in sediments	Gordon Research Conference on Permeable Sediments, Lewiston (Maine), June 15-20 (2003)
Poster presented by S. Katsev: S Katsev and I. L'Heureux	Spurious fractal scaling detection in short time series containing jump or spikes	European Geophysical Union meeting, Nice (France), April 7-11, 2003
Poster presented by S. Katsev: S. Katsev, I. L'Heureux and D.G. Rancourt	dSED: A database tool for modeling sediment early diagenesis	European Geophysical Union meeting, Nice (France), April 7-11, 2003
D.G. Rancourt , I. L'Heureux, S. Katsev, B. George, C. McDonald	Lake Sediment Structure and Evolution (LSSE) research: Towards predictive reaction transport models	Talk, 38 th Central Canadian Symposium on Water Quality Research, organized by CAWQ and hosted by NWRI, Burlington, Ontario, February 10-11, 2003
S. Katsev, I. L'Heureux, D.G. Rancourt	Modeling the mechanisms of phosphorous releases from sediments	Poster, EGS-AGU-EUG Joint Assembly, Nice, France, April 2003
S. Katsev, D.G. Rancourt , I. L'Heureux	DSED : A database tool for modeling sediment early diagenesis	Poster, EGS-AGU-EUG Joint Assembly, Nice, France, April 2003
D.G. Rancourt	Influence of Bacteria on the Sequestration of Iron and the Precipitation of Hydrous Ferric Oxides: A Cryogenic ⁵⁷ Fe Mössbauer Spectroscopy Study.	Talk, International Workshop on Biogeochemical Processes Involving Iron Minerals in natural Waters, November 16-21, 2003, Monte Verita, Switzerland. Extended abstract published in abstract book.
C. van der Zee, D.R. Roberts, D.G. Rancourt , C.P. Slomp	Nanogoethite is the dominant reactive iron oxyhydroxide phase in lake and marine sediments	Talk, International Workshop on Biogeochemical Processes Involving Iron Minerals in Natural Waters, November 16-21, 2003, Monte Verita, Switzerland. Extended abstract published in abstract book.
C. Hyacinthe, H. De Waarde, D.G. Rancourt , P. Van Cappellen	Formation and reactivity of iron phosphate minerals	Talk, International Workshop on Biogeochemical Processes Involving Iron Minerals in Natural Waters, November 16-21, 2003, Monte Verita, Switzerland. Extended abstract published in abstract book.
F. Gonzalez-Lucena, D.G. Rancourt , P.-J. Thibault, M.-Z. Dang, G.	Mineral magnetometry of synthetic micro-crystalline and nanophase iron oxides and oxyhydroxides	Talk, International Workshop on Biogeochemical Processes Involving Iron Minerals in Natural

Lamarche, J.E. Dutrizac, A. Delgado, S. Bonneville, T. Behrends		Waters, November 16-21, 2003, Monte Verita, Switzerland. Extended abstract published in abstract book.
J. Wallace, M. Gherase, L. Bernas, M. Nezamzadeh, I. Cameron, A. Cross and G. Santyr	Multiexponential Analysis of CPMG T ₂ Decay Curves for ¹²⁹ Xe Dissolved in Perfluorooctyl Bromide Emulsions: Implications for Hyperpolarized Xenon Contrast Agent Development	Intl. Society of Magnetic Resonance in Medicine, Toronto 2003
J. Wallace, L. Bernas, A. Cross, M. Gherase, G. Cron and G. Santyr , T ₁	Relaxation Times and Chemical Shifts of Hyperpolarized Xenon Dissolved in PFOB Emulsions Mixed in Blood Plasma: Comparison of Large and Small Droplet Sizes	Intl. Society of Magnetic Resonance in Medicine, Toronto 2003
G. Cron, F. Kelcz and G. Santyr	Improvement in Breast Lesion Characterization Using Pharmacokinetic Modelling with Bookend T ₁ Measurements	Intl. Society of Magnetic Resonance in Medicine, Toronto 2003
J. Parra-Robles, A. Cross and G. Santyr	Field Dependence of Chemical Exchange of Hyperpolarized ¹²⁹ Xe Dissolved in Perfluorocarbon Emulsions: Toward Low Field Imaging of Tissue-Dissolved Hyperpolarized Xenon	Intl. Society of Magnetic Resonance in Medicine, Toronto 2003
A. Cross, G. Santyr , T. Rnad, G. Cron, J. Wallace and N. Abdeen	<i>In Vivo</i> Spectroscopy of Hyperpolarized ¹²⁹ Xe in Fungal- spore Inflamed Rat Lungs	Society of Magnetic Resonance in Medicine, Toronto 2003
J. Wallace, A. Cross, L. Bernas, M. Gherase and G. Santyr	Flow Measurements Using Hyperpolarized ¹²⁹ Xe in a Perfluorocarbon Carrier Injected in a Hollow-Fibre Capillary Model of a Breast Tumour	Reasons for Hope Conference, Ottawa 2003
G. Cron, J. Wallace and G. Santyr	Measurement of Blood Flow and Tissue Cell Volume Fraction in Rodent Mammary Tumours with Quantitative Dynamic Contrast- Enhanced Magnetic Resonance Imaging	University of Toronto Breast Cancer Symposium 2003
W.D. Stevens, G. Cron, B. Pappas, G. Santyr and C. Grady	Quantification of Cerebral, Retinal and Vertebral Blood Flow in Rat Models Ischemia: An MRI Study	Society of Neuroscience, New Orleans 2003
G. Santyr	MRI at Ultralow Magnetic Field Strength Using Hyperpolarized Xenon	Robert's Research Institute, London, ON, 2003

G. Santyr	MR Imaging of the Lungs using Hyperpolarized Xenon Gas	Maynard-Phillips Summer School, Oxford, UK, 2003
G. Santyr	Research Progress in the Development of H-Xe Contrast Agents for Breast Cancer Detection	OCEBCIR Workshop, Toronto, ON, 2003
D. Sinclair	Latest Results from SNO and SNOLAB	Invited talk, Western Regional Conference on Particle and Nuclear Physics, Lake Louise, February 2003
Y. Gratton, G. W. Slater	Molecular Dynamics of a polymer tethered to a solid surface in a flow	Poster presentation at the 75 th Annual Meeting of the Society of Rheology, Pittsburg, October 2003
M. Kenward, F. Tessier, Y. Tatek, Y. Gratton, S. Guillouzic and G.W. Slater	Molecular Dynamics Simulations of Polymers in Micro-environments	Oral presentation at the 17th Annual International Symposium on High Performance Computing Systems and Applications, Université de Sherbrooke, May 11-14 (2003)
B. Buchholz, A.E. Barron, M. Kenward, G. W. Slater	Exploiting a Transient Elongational Flow Field to Prepare Monodisperse Polymer Samples by Midpoint Chain Scission	Oral presentation at the 2003 Annual Meeting of the American Institute of Chemical Engineers (Joint with The Electrophoresis Society), San Francisco, Nov. 16-21
G. W. Slater	Nanofluidics: new physics, new devices, new frontiers	INVITED oral (plenary) presentation at the 2003 Annual Meeting of the American Institute of Chemical Engineers (Joint with The Electrophoresis Society), San Francisco, Nov. 16-21
G. W. Slater, M. Kenward	Molecular Dynamics Simulations of Polymer/post collisions	INVITED oral presentation at the 2003 Annual Meeting of the American Institute of Chemical Engineers (Joint with The Electrophoresis Society), San Francisco, Nov. 16-21.
G.W. Slater, M.G. Gauthier	Building lattice random-walk models for drift and diffusion problems	Oral presentation at the CAP Annual Congress, Charlottetown, June 8-11. Abstract in: Physics in Canada (2003) 59, May-June issue, p. 91
M. Kenward, G. W. Slater	Polymer Collisions in Microfluidic Systems: An Investigation of Hydrodynamic Effects using Molecular Dynamics Simulations	Oral presentation at the First Annual Workshop of the Canadian Network for Computational Materials Science (CNCMS 1), McMaster University, May 25-27, 2003
Y. Gratton, G.W. Slater	Equilibrium and Nonequilibrium Molecular Dynamics Study of a Highly Stretched Polymer in a Good	Poster presentation at the March Meeting of the American Physical Society, Austin (Texas) 2003

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G.W. Slater , S. Guillouzic	Simulation of polymer translocation through a nanoscopic hole: a Molecular Dynamics Study	Oral presentation at the March Meeting of the American Physical Society, Austin (Texas) 2003
J.-F. Mercier, G. W. Slater , P. Mayer	Solid Phase DNA Amplification: A Simple Monte Carlo Lattice Model A lattice model of the Ogston regime of gel electrophoresis: generalization to treat high electric field intensities	Poster presentation at the March Meeting of the American Physical Society, Austin (Texas) 2003
F. Tessier, G.W. Slater	Molecular Dynamics Simulations of Electrosmotic Flow in Nanofluidic Capillaries	Oral presentation at the March Meeting of the American Physical Society, Austin (Texas) 2003
M. Kenward, G.W. Slater	Molecular Dynamics simulations of polymer/post collisions with explicit hydrodynamic interactions	Oral presentation at the March Meeting of the American Physical Society, Austin (Texas) 2003
G.W. Slater , T. Beveridge, J. Dutcher	Biofilms and polymers at interfaces	Annual meeting of the Emerging Materials Knowledge Network grantees, Toronto - 2003

Other Presentations in 2003

Speaker(s)	Title	Location
X. Bao	Development and applications of the distributed Brillouin sensors	OPRA/LEOS/NRC Workshop on Optical Sensors, March 11, 2003
X. Bao	Distributed fibre sensor for pipeline applications	Husky Energy and Colt Engineering Corporation, Calgary, Alberta, June 26, 2003
X. Bao	Stress measurement for pipelines with Brillouin sensors	Trans Canada Pipelines Limited, Calgary, Alberta, June 27, 2003
X. Bao	Development and applications of the distributed Brillouin sensor systems	ISIS Canada/Europe workshop, October 22, 2003
X. Bao	Development and applications of the distributed temperature and strain sensor system	PRO/McMaster University, Workshop – Optical Fibre Sensors and their applications – October 24, 2003
X. Bao	Structural health monitoring on concrete structures using distributed strain sensor	Nanjing Urban and Tunnel Development Co. China – November 17, 2003
X. Bao	Development and application of the distributed strain and temperature sensors	Earth Engineering Department, Nanjing University, China – November 18, 2003
X. Bao	Fiber vibration sensor for two hinge suspension bridge using novel SOP method	Runyang Yantze River Highway Bridge Project, Zhenjiang, Jiangsu, China – November 19, 2003
T. Brabec	Ultrafast photonics and applications	Carleton University – Physics Dept. – March 2003
T. Brabec	Ultrafast photonics and applications	NRC – IMS – April 2003
T. Brabec	Ultrafast photonics and applications	NRC – Steacie Institute – May 2003
T. Brabec	Ultrafast photonics and applications	Queens University – HPCVL Symposium – Sept. 2003
T. Brabec	Ultrafast photonics and applications	Kansas State University – Physics Dept. – Dec. 2003
S. Desgreniers	Hydrates de gaz nobles à haute densité: la systématique des structures cristallines. Commissariat de l'énergie atomique, Département de la physique théorique et appliquée	Commissariat de l'énergie atomique, Département de la physique théorique et appliquée. Service de la physique de la matière condensée, Bruyères-le Chatel, France (15 décembre 2003)

S. Desgreniers	Hydrates de gaz nobles à haute densité: la systématique des structures cristallines	Laboratoire des milieux condensés. UMR, CNRS, Université Pierre et Marie Curie, Paris, France. (1 ^{er} décembre 2003)
S. Desgreniers	En Route to the Centre of the Earth and Other Interesting Side Trips	CAP Lecture, University of Guelph, Department of Physics, Guelph, March 18, 2003
S. Godfrey	Physicists find Rebel Particle	OCIP Christmas Symposium, December 19, 2003, Univ. of Ottawa
S. Godfrey	What's New in the New Spectroscopy? Towards an Understanding of the Strong Interactions	Physics Department, University of Adelaide, May 8, 2003
S. Godfrey	What's New in the Old New Spectroscopy? Towards an Understanding of the Strong Interactions	Physics Department, University of Victoria, January 15, 2003
S. Godfrey	Around the World with Physics (Weather Wine and Kangaroos)	Physics Department, Carleton University, November 24, 2003
S. Godfrey	Deconstructing the Charm and Charm-Strange P-wave Mesons	TRIUMF, Vancouver, August 19, 2003
S. Godfrey	Special Research Centre for the Subatomic Structure of Matter. Beyond the Standard Model Physics at Future Colliders	University of Adelaide, Adelaide Australia, May 13, 2003
S. Godfrey	Special Research Centre for the Subatomic Structure of Matter. Recent Developments in Quarkonium Spectroscopy	University of Adelaide, Adelaide Australia, March 4, 2003
S. Godfrey	Special Research Centre for the Subatomic Structure of Matter. A Pedagogical Introduction to the Quark Model	University of Adelaide, Adelaide Australia, March 3, 2003
S. Godfrey	TRIUMF Theory Group. Recent Developments in Quarkonium Spectroscopy	TRIUMF Vancouver, January 14, 2003
C.L. Greenstock	The Value of a Radiation Index and Performance Measures in Radiation Protection, Site Safety & Health Committee	Chalk River Laboratories, January 15, 2003
C.L. Greenstock	Radiation Protection Issues Concerning Food in the Controlled Area 2	Chalk River Laboratories, December 14, 2003

P.C. Johns	Weekly seminar: Scattered X-Rays as a Diagnostic Tool for Medicine	September 29, 2003
P.C. Johns	OMPI Seminar: Radiologic Image Quality, Dose, Quality Assurance and the Physicist	January 16, 2003
B. Joós	A lattice model for the kinetics of membrane rupture	Seminar, Department of Physics, Simon Fraser University, July 2003
A. Longtin	Delay-differential dynamics in computational neuroscience	University of Guelph, Department of Mathematics, Nov. 2003
A. Longtin	Neural coding and weakly electric fish	McGill University, Department of Physiology, Oct. 2003
I. L'Heureux	Volcanic rocks, ore deposits and lake bottoms: pattern formation in minerals	University of Ottawa, April 4, 2003
I. L'Heureux	From volcanic rocks to lake bottoms: pattern formation in minerals	University of Western Ontario, Feb. 19, 2003
D.G. Rancourt	L'eau, le pétrole, l'Irak et Kyoto. Keynote speaker, Projet culturel et communautaire, Programme Science, lettres et arts (SLA), 2003	CEGEP de l'Outaouais, Hull, Québec, March 20, 2003
D.G. Rancourt	Biogeochemistry of aquatic particles and potential applications for novel particle size distribution analysers	BrightWELL Technologies Inc., Ottawa, May 14, 2003
D.G. Rancourt	Keeping environmental research alive and well	Editorial, University of Ottawa <i>Gazette</i> , March 14, 2003 publication date, Volume XV, 7, back page (page 12)
D.G. Rancourt	Why take physics? <i>The Fulcrum</i> , student newspaper	University of Ottawa, September 4-10, 2003, page 3. (Opinion Letter)
G. Santyr	Recent Research Results from the Carleton Magnetic Resonance Facility	Biomedical Engineering Career Day, Carleton University, Ottawa, ON, 2003
D. Sinclair	Scientific Breakthroughs at the Sudbury Neutrino Observatory	Davidson Dunton lecture, Carleton University, March 2003

Technical Reports (unpublished) in 2003

C.L. Greenstock	Safety and Health Performance Report for 2003	AECL Report AECL-MISC-391-02, 2003
C.L. Greenstock	Food Pass Procedure for Use in a Controlled Area 2	CRL Publication CW-12-02, 2003
C.L. Greenstock	Radiological Safety Zoning for the Waste Treatment Centre	AECL Report ZP-11, 2003
C.L. Greenstock	Radiological Safety Zoning for the Heavy Water Upgrading, Storage and Detritiation	AECL Report ZP-19, 2003
C.L. Greenstock	Radiological Safety Zoning for the Waste Management Operations Administrative Building	AECL Report ZP-77, 2003
C.L. Greenstock	Radiation Protection Program Review for 2003	AECL Report RadP-01900-QAPR-002
C.L. Greenstock	Personnel and Equipment Monitoring for Tritium Contamination	AECL Report BSP-4203, 2003

Members of the Institute in 2003

J.C. Armitage	Instrumentation / Photonics	C
Xiaoyi Bao	Fiber Optics	O
Thomas Brabec	Photonics	O
A. Bellerive	Experimental Particle Physics	C
M. Cada	Integrated Active Photonics	O- Adjunct
Ian Calder	Semiconductor Physics	O- Adjunct
Ian Cameron	Medical Physics	C-Adjunct
R.K. Carnegie	Experimental Particle Physics	C
Sylvain Charbonneau	Semiconductor Physics	O-Adjunct
Liang Chen	Photonics	O
R.L. Clarke	Medical Physics	C-Adjunct
Paul Corkum	Femtsecond Science	O- Adjunct
Joanna Cygler	Medical Physics	C-Adjunct
Robert deKemp	Medical Physics	C-Adjunct
Serge Desgreniers	High Pressure Physics	O
Marie D'lorio	Semiconductor Physics	O-Adjunct
Madhu Dixit	Experimental Particle Physics	C-Adjunct
Simon Fafard	Semiconductor Physics	O-Adjunct
Paul Finnie	Organic Materials and Devices	O- Adjunct
Emery Fortin	Semiconductor Physics	O -Emeritus
L.H. Gerig	Medical Physics	C-Adjunct
Stephen Godfrey	Theoretical Particle Physics	C
C.L. Greenstock	Medical Physics	C-Adjunct
C.K. Hargrove	Experimental Particle Physics	C-Adjunct
Pawel Hawrylak	Theoretical Condensed Matter	O-Adjunct
R.J. Hemingway	Experimental Particle Physics	C
R.J.W. Hodgson	Condensed Matter Theory	O

B.J. Jarosz	Medical Physics	C
P.C. Johns	Medical Physics	C
Béla Joós	Theoretical Condensed Matter	O
Pat Kalyniak	Theoretical Particle Physics	C
G. Lam	Medical Physics	C-Adjunct
Gilles Lamarche	Low Temperature Physics	O-Adjunct
M.A.R. LeBlanc	Superconductivity	O
Ivan L'Heureux	Non-linear Dynamics	O
André Longtin	Nonlinear Dynamics, Biological Physics	O
Barry McKee	Medical Physics	C-Adjunct
H.J.A.F. Mes	Experimental Particle Physics	C-Adjunct
Stephan Mihailov	Electrophotonics	O-Adjunct
R. Munger	Medical Physics	O-Adjunct
Cheng Ng	Medical Physics	C-Adjunct
F.G. Oakham	Experimental Particle Physics	C
Peter Piercy	Surface Physics	O
G.P. Raaphorst	Medical Physics	C-Adjunct
D.G. Rancourt	Earth and Planetary Materials	O
Sylvain Raymond	Experimental Condensed Matter	O-Adjunct
D.W.O. Rogers	Medical Physics	C
W.J. Romo	Theoretical Particle Physics	C
Giles Santyr	Medical Physics	C
Ken Shortt	Medical Physics	C-Adjunct
W.D. Sinclair	Solar Neutrino Physics	C
G.W. Slater	Polymer Physics	O
A.K.S. Song	Condensed Matter Theory	O- Adjunct
Z.M. Stadnik	Experimental Condensed Matter	O
M.K. Sundaresan	Theoretical Particle Physics	C
John Tse	Computational Physics	O-Adjunct

Y.P. Varshni	Theoretical Solid State, Astrophysics	O
T. Waker	Medical Physics	C-Adjunct
P.J.S. Watson	Theoretical Particle Physics	C
Robyn Williams	Semiconductor Physics	O-Adjunct
R. Wilkins	Medical Physics	C-Adjunct
D. Wilkins	Medical Physics	C-Adjunct
J.C. Woolley	Semiconductor Physics	O – Emeritus

Graduate Students at the Institute in 2003

Student	Registered	Supervisor(s)	Completed
<i>Abdeen, Nishard</i>	<i>(C) MSc Sep-02</i>	<i>Santyr</i>	
<i>Allen, Claudine</i>	<i>(O) PhD Jan-01</i>	<i>Fafard, Raymond</i>	
<i>Al-Qadi, Khalid</i>	<i>(O) PhD Sep-01</i>	<i>Bao</i>	
<i>Awirothananon, Sunida</i>	<i>(O) PhD Sep-02</i>	<i>Fafard, Raymond</i>	
<i>Babineau, David</i>	<i>(O) MSc Sep-03</i>	<i>Longtin/Lewis</i>	
<i>Barrie, Gregory</i>	<i>(O) PhD Jan-1</i>	<i>Bao</i>	
<i>Beckwith, Paul</i>	<i>(O) PhD Sep-03</i>	<i>Bao</i>	
<i>Boileau, Justin</i>	<i>(O) MSc May-99</i>	<i>Slater</i>	
<i>Bouchard, Line</i>	<i>(O) MSc Sep-03</i>	<i>Bao</i>	
<i>Boucher, Pierre-Alexandre</i>	<i>(O) MSC Sep-03</i>	<i>Joòs</i>	
<i>Buckley, Lesley</i>	<i>(C) PhD Sep-01</i>	<i>Rogers</i>	
<i>Chacron, Maurice</i>	<i>(O) PhD Jan-00</i>	<i>Longtin</i>	<i>Completed</i>
<i>Charron, Luc</i>	<i>(O) M.Sc. Sept –02</i>	<i>Fortin</i>	
<i>Chen, Ou</i>	<i>(O) MSc Sep-01</i>	<i>Bao</i>	
<i>Crisan, Simona</i>	<i>(O) MSc Sep-00</i>	<i>Slater</i>	
<i>Doiron, Brent</i>	<i>(O) PhD May-01</i>	<i>Longtin</i>	
<i>Donkers, Michael</i>	<i>(C) PhD Sep-97</i>	<i>Hemingway</i>	<i>Completed</i>

<i>Duggal, Clifford</i>	<i>(C) MSc Sep-03</i>	<i>Gerig</i>	
<i>Dybalski, Wojciech</i>	<i>(O) PhD Sep-03</i>	<i>Hawrylak</i>	
<i>Evans, James</i>	<i>(O) PhD May-01</i>	<i>Rancourt</i>	
<i>Ferrier, Graham</i>	<i>(O) MSc Sep-00</i>	<i>Bao</i>	
<i>Flacau, Roxana</i>	<i>(O) MSc Sep-01</i>	<i>Desgreniers</i>	
<i>Frederick, Simon</i>	<i>(O) PhD Sep-03</i>	<i>Williams</i>	
<i>Gao, Zhanrong</i>	<i>(C) PhD Sep-01</i>	<i>Santyr</i>	
<i>Garcia Fernandex, Lourdes Maria</i>	<i>(C) MSc Sep-03</i>	<i>Raaphorst / Wilkins</i>	
<i>Gauthier, Alain</i>	<i>(O) MSc Sep-03</i>	<i>Joòs</i>	
<i>Gauthier, Michel</i>	<i>(O) MSc Jan-01</i>	<i>Slater</i>	
<i>Ghasroddashti, Esmaeel</i>	<i>(C) PhD Jan-02</i>	<i>Gerig</i>	
<i>Gherase, Mihai</i>	<i>(C) PhD Sep-01</i>	<i>Santyr</i>	
<i>Gorjanc, Timothy</i>	<i>(O) PhD Jan-99</i>	<i>D'lorio</i>	
<i>Gratton, Yannick</i>	<i>(O) MSc Jan-02</i>	<i>Slater</i>	
<i>Hasan, Ziaul</i>	<i>(C) MSc Sept-01</i>	<i>Johns</i>	<i>Completed MSc.</i>
<i>Heelan, Louise Ann</i>	<i>(C) MSc Sep-03</i>	<i>Hemingway</i>	
<i>Hnatovsky, Kyrylo</i>	<i>(O) PhD Sept-02</i>	<i>Brabec</i>	
<i>Hubert, Sylvain</i>	<i>(O) PhD Sep-96</i>	<i>Slater</i>	
<i>Kenward, Martin</i>	<i>(O) PhD May-01</i>	<i>Slater</i>	
<i>Knight, Gary</i>	<i>(O) PhD Sep-00</i>	<i>Hodgson, Smy</i>	
<i>Korkusinski, Marek</i>	<i>(O) PhD Sep-01</i>	<i>Hawrylak</i>	
<i>Larsson, Carey</i>	<i>(C) PhD Jan-02</i>	<i>DeKemp</i>	
<i>Leblanc, Pierre</i>	<i>(O) MSc Sep-01</i>	<i>Fortin</i>	
<i>Leblanc, Serge</i>	<i>(O) MSc Sept-02</i>	<i>Bao</i>	
<i>Martinez, Jose</i>	<i>(C) PhD Sep-01</i>	<i>Jarosz</i>	
<i>McCormick, Laurette</i>	<i>(O) PhD May-01</i>	<i>Slater</i>	
<i>Mercier, Jean-Francois</i>	<i>(O) PhD May-99</i>	<i>Slater</i>	
<i>Mercier, Patrick</i>	<i>(O) PhD Sep-96</i>	<i>Rancourt</i>	
<i>Middleton, Jason</i>	<i>(O) PhD Sep-01</i>	<i>Longtin</i>	
<i>Mullins, Dana</i>	<i>(C) MSc Sep-01</i>	<i>Ng</i>	<i>Completed MSc</i>

<i>Myint, Kenji</i>	<i>(C) PhD Sep-01</i>	<i>Gerig</i>	
<i>Nezamzadeh, Marzieh</i>	<i>(C) PhD Jan-02</i>	<i>Cameron</i>	
<i>Nisar, Mohammad</i>	<i>(C) MSc Sep-02</i>	<i>Johns</i>	
<i>Nixon, Grant</i>	<i>(O) PhD Sep-94</i>	<i>Slater</i>	
<i>Nkongchu, Ken</i>	<i>(C) MSc Sep-01</i>	<i>Santyr</i>	
<i>Olariu, Elena</i>	<i>(C) PhD May-03</i>	<i>Cameron</i>	
<i>Parra Robles, Juan</i>	<i>(C) PhD Jan-00</i>	<i>Santyr</i>	
<i>Prévost, Jean-Paul</i>	<i>(O) PhD Jan-01</i>	<i>Rancourt</i>	
<i>Ramsey, Jamie</i>	<i>(O) MSc Sep-00</i>	<i>Williams</i>	
<i>Ravet, Fabien</i>	<i>(O) M.Sc. Jan-03</i>	<i>Bao</i>	
<i>Rollin, Etienne</i>	<i>(C) MSc Sep-02</i>	<i>Bellerive</i>	
<i>Schram, Malachi</i>	<i>(C) PhD Sep-02</i>	<i>Oakham</i>	
<i>Sego, Zdenko</i>	<i>(C) MSc Sep-03</i>	<i>Rogers</i>	
<i>Simard, Olivier</i>	<i>(C) PhD Sep-02</i>	<i>Bellerive</i>	
<i>Smelser, Christopher</i>	<i>(O) PhD Sep-03</i>	<i>Mihailov</i>	
<i>Taylor, Jason</i>	<i>(O) Ph.D. Jan-03</i>	<i>Charbonneau, Cada</i>	
<i>Tesic, Gordana</i>	<i>(C) Ph.D Sep-03</i>	<i>Bellerive</i>	
<i>Tessier, Frederic</i>	<i>(O) PhD Sep-99</i>	<i>Slater</i>	
<i>Tonkopi, Elena</i>	<i>(C) MSc Sep-03</i>	<i>Rogers</i>	
<i>Truica, Sorina</i>	<i>(C) PhD Sep-02</i>	<i>Cameron</i>	
<i>Tsandev, Iana</i>	<i>(O) MSc May 03</i>	<i>L'Heureux</i>	
<i>Valdes, Marcelo</i>	<i>(C) MSc Jan-98</i>	<i>Sundaresan</i>	<i>Completed</i>
<i>Waldron, Derek</i>	<i>(O) MSc Sept-02</i>	<i>Hodgson</i>	<i>Completed</i>
<i>Walker, Robert</i>	<i>(O) MSc Sep-01</i>	<i>Bao</i>	
<i>Wallace, Matthew</i>	<i>(O) MSc Sep-03</i>	<i>Joòs</i>	
<i>Waller, David</i>	<i>(C) PhD Sep-97</i>	<i>Karlen</i>	<i>Completed</i>
<i>Wan, Yidun</i>	<i>(O) MSc Sep-03</i>	<i>Bao/Chen</i>	
<i>Wang, Pu</i>	<i>(O) MSc Jan-01</i>	<i>Stadnik</i>	
<i>Wassenaar, Richard</i>	<i>(C) PhD Sep-00</i>	<i>deKemp</i>	
<i>Wheeldon, Jeffrey</i>	<i>(O) MSc Sep-03</i>	<i>Cada/Hall</i>	

<i>White, Stephen</i>	<i>(C) MSc Sep-02</i>	<i>Santyr</i>	
<i>Wind, Andrew</i>	<i>(C) MSc Sep-02</i>	<i>McKee</i>	
<i>Xie, Li</i>	<i>(O) MSc Sep-03</i>	<i>Bao</i>	
<i>Yamasaki, Kristy</i>	<i>(O) MSc Sep-02</i>	<i>Hodgson</i>	<i>Completed</i>
<i>Yu, Qinrong</i>	<i>(O) PhD Jan-01</i>	<i>Chen/Bao</i>	
<i>Zeng, Xiaodeng</i>	<i>(O) MSc Sep-00</i>	<i>Bao</i>	
<i>Zhang, Ziyi</i>	<i>(O) MSc Sep-03</i>	<i>Bao</i>	

Research Associates at the Institute in 2003

Name	Period	Supervisor(s) or Group
Jan Benda	February 2002 – present	Longtin
Maurice Chacron	2003-2004	Longtin
Greg Cron	January 2002 – present	G. Santyr
Albert Cross	January 2002 – July 2003	G. Santyr
Xiongxin Dai	November 2002 – present	SNO group
Mei-Zhen Dang	2000 - present	D. Rancourt
Ranpal Dosanjh	January 2002 – present	SNO group
Hadjifaradji, S	February 2002 - present	Chen / Bao
Wujun Huo	January 2003 – present	S. Godfrey and P. Kalyniak
Jiro Itatani	Sept. 2003 – present	T. Brabec
Christian Jungreuthmayer	October 2002 – present	T. Brabec
Mohsen Khakzad	September 2000 -	G. Oakham (ATLAS)
Sergei Katsev	May 2002 – present	L'Heureux
Benjamin Lindner	March 2002 – present	A. Longtin
Evgueni Ponomarev	October 2002 – present	T. Brabec
Kirsten Sachs	April 2000 – present	OPAL/LC Carleton
Nick Starinski	October 2000 – October 2003	D. Sinclair
Krisztina Szalisznyo	Jan.2002-Jan. 2004	Longtin (NATO Fellow)
Neera Tressler	May 2003 – present	T. Brabec
Julia Wallace		G. Santyr
David Waller	January 2003 – present	SNO
Jurgen Zanghellini	July 2003 – present	T. Brabec

Zhongxi Zhang

May 2003 – present

T. Brabec

Shouhua Zhu

November 2002 – present

S. Godfrey and P. Kalyniak

Funding in 2003

Name	Source	Amount per year
X. Bao	NCE – ISIS, three projects on Brillouin sensing of structures	70,000
		50,000
		5,000
	EXFO contract	23,000
	NSERC-CIPI all-optical wavelength converters	31,695
		34,120
	Advanced fiber laser systems	
	Roctest, pipeline sensors (Profs. Bao and Chen)	15,000
	Canada Research Chair	200,000
	Canada Research Chair special funding	70,000
	NSERC Networks, Agile All-Photonics Networks	85,000
	NSERC, Discovery fund, “Photonics and fibre optics”	60,000
	Hydro Quebec, “Fibre cable strain measurement using Brillouin sensor system”, Contract	14,020
Ontario PREA	50,000	
A. Bellerive	Canada Research Chair	200,000
T. Brabec	Canada Research Chair	200,000
	Canada Research Chair funding	75,000
	Molecular Imaging - CIPI –	35,000
	Photonics Research Ont.	40,000
	NSERC	28,000
Ian Cameron	ORDCF Neuroimaging Grant	100,000
L. Chen	NCE-CIPI all-optical wavelength converters	24,520

	NSERC operating	17,000
S. Desgreniers	NSERC discovery	32,000
	NSERC Major Installation Grant (McKellar et al.)	310,000
M. D'lorio	NSERC	12,000
	CRTI	1,100,000
S. Fafard	NSERC operating	14,175
E. Fortin	NSERC operating	39,900
S. Godfrey	NSERC operating	44,000
R.J.W Hodgson	NSERC operating	5,800
B.J. Jarosz	NSERC operating	12,000
	Carleton operating	3,000
P.C. Johns	NSERC operating	19,300
B. Joós	NSERC operating	30,000
P. Kalyniak	NSERC operating	33,000
I. L'Heureux	NSERC operating	25,000
A. Longtin	NSERC operating	28,350
	Ontario govt. PREA	36,000
	Canadian Institutes of Health (with L. Maler)	92,000
D. Rancourt	NSERC operating (renewal year)	34,650/45,000
	NSERC SPG (with 7 co- applicants)	160,217
	GSC in-kind (quantitative mineralogy, with 7 co-applicants)	616
	CANMET	100,000
G. Santyr	NSERC Operating	28,000
	Canadian Breast Cancer Research Initiative ORDCF	100,000 25,000
G.W. Slater	NSERC operating	69,000
	Fonds France-Canada pour la recherche	10,000
	NCE (Advanced Food and	

	Biomaterials)	76,000
	NIH (USA, co-PI))	70,000
	MMO-ORDCF-EMK	15,000
		18,000
Z.M. Stadnik	NSERC operating	29,000
Y.P. Varshni	NSERC operating	10,000
F.G. Oakham	CA*net\$ Directed Research Program	155,354
ATLAS Collaboration: F.G. Oakham, M.S. Dixit	NSERC operating	252,000
OPAL Collaboration: R.K. Carnegie, R.J Hemingway, D. Karlen, M.S. Dixit, C.K. Hargrove, M. Losty, H. Mes, F.G. Oakham	NSERC operating	148,600
SNO Collaboration: C.K. Hargrove, A. Noble, D. Sinclair, A. Bellerive, R. Hemingway	NSERC operating	380,000
F.G. Oakham, with A.. Bellerive, M.S. Dixit, R.K. Carnegie C.K. Hargrove, R. J. Hemingway, H. Mes, D Sinclair	NSERC MFA	200,000
	TOTAL for 2003	\$5,155,667