InterACTIONS

CANADIAN MEDICAL PHYSICS NEWSLETTER
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PhD, FAAPM, FCOMP

2012 COMP/OCPM GOLD MEDAL WINNER

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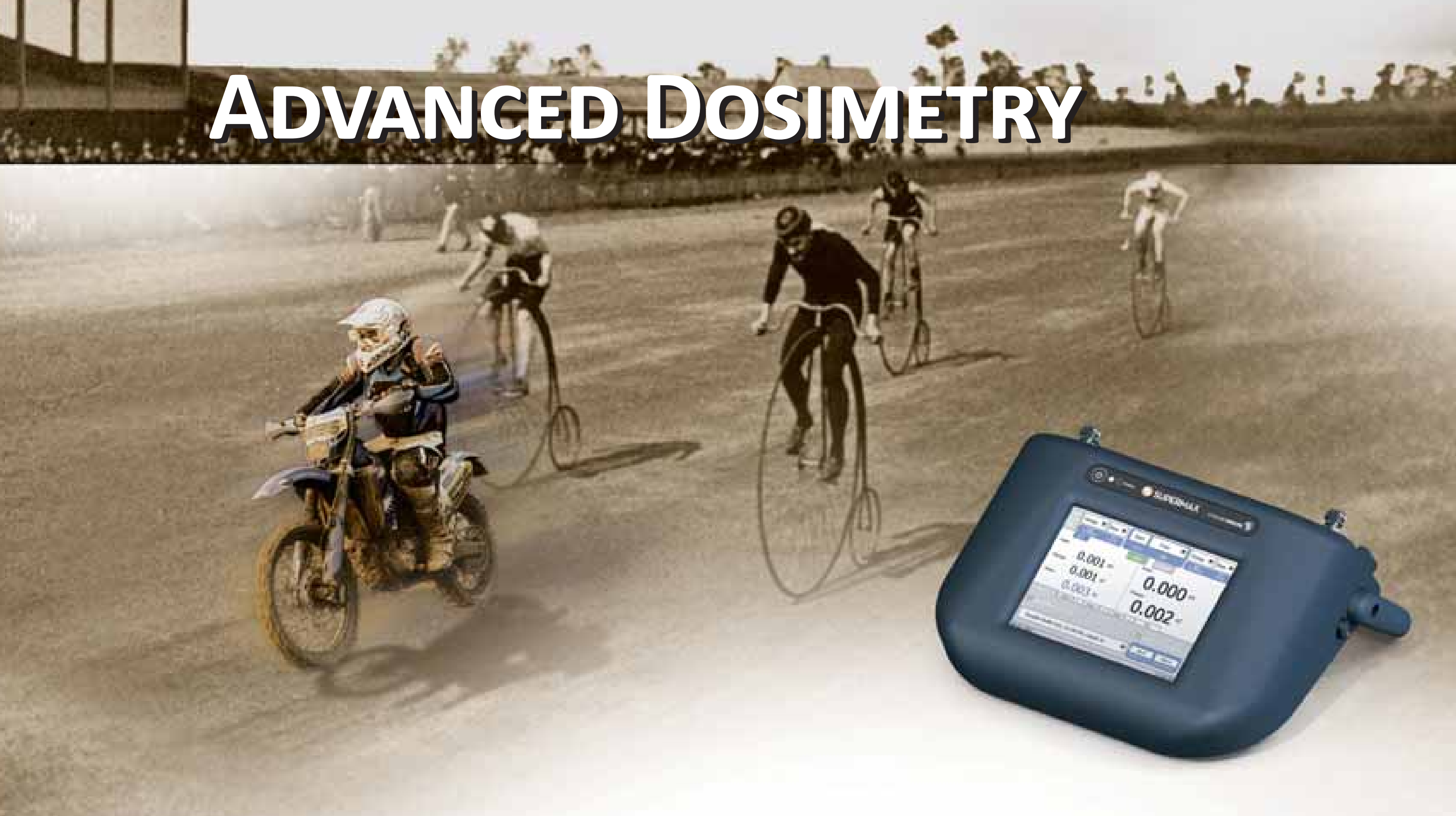

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InterACTIONS

Volume 58, Number 4 – October/octobre 2012

Contents

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Message from the COMP President

Well, here is my first message as President of COMP. Over the last two years, I have been getting a better grasp of the dedication of the Board members and volunteers of COMP. One must never forget that they perform a huge amount of work at a ridiculously low pay!

For those who were at the COMP annual meeting in Halifax this year, you already tasted a few changes (and, no, I am not talking of the fantastic lobster dinner introduced with the sounds of bagpipes). The most important one was certainly the change of format for the CCPM Symposium, which went from about a 3-3.5 hours event to 6 hours of continuing education (CE) over three days. This increase of CE was made without removing a single scientific session and yet within the same overall meeting duration. With Health Canada Safety Code 35 and the ever increasing importance of imaging in radiation therapy, it is COMP's intention to take a stronger role in promoting participation of our imaging experts and scientists. We therefore made the Friday CE session entirely an imaging physics related session followed by a corresponding scientific session. We hope that this will encourage our imaging community to engage and leverage COMP to enhance recognition of their contribution within the Canadian medical community.

Durant les deux dernières années, l'OCPM vous a souvent sollicité à travers divers sondages. Nous voulions savoir ce que l'OCPM pouvait faire de plus ou encore de mieux pour ses membres, autant sur le plan professionnel que scientifique. Nous vous avons demandé de participer, de vous impliquer. Vous l'avez fait en grand nombre et nous espérons que vous avez tellement aimé votre expérience que vous continuerez sur une base permanente à nous donner vos commentaires, demandes ou encore vous impliquer directement dans l'organisation comme bénévole. Suite aux résultats de la planification

Luc Beaulieu

stratégique de 2011, plusieurs éléments ont été identifiés comme essentiels pour les membres et devront être implémentés durant les 2 prochaines années. Le rapport est disponible sur notre site web et donc je vous invite à le consulter.

In 2011, a strategic planning exercise was conducted. The new strategic plan document covering the period 2012-2015 is now available on the COMP website. I strongly urge you to read this document. In order for COMP to truly make inroads toward being **"The recognized leader and primary resource for medical physics in**

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Message from the CCPM President

This message follows closely on the heels of our Annual General Meeting held in Halifax. There were a number of significant issues related to the business of the college that arose during the AGM, and these need reporting on, but I'll get to that later.

In his final message as president of the college, Dave Wilkins thanked the many people he had worked with throughout his tenure on the CCPM Board. It is left to me to extend my thanks, and the thanks of all the members of the College, to Dave.

Dave has now completed six years of service to the College, the past three as President and the three years prior to that as Vice-President. Dave has worked hard to move the CCPM forward and has been a great ambassador for advancing the role and status of certification for our profession. To some extent, I have looked upon my three years as Vice-President as an apprenticeship, and I have benefited greatly from Dave's mentoring and his astute leadership. Dave leaves the College in a position of organizational and financial strength, and with a strong national and international reputation. We all owe Dave a great deal of thanks for all the work he has done on behalf of the College.

I would be remiss if I failed to also thank Brenda Clark for her on-going service to the College. Brenda has chaired the Nominating Committee for many years now. This is a task that takes place mostly behind the scenes and thus her remarkable effort has gone largely unnoticed by the membership. The Nominating Committee is normally chaired by the immediate Past President of the Board, and so Dave Wilkins will now be taking over that role from Brenda.

The AGM is the primary vehicle by which members can have direct input into the workings of the CCPM. Prior to the AGM in July, our bylaws could only be amended by a vote held at the AGM (although mail-in ballots returned prior to the meeting could also be counted). In the April 2012 issue of Interactions, Dave Wilkins outlined the reasons why the Board felt there was a need to change the way in which bylaws could be amended. To this end, an amendment to the bylaws was circulated prior to the meeting, and the amendment was voted on and passed at the AGM. In the future, bylaw amendments will be discussed at the AGM, but votes on bylaw amendments will be held at a later date by electronic means. This will afford the opportunity for a much larger percentage of our members to participate in these votes and have their say in approving or disapproving of the proposed amendments.

Matthew G. Schmid

In fact, the amendment to the former bylaw was really fomented by the issue of obtaining quorum at the AGM. At the two AGMs prior to this year, it was a real adventure (scouring the nearby pubs) to gather up the necessary number of members to achieve quorum. This year, however, perhaps because of the extra effort put into begging, cajoling, and the shameless offer of prizes, a quorum was reached without the usual drama. It is perhaps not so surprising, then, that a second proposed amendment, to drop the quorum requirement at the AGM, was defeated. Many of the members in attendance felt that this would devalue the AGM. The AGM still remains the primary opportunity for our members to meet and discuss the business of the College and to welcome our new members. Many of our members, and a great majority of those who actually attended the AGM, place a great deal of value on this. So, as has always been the case, all members are strongly urged to attend the AGM whenever they can, and hopefully we will never again have to revert to sending out a posse to collar pub patrons.

Another important amendment which was passed by the members dealt with the minimum employment requirements for recertification. The board feels that is important to recognize that there are many different employment circumstances and personal situations that do not necessarily reflect on the competence of the individuals involved, and this is reflected in the new bylaw.

The financial management of the CCPM is always an important aspect of the AGM. The CCPM financial structure is set up to make the examination and recertification processes self-financing. Prior to the AGM, our Treasurer Glenn Wells presented a cost analysis to the board which demonstrated that we would have to increase our fees in order to recover the costs directly associated with the examination process. To this end, a motion to increase the fees for the membership and fellowship exams to $500 was presented to the members and was carried.

There is a tremendous amount of work that goes into credentialing, examining, and recertifying candidates. Although the $500 application fee may seem rather steep to many of the candidates, it is very reasonable when compared to the fees charged by many other similar certification organizations. In fact, applicants do not bear a large part of the true costs of the certification program because a great deal of the work is done by members who generously donate their time.

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Executive Director Report October 2012

Although the season of Fall is now upon us and efforts are well underway for upcoming COMP activities and events, it is great to reflect on all that has happened since the July issue. The Annual Scientific Meeting in Halifax was a great success. We received feedback last year that members wanted to maintain the currently successful ASM schedule and format but that they also were looking for continuing education (CE) sessions. The Conference Committee took on this challenge and additional CE sessions, delivered by top-notch speakers, were added to the program. As the ASM follow-up survey indicated, these new sessions were very well-received. The social program organized by the LAC was terrific and the banquet in particular was a wonderful event. Who knew there was so much musical talent among our membership? The ASM survey results can be found in a separate article in this newsletter. Thank you to Varian and Elekta for their generous generous sponsorhip and to Philips and Best Medical for their support. A very special thank you to Jason Schella and the LAC for all of their hard work and support!

At this year's annual general meeting (AGM) we had the opportunity to thank three outgoing Board members – Jason Schella, Jean-Pierre Bissonnette and Tony Popescu. Marco Carlone finished his term as Councillor for Science and Education and will now be moving into the role of President-elect. We are grateful for their contribution and also very fortunate to have talented and capable people joining the Board to continue their good work. More details on the contributions of the Board members who have completed their terms and the new Board members who will be replacing them are available in separate articles.

An important aspect of the ASM is the various awards that are presented. It was an honour to celebrate Dave Rogers as this year's Gold Medal recipient. Dave's accomplishments are highlighted in a special article written by Rock Mackie that can be found in this issue. As well, the Sylvia Fedoruk prize was presented to Andriy Andreyev for the paper: Andreyev A. and Celler A., "Dual-isotope PET using positron-gamma emitters," Physics in Medicine and Biology, 56, Vol. 14, July 2011; 4539-4556. The J. R. Cunningham Young Investigators Symposium is a highlight of the meeting. It is especially meaningful for the recipients when the award is presented to them by Jack Cunningham himself who, along with his wife Sheila, makes a significant effort to be part of the event. This effort (which involved driving from Camrose, Alberta to Halifax) is appreciated by all.

Plans are well underway for the 2013 Winter School that will be taking place from January 27th to 31st in Mont Tremblant, QC. The Winter School has been endorsed by the Canadian Association of Radiation Oncology and the Canadian Association of Medical Radiation Therapists. One of the objectives of this event is to bring professionals from all interested groups (including government and industry) together in an intimate setting so that issues can be discussed in an open and collegial format with an emphasis on peer-to-peer learning and interactivity. Registration opens on October 1st – don't miss out on this excellent continuing education opportunity.

Ms Nancy Barrett

I would like to take this opportunity to thank Idris Elbakri who has been serving as Editor of InterACTIONS for the past three years. The role of Editor is time-consuming and sending out constant reminders for article submissions can be a thankless task. Idris has done a terrific job and has been a pleasure to work with. We are very fortunate that Chris Thomas from Halifax has stepped into the role of Editor. I had the opportunity to work with Chris at this year's ASM and I know he will bring great enthusiasm to the role.

As always, please feel free to contact me or Gisele or at any time with your feedback and suggestions.

Thank you to Our Outgoing Board Members and Volunteers!

Jason Schella has completed his term as Past-President of COMP. Jason has contributed extensively to COMP and has been involved in the re-organizing of the committee structure of COMP, which involved the introduction of an Executive Committee and the expansion of the Awards Committee to include the Gold Medal and the FCOMP award. Jason has also managed the abstract submission process for the past 3 years, has chaired the Conference Committee and represented COMP on the CPQR initiative. This year, Jason also chaired the Local Arrangements Committee for the Halifax ASM.

Jason also facilitated the introduction of the FCOMP award. This took place over the last three years and involved considerable Board discussion and consultation with members and the CCPM. The inaugural FCOMP awards were given out at the 2012 AGM and it was a positive and memorable occasion for the COMP community.

Marco Carlone served as Councillor of Science and Education and the Chair of the Science and Education Committee (SEC) for 3 years. Marco was the first Chair of the SEC as this committee was established as part of the 2007 strategic plan. The SEC, under Marco's leadership, launched the very successful COMP Winter School which has been held annually for the past 3 years. As well, the SEC, through the Conference Committee, introduced continuing education sessions into the program of the 2012 ASM. Through the SEC, Marco also facilitated the creation and activities of the Student Council and established closer ties with CAMPEP.

While Marco is finishing his work with the SEC, he is now moving into the role of President-Elect of COMP and will be continuing on the Board.

Jean-Pierre Bissonnette served on the COMP Board as Councillor of Quality Assurance and Radiation Safety and also chaired the Quality Assurance and Radiation Safety Advisory Committee (QARSAC) for 3 years. In this capacity, Jean-Pierre represented COMP on the Canadian Partnership for Quality Radiotherapy (CPQR). Jean-Pierre also managed the Young Investigators Symposium and the Best Oral and Poster awards for many years.

Jean-Pierre will continue to represent COMP on the CPQR to ensure continuity for this important initiative and is also involved in the planning of the 2015 World Congress on Medical Physics and Biomedical Engineering. So, although his term on the Board is now complete, we are still fortunate to have Jean-Pierre working on behalf of COMP!

Tony Popescu served as Councillor of Communications and chaired the Communications Committee for 3 years. The Communications Committee oversees the publication of InterACTIONS and the COMP website. During Tony's tenure, policies for external communications were developed, the Student Council portion of the website was added and COMP made its foray into the world of social media. This involved the development of a social media policy, a LinkedIn group, 2 facebook groups (one for the Student Council and one for COMP) and a twitter account.

Idris Elbakri is the outgoing Editor of the COMP newsletter, InterACTIONS. The newsletter is published four times a year and the role of Editor is a considerable undertaking. This role also involves the thankless task of reminding contributors about the deadlines for submissions and making room for material that is submitted at the last minute. Idris produced a quality publication during his tenure and worked closely with the printer to improve the production process.

Welcome New Board Members

Parminder Basran will be serving on the Board as Councilor for Communications and will be Chair of the Communications Committee.

Parminder completed his MSc in Medical Physics from the University of Alberta in 1997 and his PhD in Medical Physics from the University of Calgary in 2002. He obtained Membership from the Canadian College of Physicists in Medicine in 2004 and Fellowship in 2010. He is a Senior Medical Physicist with the BC Cancer Agency-Vancouver Island Centre and Adjunct Associate Professor at the University of Victoria, Department of Physics and Astronomy. His current research interests are broad, including the use of functional images in radiation treatment planning, intensity modulated radiotherapy, and stereotactic body radiation therapy.

Parminder has been a member of the COMP Communications Committee since 2006 and was Editor of InterACTIONS Newsletter from 2006 to 2009.

Stephen Breen will be serving on the Board as Councilor for Science and Education and will be Chair of the Science and Education Committee.

Stephen completed his BEng in Engineering Physics at Technical University of Nova Scotia and his PhD in Medical Biophysics at the University of Western Ontario. Stephen also completed a post-doctoral fellowship in the Joint Department of Physics at the Institute of Cancer Research and the Royal Marsden Hospital in London, UK.

Stephen is an Assistant Professor at the University of Toronto in the Department of Radiation Oncology and a Senior Physicist in the Radiation Medicine Program at Princess Margaret Hospital. Stephen's work is focused on:

- Image-guided IMRT for head and neck cancers.
- Physics lead for imaging and working on the application of PET, SPECT, and MR imaging to radiotherapy.
- The application of statistical process control to quality assurance in radiotherapy.

Stephen serves as the Physics lead, Cancer Care Ontario Community of Practice for head and neck radiotherapy and the Physics co-chair on RTOG and NCIC clinical trials in head and neck cancer. For the past two years, Stephen has served on the planning committee for the COMP Winter School and he served as the Course Director for the 2012 program.

Michelle Nielsen will be serving on the Board as Councilor for Quality Assurance and Radiation Safety and Chair of the Quality Assurance and Radiation Safety Advisory Committee (QARSAC).

Michelle completed her MSc in Medical Physics at University of Toronto in 2002 and her medical physics residency at the Sunnybrook Regional Cancer Center in 2004.

Michelle has been a radiation oncology physicist at The Carlo Fidani Peel Regional Cancer Centre at the Credit Valley Hospital and Trillium Health Centre since 2004. At the Carlo Fidani Peel Regional Cancer Centre, she has been the Radiation Safety Officer since 2006 and moved into the role of Senior Medical Physicist in 2011. Her clinical research interests include IMRT patient specific QA, paperless processes and volumetric modulated arc therapy.

Michelle has been a volunteer on the COMP Quality Assurance and Radiation Safety Advisory Committee (QARSAC) since 2009 and the CCO IMRT Advisory Committee since 2011.

Introducing the New Editor of InterACTIONS

Chris Thomas is the new Editor of InterACTIONS, COMP's quarterly newsletter.

Chris completed his PhD in Medical Biophysics from the University of Western Ontario in 2001 and his medical physics residency at the Princess Margaret Hospital in 2007. He received his CCPM certification in 2010 and is currently with the Nova Scotia Cancer Centre as a Medical Physicist. He is also a lecturer in the Department of Radiology and an Assistant Professor in the Department of Radiation Oncology at Dalhousie University. His clinical research interests include the use of imaging in Radiation Oncology and VMAT.

Chris served on the Local Arrangements Committee for the 2012 Annual Scientific Meeting in Halifax.

CNSC Feedback Forum
Licensing of PET Cyclotron Facilities

Jeff Sandeman, Senior Project Officer,
Accelerators and Class II Facilities Division, CNSC

(Based on materials presented by CNSC staff during the Cyclotron Workshop at the 2012 CRPA Annual Meeting held in May 27-30, 2012 in Halifax, NS)

Introduction

Anyone who has been to a conference where the Accelerators and Class II Facilities Division (ACFD) has presented lately is likely to have heard something about ACFD's role in the regulation of PET cyclotron facilities. So why this sudden increased interest and focus on cyclotrons? Well, in relative terms, this is the most rapidly expanding sector of all the various types of facilities regulated under the *Class II Nuclear Facility and Prescribed Equipment Regulations*. In addition, the technologies involved are also evolving very quickly. Consequently, there has been an urgent need to ensure the ACFD has the proper regulatory tools in place, such as licence application guides, to facilitate the licensing process.

This article presents a brief history of the licensing of PET cyclotrons in Canada. In addition, it examines some of the unique features of these types of facilities in comparison with other types of medical Class II facilities. Finally, it describes the impact these differences have on the content of the new licensing guide, RD/GD-289, *Licence Application Guide for Class II Non-medical Accelerators*, which was released in May 2012.

History

The first PET cyclotron facility in Canada was licensed to operate in the early 1990s. In the late 1990s, the general interest worldwide in the use of PET for brain imaging and neurology was reflected by a sudden increase in the number of PET cyclotrons in Canada. As can be seen in Figure 1, by 2001 there were 7 PET cyclotrons either under construction or already in operation. However, this remained very static until 2007, with only one new machine coming on-line in that 6 year period. Since 2007, applications for new facilities have increased steadily at a rate of 2 new facilities per year, more than doubling the total number of licensed units over that 5 year span.

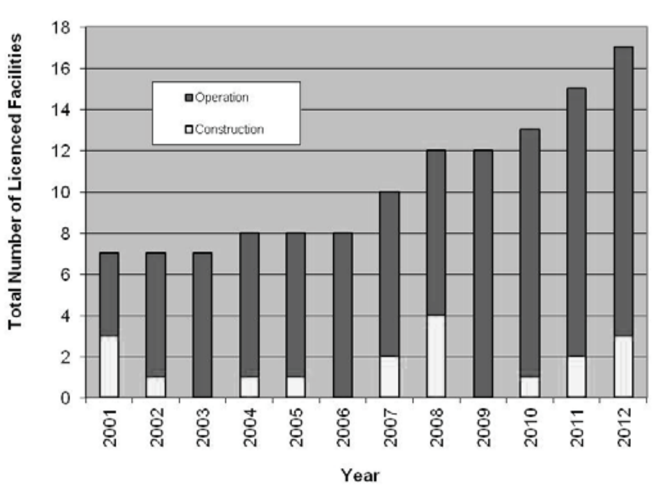

Figure 1: PET cyclotron licences.

So what has prompted this increase? There were two major factors. First was the decision by various Provincial government health departments to cover the cost of diagnostic PET scans for the early detection and ongoing disease management of specific types of cancer. This brought PET out of the realm where it was strictly a research tool in Canada, into routine use as key diagnostic procedure. The resulting increase in the demand for PET isotopes, and consequently the need for more cyclotrons to produce those isotopes, is expected to continue for some time. International recommendations[1] suggest two PET scanners are needed per million population, but the current ratio in Canada is less than half that.

Figure 2: PET cyclotron locations in Canada.

The second factor was the prolonged shutdown of the National Research Universal (NRU) reactor at Chalk River in 2009. The resulting shortage of key nuclear medicine isotopes, such as ^{99m}Tc, highlighted the need for alternatives, both in the way in which nuclear medicine isotopes are produced and in the types of isotopes and procedures used.

This prompted further investigation into the use of PET as an alternative for conventional SPECT nuclear medicine procedures, such as cardiac perfusion imaging. In addition, in 2010 the government of Canada, through the Non-reactor-based Isotope Supply Program (NISP), made $35 million in funding available for the development of alternate methods for the production of ^{99m}Tc. Through this program, new target systems are now being developed to enable direct production of ^{99m}Tc by irradiating ^{100}Mo targets on PET cyclotrons.

Licensing Considerations

In the relatively static environment that existed prior to 2007, the extremely limited number of PET cyclotron licence applications allowed for them to be dealt with on a case-by-case basis. There were so few PET cyclotrons in Canada that, for the most part, each unit and facility was very different from any other. However, with the sudden increase in demand, combined with the influx of standard cyclotron platforms from major suppliers, such as GE, Siemens, IBA and ACSI, there is now a need for tools, such as a comprehensive licence application guide to facilitate timely licensing of new facilities.

This may sound like a simple task. After all, superficially, cyclotrons are just another type of accelerator. However, in reality, many of the key considerations for licensing of PET cyclotrons are virtually the polar opposites of those for typical medical linear accelerators or other CII facilities.

A medical linac is used to produce a high intensity external beam of X-rays. Activation is an unwanted by-product, mainly resulting from (γ, n) interactions in the accelerator head. The resulting neutron fields also an unwanted by-product. Consequently, linacs are designed to minimize these aspects. The activities produced in the accelerator head are small (< 1 GBq). The only "open", dispersible radioactivity produced is via activation of the air (^{13}N, ^{15}O) and is minimal under typical clinical operating conditions, such that no special ventilation is necessary. Handling or servicing of activated components, such as the target, is infrequent. Because of the very high intensity x-ray beam produced, facilities incorporate multiple safety systems specifically designed to prevent anyone other than the patient from being within the room during irradiation. At the same time, staff must be able to move freely in and out of the room many times per hour while the beam is off.

In contrast, activation of the target material is the sole purpose of a PET cyclotron. The isotopes produced typically have activities up to several hundred GBq. The primary external radiation field is generally neutrons from (p,n) reactions in the target, but prompt gamma plus 511 keV annihilation photons from the PET isotope itself are also produced. All external radiation fields are unwanted by-products, but the ability to minimize these fields is limited by the need to maximize the quantity of isotope produced. Activation products are mostly in an "open" dispersible form, such as ^{18}F, ^{13}N, ^{11}C and ^{15}O, in either liquid or gaseous form. Even solid targets, such as those used experimentally for ^{99m}Tc production, can potentially melt or vaporise. Containment of these materials in the event of an accident is of paramount importance. Handling or servicing of activated components, such as target foils, is part of normal maintenance. The PET isotopes produced are routinely handled every day for processing and QC purposes. "Self-shielded" machines allow for persons to be in the room during irradiation, but staff generally only need infrequent access to the vault.

	Medical Linac	PET Cyclotron
External Radiation	• Desired • X-ray dominant • Secondary neutron	• Unwanted • Neutron dominant • Secondary gamma
Activation	• Unwanted • Low activities • Limited handling during servicing • No routine handling • Minimal potential dose or risk of contamination from "open" sources.	• Desired • High activities • Routine handling during servicing • Routine handling for processing • High potential doses and risk of contamination from "open" sources
Facility Design	• Photon shielding requirements dominate • Safety systems prevent occupancy during irradiation • Frequent access	• Neutron shielding requirements dominate • Some safety systems not required for "self-shielded" units • Infrequent access

Table 1: PET Cyclotron vs. Medical Linac Comparison

All of these unique characteristics must be addressed when preparing and assessing a licence application for a PET cyclotron facility. As such, they have been incorporated directly into RG/GD-289.

RD/GD-289

Those familiar with the licence application guide for radiotherapy facilities, RD/GD-120, will see very similar structure in RD/GD-289, which is used when applying for a licence to construct, commission, operate or decommission a PET cyclotron. The same basic information regarding the applicant, the equipment and the radiation protection program oversight and policies is required. Similarly, a detailed analysis of the facility shielding and safety systems is still needed. Testing of safety systems and a radiation survey of the vault is still required during commissioning. Routine operating procedures, including periodic testing of safety systems, must be submitted in order to obtain a routine operating licence.

However, there are quite a few new wrinkles to address the unique characteristics of PET cyclotrons. For example, the emphasis when defining the facility workload is on total beam power (current-hours) and the activities of the isotopes produced. In the section on facility design, exemptions for self-shielded units are specified for certain safety systems. These exemptions are taken directly from section 15(14) of the *Class II Nuclear Facility and Prescribed Equipment Regulations*. It is important to note that these exemptions only apply under very specific circumstances. Namely, that the dose rate at 30 cm from the external surface of the cyclotron does not exceed 200 μSv/h under worst case operating conditions. One of the common problems found with existing self-shielded cyclotrons in Canada is that they initially meet this criterion, but subsequent modifications and upgrades result in much higher dose rates, thereby invalidating the exemption. Things like new targets and increased beam currents to increase the activity produced per irradiation always require a licence amendment and must be assessed carefully to ensure they will not compromise safety.

Despite the safety system exemptions, rooms housing self-shielded cyclotrons are not intended for full occupancy. The dose rates near the equipment may still be as high as 200 μSv/h. Also note that room shielding, to keep doses in surrounding areas ALARA, is still required even for self-shielded units.

Finally, the single biggest difference between a PET cyclotron licence application and a typical radiotherapy licence application is that the issue of isotope handling and containment must be addressed in detail. This includes

- Radiation protection policies and procedures for contamination control.
- Additional safety systems, such as ventilation stack monitors.
- Shielding design assessment of hot cells and transfer lines.
- Lab design assessment using GD-52, *Design Guide for Nuclear Substance Laboratories and Nuclear Medicine Rooms*.
- Assessment of ventilation and processing systems.
- Assessment of accidental release scenarios, including dose estimates, safety measures and emergency procedures to mitigate potential doses.
- Dose estimates and documented procedures for isotope handling, including processing, QC and packaging.

Conclusions

The number of PET cyclotron facilities in Canada has doubled over the last 5 years. This trend is expected to continue for the foreseeable future. This has emphasized the need for better guidance and standardization of licence applications. RD/GD-289 was released in May of 2012 to address this gap. While PET cyclotron licence applications have many similarities with those for typical medical radiotherapy facilities, there are also some major fundamental differences. The key differences are those arising from the production of open source radioisotopes. Consequently, the handling and containment of these isotopes must be explicitly addressed.

The ACFD will continue to work with licensees to refine the framework for licensing and compliance of these facilities. This framework will need to evolve as new technologies are developed and the production and use of new isotopes is explored.

References:

1. *The Use of Positron Emission Tomography (PET) for Cancer Care Across Canada, Time for a National Strategy,* Susan D. Martinuk, Copyright © 2011 AAPS, Inc. and TRIUMF

Message from the CCPM President

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In addition to an increase in the fees for the membership and fellowship exams, the board feels it is also necessary to increase the credentialing fee to $150. This fee is charged to applicants who apply but who do not meet the eligibility requirements to sit the exam. There is a considerable amount of work involved in assessing the credentials of applicants, and this fee reflects the actual costs incurred by the CCPM to do the credentialing work.

The board has also clarified the rules concerning the refund of application fees when applications are withdrawn. A great deal of planning has to take place to prepare for the exams, and many people have to make travel arrangements in advance. This necessitates that there be a firm deadline for withdrawing an application without forfeiting the application fee. Details of the new fee structure will be available on the web-site in the near future.

The welcoming of our new members at the AGM symbolically marks the end of the examination process for one year, but the work never stops. I am constantly impressed by the number of volunteers that work together behind the scenes to achieve the goals of the college. I urge all members to consider serving the College at some point in their careers, and I look forward to working with those that are able and willing to make such a commitment.

Optically-stimulated luminescent dosimetry: an alternative to TLD for in vivo measurements?

Charlie Kirkby, Michael Balderson,
Ian Nygren, J. Eduardo Villarreal-Barajas,
and Esmaeel Ghasroddashti

Alberta Health Services

Introduction

In the recent report of Sawakuchi et al.[1] on the status of in-vivo dosimetry in Canada it was reported that 27 of the 34 centres that responded to the survey perform in-vivo dosimetry and that one of its major drawbacks included increased time staff dedicate to working with thermoluminescent dosimetry (TLD) systems. In the survey, no mention was made of optically-stimulated luminescent (OSL) dosimetry systems, which are potentially less labour intensive than crystal or powder-based TLD systems. Our centre has been using Landauer's InLight microStar OSL dosimetry system with "nanodot" aluminum oxide detectors (Landauer Inc., Glenwood, Il) for in vivo dosimetry since June 2010. As new radiation therapy centres are constructed within our province, there has been interest in the performance of this system. Since it may also be of interest to our colleagues across the country, we present a review of the system and its characteristics.

System Characteristics

The InLight microStar system (shown in Fig. 1) was purchased in 2009, which included the reader, a dedicated laptop computer, software, a bar-code scanner, a carrying case, and 50 nanodot aluminum oxide dosimeters. While TLD reader systems range considerably in price, the OSL system was comparable in price to some of the most basic single chip TLD reader systems. Replacement dosimeters are available at costs of approximately \$5 or \$10 for the ±5% (standard) or ±2% (screened) models, respectively.

Full details of the theory behind OSL dosimetry and the microStar readout process are available elsewhere.[2-4] In brief, the "nanodot" dosimeters consist of an Al_2O_3:C crystal fixed inside a light-tight polyethylene casing that provides 0.04 g/cm^2 of intrinsic buildup,[4] giving it dimensions of 1.0×1.0×0.2 cm^3. Larger "dot" detectors are available as well, but we have not tested these. Each nanodot has a barcode sticker that can be scanned, allowing for automatic identification of the crystal (and thus its associated unique sensitivity factor) in the microStar software with minimal chances for identification error.

The phenomenological operation is similar to that of more familiar thermoluminsecent dosimeters. The carbon doping creates imperfections in the crystal lattice that can act as traps between valence and conduction bands that will trap electrons

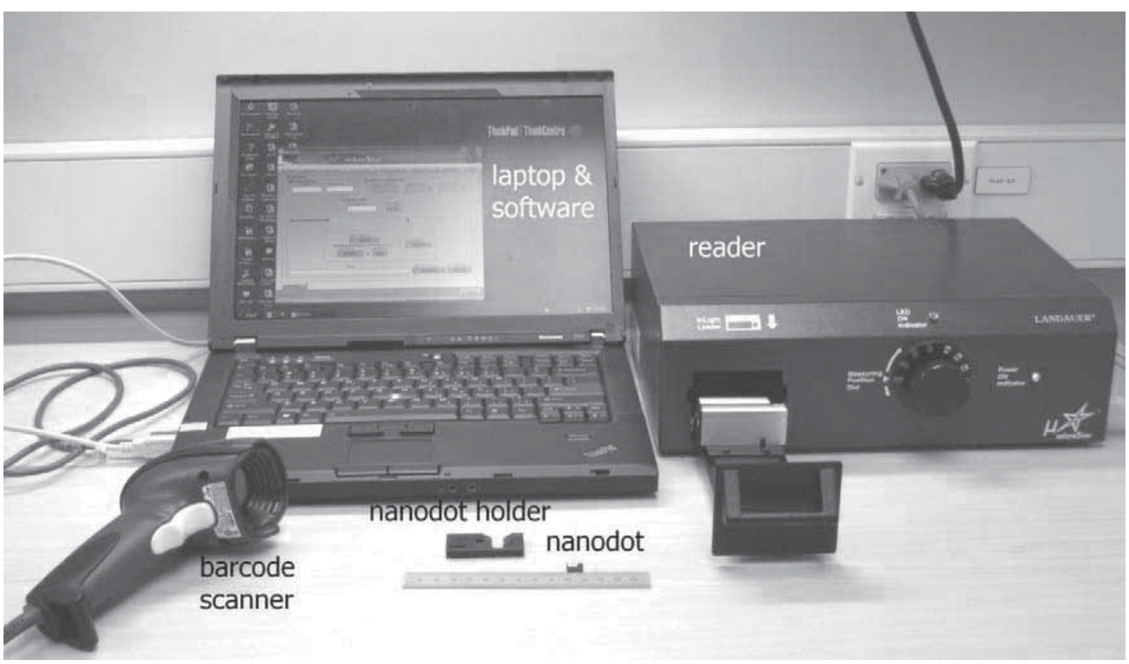

Fig. 1. *The microStar system set up on a work bench on our physics lab.*

or holes created during the irradiation process. Recombination centres are generally created from oxygen vacancies where holes can be trapped (referred to as F^+ centres). When the crystal is optically stimulated, electrons can gain enough energy to leave their traps and recombine with holes at the F^+ centres. The recombination energy is transferred to a luminescence centre where light is released with a peak wavelength of 410-420 nm.

Operation

After irradiation the nanodot is scanned via the barcode reader and placed into an adapter that goes into the reader, which is then closed. The readout process uses a light emitting diode to stimulate optical emissions from the crystal, which are then measured using a photomultiplier tube with a high-sensitivity photon counting system. The number of counted photons is proportional to the radiation dose received by the OSLD crystal. The readout process does not itself anneal the crystal. Signal is lost at a rate of roughly 0.05% per reading (see below).

From a practical point of view the setup is reasonably simple. The reader attaches to a laptop via a USB cable. The microStar reader software comes already installed on the laptop, but can be installed on a network server if desired. The software naturally requires some configuration and the reader itself must be calibrated. The procedures are outlined step-by-step in the manual. Essentially, reader calibration involves irradiating a few OSLDs to known doses, reading them and typing in the doses they have received. Landauer recommends recalibration every six months or if the reader is moved.

Prior to reading, the reader requires 10 minutes to warm up. For stable readings the literature also suggests a lag time of at least 10 minutes after irradiation to avoid signal from the unstable traps.[5] There is no additional equipment, such as a nitrogen tank common with TLD readers, that needs to be operated or attended to. The reading operation is straight-forward and requires only a few seconds. The user has the option of exporting the data in various formats including a Microsoft Excel Spreadsheet. The user can tailor the output to include much of the data relevant to the readout process and includes conversions of the PMT counts to deep dose equivalent, shallow dose equivalent, beta dose, and eye lens dose when configured.

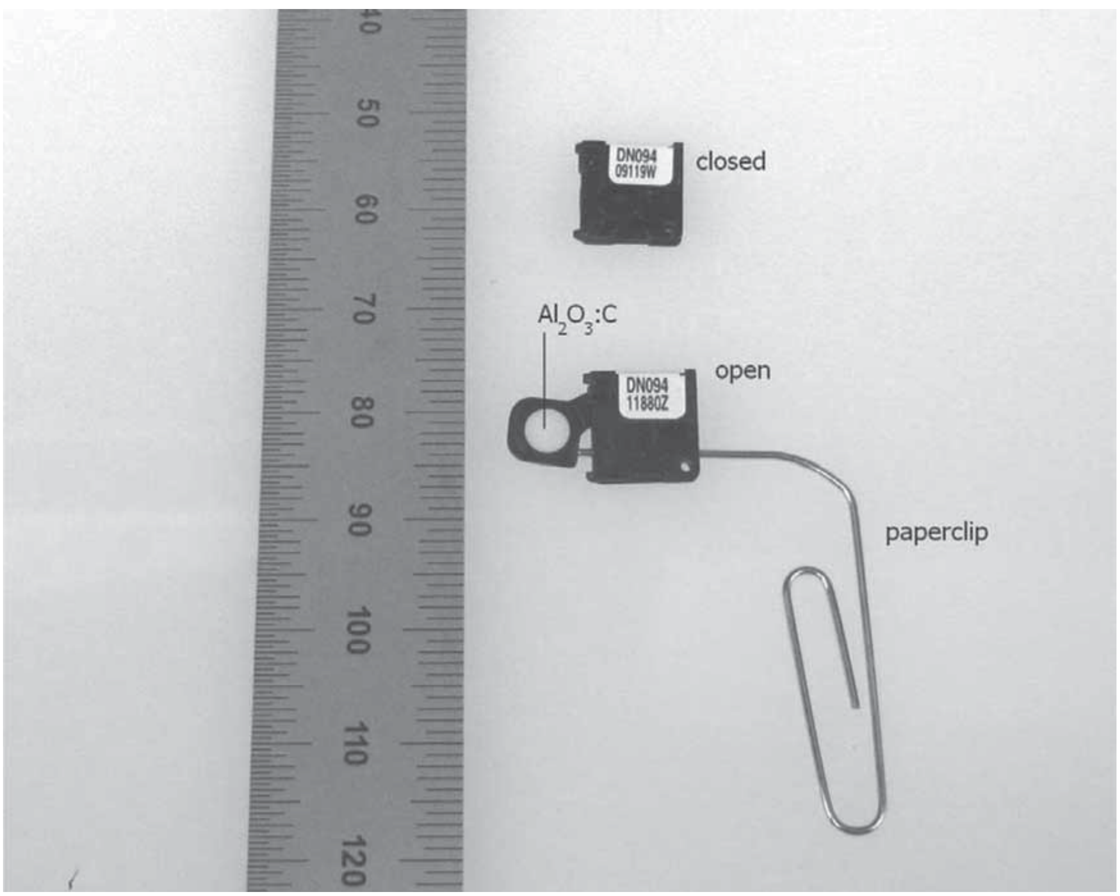

Fig. 2. *The nanodot aluminum oxide in both opened and closed states. A paperclip can be used to open the cassette to expose the crystal for annealing.*

Annealing

The low cost of the detectors and factory-provided calibration factors (discussed below) make one-time clinical use a financially viable option. This eliminates any risk of transferring pathogens between patients without the need for cleaning or enclosing the detector in a disposable casing. Users may however be interested in repeated use, e.g. for determining in-house calibration factors or for research projects. This requires annealing of the nanodots – exposing the crystal to a light source for sufficient time that enough electrons and holes are liberated from their traps so as not to generate a signal discernable from background. We are aware of commercially available annealing systems that use high-intensity LEDs or fluorescent lamps for this purpose. However, the nanodot cassette can be opened with a paper clip, exposing the crystal to light (see Fig. 2). We have found that placing opened OSLDs on an old light box acts as an effective annealing process. In Fig. 3 we show a log-log plot of the relative signal vs. time measured with such an approach. Obviously the specific slope can be expected to vary with factors such as light intensity, but in general this simple approach can reduce the signal from an irradiated nanodot by two orders of magnitude in less than two hours and by three orders of magnitude overnight. One word of caution: it has been reported that after an accumulated dose of 20 Gy, the sensitivity drops at a rate of 4% per 10 Gy of additional dose.[4]

Results of Interest

While commissioning our unit we investigated various aspects of OSLD performance. Most of these tests have been investigated in the literature. However there is still value in revisiting these tests, both to affirm reproducibility with the new technology, and in order to define the performance characteristics of an individual system.

Dosimetric Accuracy

The nanodots are manufactured with accuracy of either ±5% (standard – which we use in our clinic) or ±2% (screened) as stated by Landauer. We exposed 20 nanodots to a dose of 200 cGy in a 6 MV photon beam under full buildup conditions in solid water. (All doses are to water following AAPM TG-51 protocol). Using the manufacturer's sensitivities, the OSLDs measured a mean dose of 200.1 cGy with a standard deviation of 11.5 cGy or 5.7%. The most extreme case measured 27.1 cGy or 13.6%

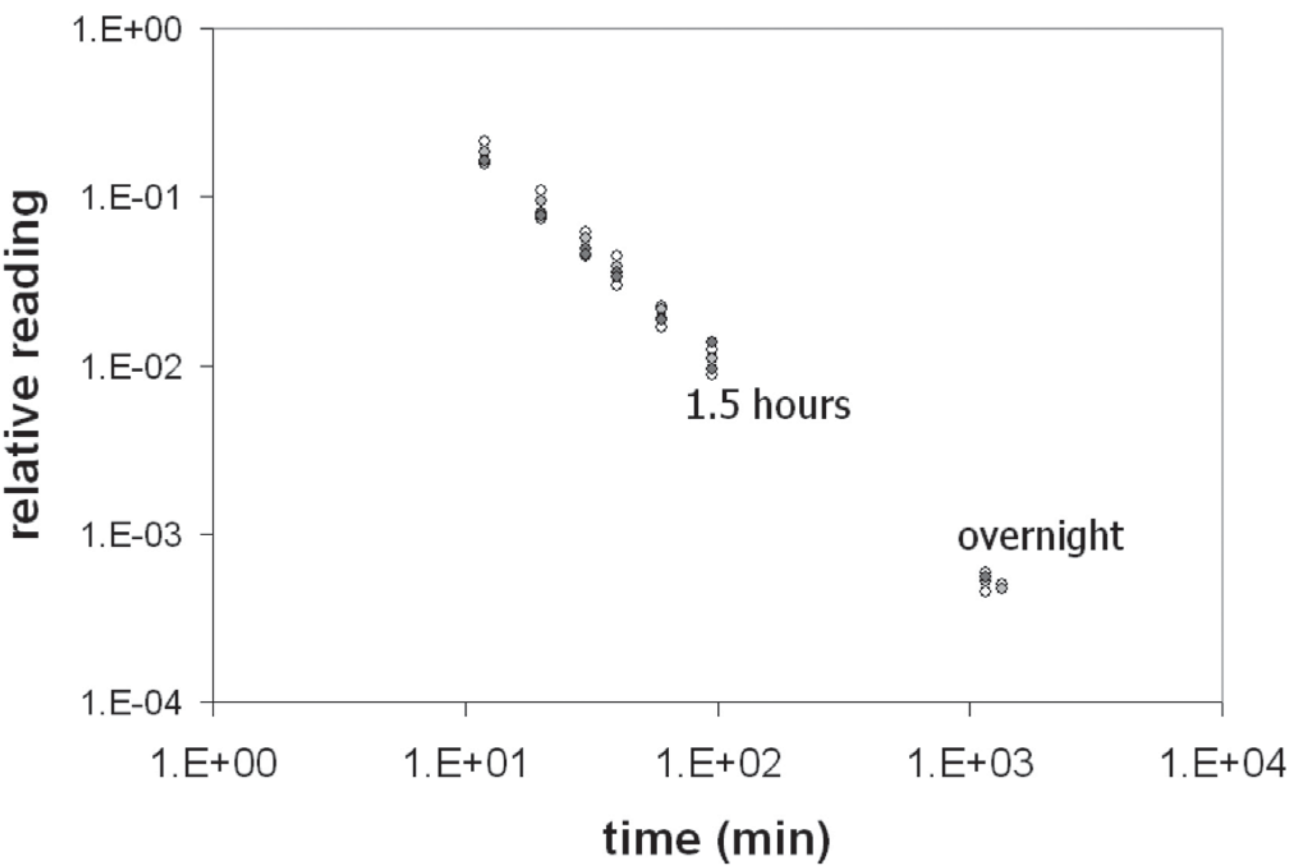

Fig. 3. *A log-log plot of the relative OSLD reading after 2 Gy irradiation for 5 different OSLDs when left on the light box for the purpose of annealing. By 1.5 hours the signal dropped 2 orders of magnitude and when left overnight it dropped over three orders of magnitude.*

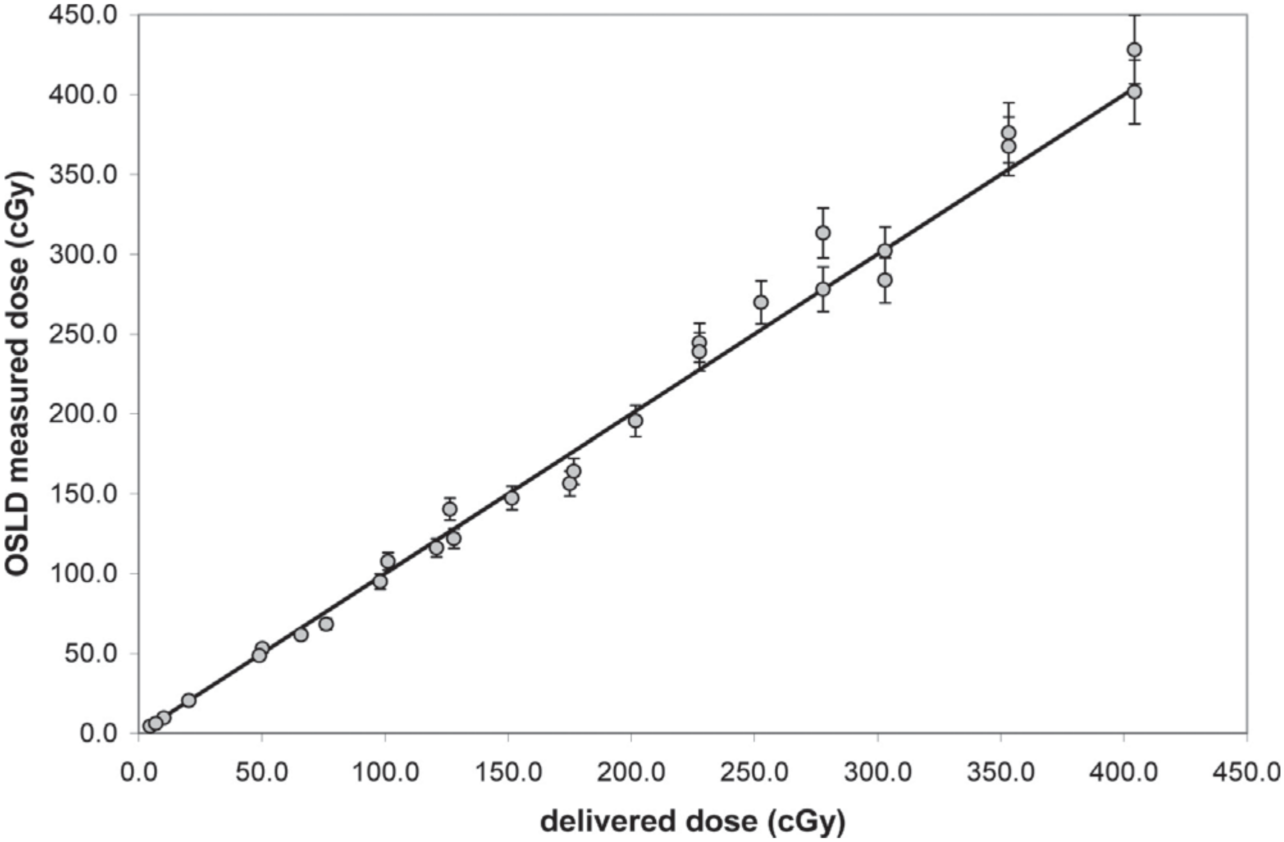

Fig. 4. *OSLD measured dose vs. known delivered dose at 6 MV under full buildup conditions over a range of doses (~5 – 400 cGy). The black line represents perfect one-to-one correspondence for reference. Error bars are taken as ± 5%.*

high. The individual precision (expressed as a standard deviation about the mean over four measurements for an individual OSLD) ranged from 1.0% to 4.1% with a mean value of 2.0% – suggesting more accurate measurements may be possible with individually determined sensitivity factors.

In a separate experiment, we exposed OSLDs to a range of known doses (~5 to 400 cGy) at 6 MV. The results are shown in Fig. 4. Here the relative standard deviation from the known value was 6.7%. OSLDs have been shown to exhibit a small supra-linear behaviour above approximately 300 cGy,[4] but this is only a ~ 4% effect at 400 cGy, which is not detectable with a measurement uncertainty of 6.7%.

To test the readout reproducibility and signal loss with readout, we repeatedly read a single OSLD 50 times after it had been irradiated to 200 cGy at 6MV. The results are shown in Fig. 5. The standard deviation as a percentage of the mean over the first 10 readings was 1.3%. Over the 50 readings, we registered an average signal loss of 0.05% per reading, which is consistent with Landauer's claims. This offers an advantage over TLD systems in that the OSLD chip can be re-read in the event the data is lost or in question.

Energy Sensitivity

The OSLDs have been shown to be independent of energy for photons and electrons in the megavoltage range,[4, 5] however, there is a known dependence in the kilovoltage range, which is due to the effective atomic number of aluminum oxide (11.2). OSLD output has been shown to differ by a factor of 3 in comparing the delivery of 1 Gy from a 150 kVp beam to a 6 MV beam.[6] (For comparison, the same factor for a TLD 100 is approximately 1.1.7) In an imaging or orthovoltage context energy-specific calibration factors are necessary for OSLDs.

In a therapeutic context, when the OSLDs are used for measuring out-of-field dose (eg. confirming dose to an implantable cardiac device), the lower energy of the scattered radiation implies a correction may need to be applied. Recent work by Scarboro et al. has demonstrated this correction could be greater than 30% in extreme circumstances.[8] We tested a scenario measuring dose in a solid water phantom 10 cm from the edge of a 10×10 cm^2 6 MV photon field at 1.5 cm depth and measured a factor of 0.91 ±0.03 to correct to the ion chamber reading. This result was consistent with Scarboro et al. who reported a factor of 0.89 ±0.02 for the same setup.

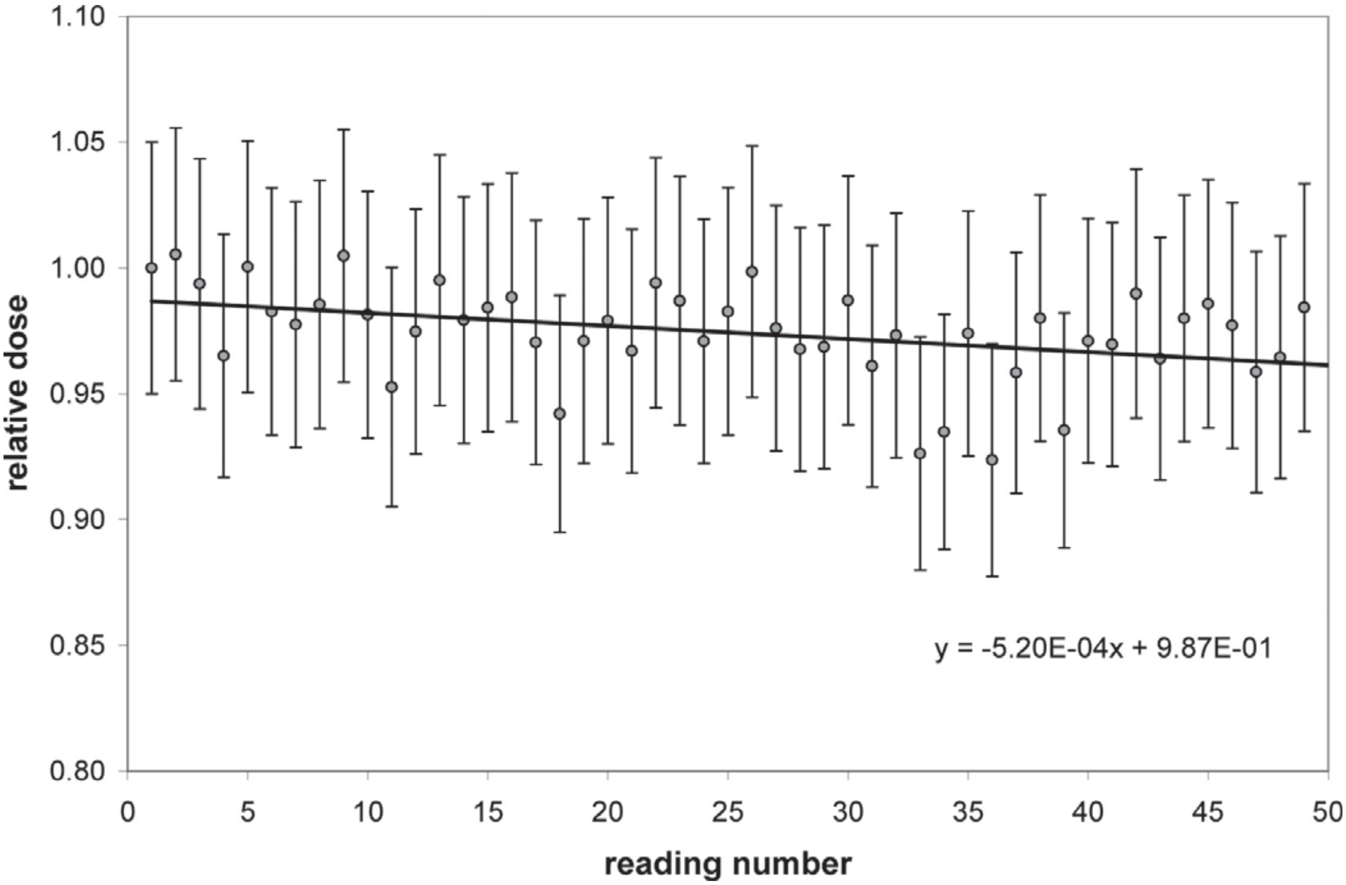

Fig. 5. *The relative dose as a function of reading number over 50 readings. The black line is a regression fit to the data and suggests a loss of 0.05% per reading.*

Angular Dependence

The OSLDs have an angular dependence. Under full build-up conditions, edge-on irradiation scenarios, compared to broadside scenarios show differences of 4 % in a 6 MV beam, 3% at 18 MV, which is due to self-attenuation and the air gap within the cassette.[9] Our own measurements under full build-up were not able to identify any angular dependency to within measurement uncertainty (5%). When used for entrance dosimetry, the literature suggests a strong angular dependence with the OSLD measuring high by a factor of 1.72 at an angle of 75 degrees (for screened nanodots).[5] We conducted our own simple experiment to test this, mounting OSLDs on an adjustable platform (the Iso-Align from Civco Medical Solutions, Kalona, IA). The OSLDs were irradiated for 200 MU at 6MV with the platform at varied angles (0° representing normal incidence, 90° being the "edge-on" orientation). The results are shown in Fig. 6. For angles greater than 45° we detected a change in relative OSLD signal beyond experimental uncertainty, but in contrast to Kim et al. at 75° our signal was only high by a factor of 1.38. It is important to note here that surface dose itself can vary as a function of angle as a result of changes in the buildup phenomenon and may be influenced by contaminant electrons.

Conclusions

The microStar reader and nanodots provide a simple, fast, and cost-effective means of performing in vivo dosimetry. In general, the measurement accuracy we observed was approximately 5-7% with the standard nanodots. This is generally consistent with the performance seen with TLD-100 systems that we are familiar with. It offers advantages over TLD systems of requiring less dedicated time for operation, does not require a nitrogen source, and the OSLDs can be re-read. The OSLDs are not tissue equivalent and have energy-specific sensitivities below the megavoltage range that may affect out-of-field measurements. Overall, we have found the OSL dosimetry system to be an effective substitute for a TLD system.

Acknowledgements

The authors would like to acknowledge Peter Dunscombe for useful discussions on this work.

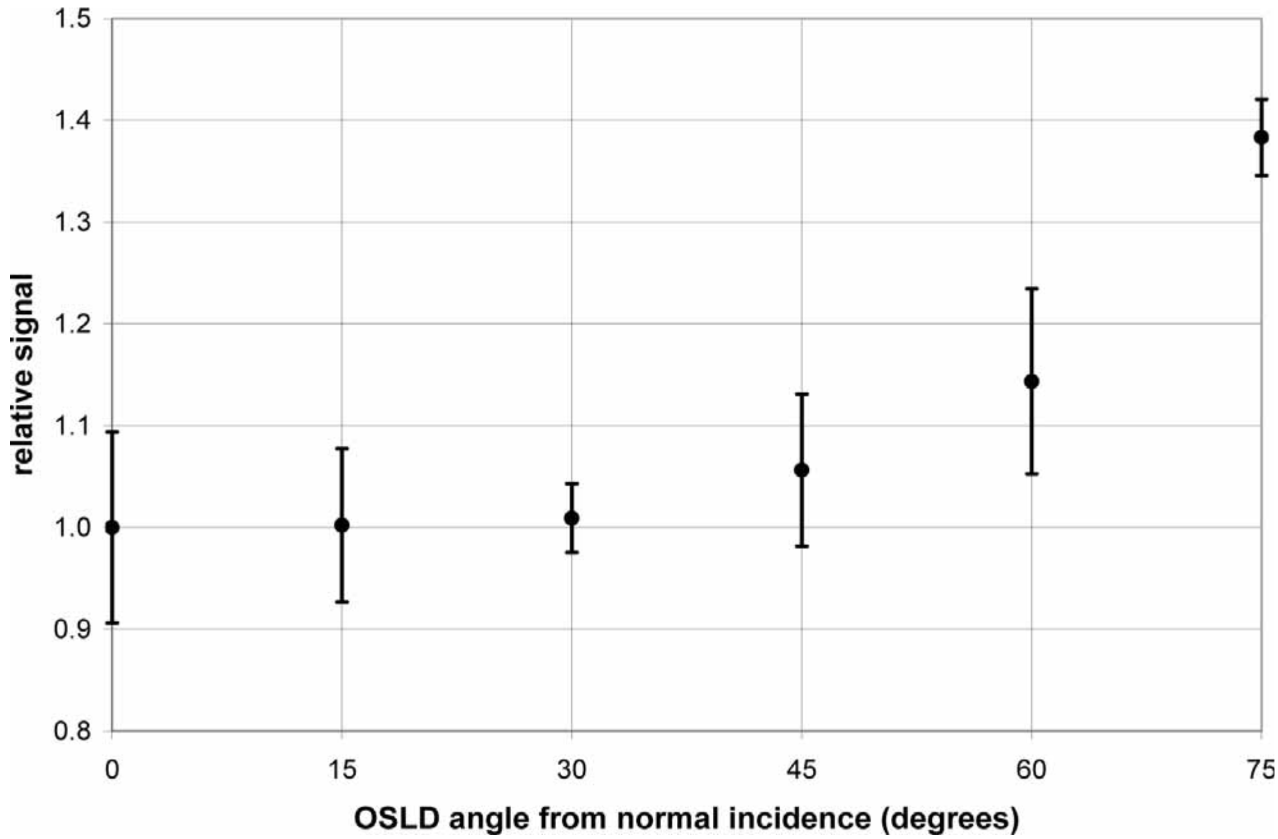

Fig. 6. *The angular dependence of the OSLD for surface irradiations of 200 MU. Beyond 45° a significant increase in OSLD signal is observed. Error bars represent the standard deviation over 4 OSLD measurements.*

References

1. G. O. Sawakuchi, L. Archambault, A. Scullion and J. E. Cygler, "Results of a survey to assess the current status of in-vivo dosimetry in Canada," Interactions: the Canadian Medical Physics Newsletter **58,** 13-18 (2012).
2. S. W. S. McKeever, "Optically stimulated luminescence dosimetry," Nuclear Instruments and Methods in Physics Research B **184,** 29-54 (2001).
3. A. Viamonte, L. A. da Rosa, L. A. Buckley, A. Cherpak and J. E. Cygler, "Radiotherapy dosimetry using a commercial OSL system," *Med Phys* **35,** 1261-1266 (2008).
4. P. A. Jursinic, "Characterization of optically stimulated luminescent dosimeters, OSLDs, for clinical dosimetric measurements," *Med Phys* **34,** 4594-4604 (2007).
5. D. W. Kim, W. K. Chung, D. O. Shin, M. Yoon, U. J. Hwang, J. E. Rah, H. Jeong, S. Y. Lee, D. Shin, S. B. Lee and S. Y. Park, "Dose response of commercially available optically stimulated luminescent detector, Al2O3:C for megavoltage photons and electrons," *Radiat Prot Dosimetry* **149,** 101-108 (2012).
6. C. S. Reft, "The energy dependence and dose response of a commercial optically stimulated luminescent detector for kilovoltage photon, megavoltage photon, and electron, proton, and carbon beams," *Med Phys* **36,** 1690-1699 (2009).
7. A. A. Nunn, S. D. Davis, J. A. Micka and L. A. DeWerd, "LiF:Mg,Ti TLD response as a function of photon energy for moderately filtered x-ray spectra in the range of 20-250 kVp relative to 60Co," *Med Phys* **35,** 1859-1869 (2008).
8. S. B. Scarboro, D. S. Followill, J. R. Kerns, R. A. White and S. F. Kry, "Energy response of optically stimulated luminescent dosimeters for non-reference measurement locations in a 6 MV photon beam," *Phys Med Biol* **57,** 2505-2515.
9. J. R. Kerns, S. F. Kry, N. Sahoo, D. S. Followill and G. S. Ibbott, "Angular dependence of the nanoDot OSL dosimeter," *Med Phys* **38,** 3955-3962 (2011).

Note from the editor:

In the last issue of InterACTIONS, the figures for Kirkby *et al.'s* article were unfortunately omitted. With apologies to Kirkby *et al.* and our readers, we have decided to reprint in this issue the entire article including the figures.

COMP 2012 Treasurer’s Report

Crystal Plume Angers, MSc
Ottawa, ON

The Treasurer’s report was presented at COMP’s Annual General Meeting (AGM) in Halifax. The report focused on three main areas: a) the 2011 year end summary and auditors report, b) the 2012 year-to-date financial status, and c) the 2013 budget and membership fee increase. The report highlights are presented here.

The 2011 auditors report as well as the 2012 AGM minutes will be circulated to all COMP members via email and will be posted on the COMP website.

2011 Year End Summary

Nephin & Winter Chartered Accountants audited the financial statements for 2011. At the AGM it was moved and passed that Nephin & Winter be retained to audit the 2012 statements. The 2011 year-end balance sheet is provided below and shows that the total equity at year-end was $227,561.33. The total equity is reduced from 2010 year-end due to a 2011 deficient of $4,951.49. The 2011 deficit can be attributed to one time expenses for strategic planning and translation services.

Canadian Organization of Medical Physicists Balance Sheet as at 31 Dec, 2011

ASSET		
Current Assets		
TD Canada Trust Chequing	60,135.45	
Beanstream Holding Account	33,366.75	
Total Cash		93,502.20
Investments		0.00
ING Savings Account		203,865.66
Accounts Receivable	13,865.47	
Interest receivable	0.00	
Total Receivable		13,865.47
Prepaid Expenses		49,599.90
Total Current Assets		360,833.23
TOTAL ASSET		360,833.23
LIABILITY		
Current Liabilities		
Accounts Payable		13,712.00
Accrued liabilities		2,000.00
LAC		0.00
Deferred Income - Advertising		11,715.00
Deferred Income - Dues		18,025.39
Deferred Income - Subscriptions		949.51
Deferred Income - H.E. Johns		550.00
Deferred Income - Winter School		86,220.00
TD Visa Payable - N. Barrett	100.00	
TD Visa Payable - M. Mondat	0.00	
TD VIsa Payable - W. Ziegler	0.00	
Total Credit Card Payables		100.00
GST/HST Charged on Sales	0.00	
GST/HST Paid on Purchases	0.00	
GST Owing (Refund)		0.00
Total Current Liabilities		133,271.90
TOTAL LIABILITY		133,271.90
EQUITY		
Retained Earnings		
Retained Earnings - Previous Year		232,512.82
Current Earnings		-4,951.49
Total Retained Earnings		227,561.33
TOTAL EQUITY		227,561.33
LIABILITIES AND EQUITY		360,833.23

2012 Year-to-Date

A financial summary is provided below and includes the 2012 budget and the actual 2012 year-to-date (YTD) as of June. As is typical for the mid-year statements, most of the revenue has been accrued but over half of the expenses are still outstanding. The 2012 revenues are tracking well against the budget with the Winter School realizing a profit of just over $17K. This increased profit will help to offset the 2012 budgeted deficit of approximately $6K. Furthermore, a technical survey feasibility study was budgeted in 2011 but not expensed until 2012, thereby increasing the 2012 projected deficit to approximately $9.5K.

2013 Budget and Membership Fee Increase

	Budget 2013	Budget 2012	Actual 2012 YTD	Actual 2011	Actual 2010
REVENUE					
Total Advertising	**26,000.00**	**26,000.00**	**22,680.00**	**31,579.92**	**29,212.82**
Total ASM	**35,000.00**	**134,000.00**	**126,830.97**	**54,788.30**	**154,609.33**
Total Winter School	**94,050.00**	**91,820.00**	**97,113.70**	**71,417.82**	**38,804.00**
Interest Income	2,000.00	2,500.00	1,064.66	2,531.15	3,133.80
Membership Dues & Processing Fees	137,500.00	116,000.00	117,269.26	115,911.94	114,924.09
Subscriptions	0.00	0.00	2,649.51	3,720.00	3,869.17
Award Sponsorship Revenue	2,000.00	2,000.00	2,000.00	0.00	2,000.00
Misc. Revenue	**0.00**	0.00	110.00	-28.70	1,555.90
TOTAL REVENUE	**296,550.00**	**372,320.00**	**369,718.10**	**279,920.43**	**348,109.11**
EXPENSES					
Total - Committees & Executive/Board	**33,200.00**	**21,600.00**	**142.97**	**33,768.76**	**16,897.84**
Travel to represent COMP/CCPM	**3,000.00**	**3,000.00**	**116.05**	**1,223.24**	**500.00**
Travel for CAMPEP	**4,500.00**	**6,100.00**	**0.00**	**2,229.26**	**5,771.75**
Total - Annual Scientific Meeting	**0.00**	**115,300.00**	**6,937.88**	**37,221.83**	**117,965.43**
Total - Winter School	**78,900.00**	**79,276.00**	**79,841.09**	**64,057.50**	**39,175.77**
Directory	0.00	0.00	0.00	7,950.89	0.00
Newsletter	20,000.00	20,000.00	8,693.69	18,976.67	17,121.26
Website	4,000.00	4,000.00	1,010.00	6,204.65	5,024.65
Bilingual	3,000.00	3,000.00	832.46	4,656.53	
Professional Survey	0.00	4,000.00	0.00	0.00	3,928.80
Total - Programs & Services	**27,000.00**	**31,000.00**	**10,536.15**	**37,788.74**	**26,074.71**
Total - Office & Administration	**106,480.00**	**105,630.00**	**55,128.19**	**94,099.08**	**96,896.29**
Total - Awards & Support	**22,000.00**	**16,000.00**	**7,662.17**	**14,483.51**	**12,875.44**
TOTAL EXPENSES	**275,080.00**	**377,906.00**	**160,364.50**	**284,871.92**	**316,157.23**
SURPLUS (DEFICIT)	**21,470.00**	**-5,586.00**	**209,353.60**	**-4,951.49**	**31,951.88**

The 2013 budget, summarized above, was approved by the joint COMP/CCPM board and presented at the AGM. In order to balance the budget for 2013, a membership fee increase was proposed and approved. The increased revenue obtained from higher fees will help offset the deficit experienced in 2011 and the budgeted deficit for 2012. The increased revenue will also enable COMP to continue to improve services. Specifically, the 2011 Strategic Planning session identified website redevelopment and continuing education as important future initiatives. The membership fee increase is summarized below and will take effect in 2013. COMP continues to encourage student involvement and as such the fee increase does not apply to the student membership type.

Type	2012 Fee	2013 Approved Fee	Fee Increase
Corporate	$750	$900	$150
Full	$200	$240	$40
Associate	$115	$135	$20
Retired	$30	$35	$5
Student (1st year waived)	**$30**	**$30**	**$0**

A review of our past year's financial summaries reveals a highly variable bottom line (surplus or deficit) largely due to one time expenses. In order to separate operating expenditures from one time expenses, it was decided to maintain a surplus operating budget and to track special projects independent of this budget. This has been done for 2013 (note the budgeted surplus of approximately $20K) and a budget for special projects provided below.

	Budget 2013
SPECIAL PROJECTS	
Technical Survey	5,000.00
Website Redevelopment	12,500.00
Non-Profit Regs Change	2,000.00
Total - Special Projects	19,500.00

If there are any questions about the figures presented here or our financial situation please do not hesitate to contact me, cangers@ottawahospital.on.ca

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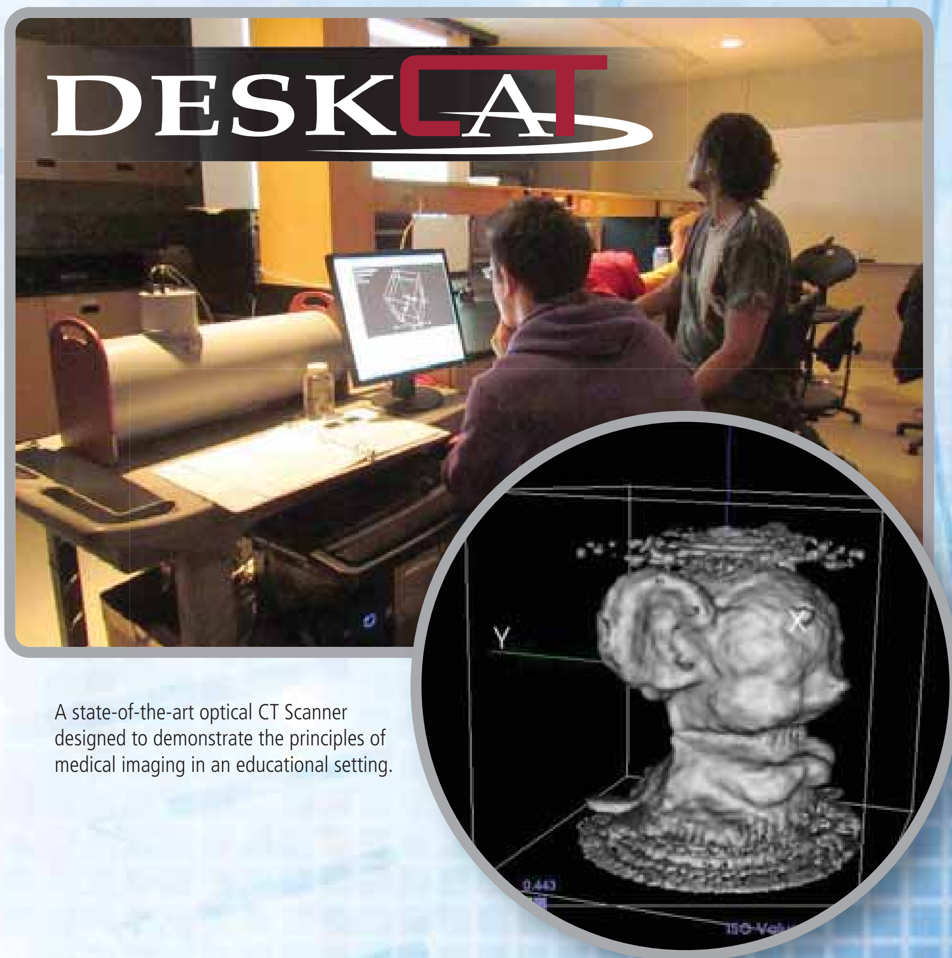

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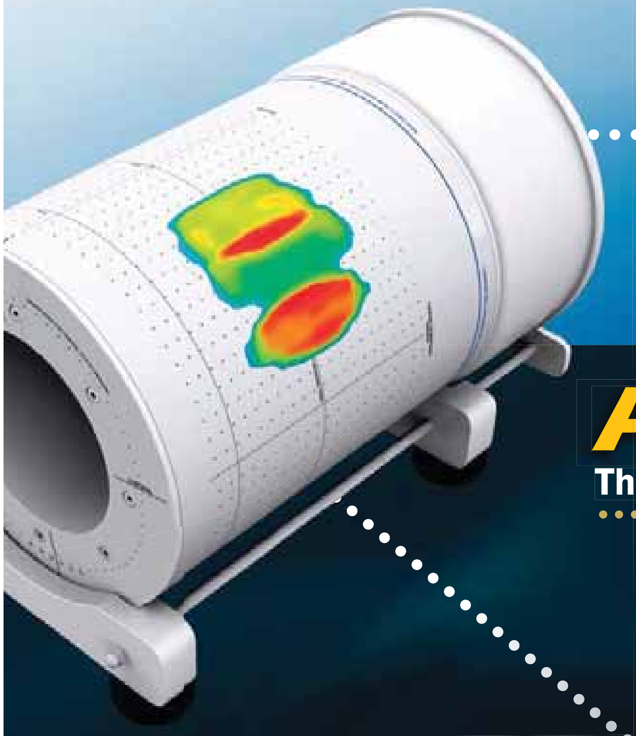

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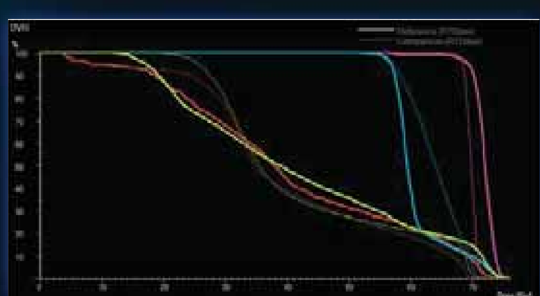

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4th Annual COMP Winter School

Quality and Safety in Radiation Oncology

Fairmont Mont Tremblant, January 27th - January 31st 2013

4éme École d'hiver annuelle de l'OCPM

Quality and Safety in Radiation Oncology

Fairmont Mont Tremblant, January 27th - January 31st 2013

The Winter School on Quality and Safety in Radiation Oncology

The Winter School is a multidisciplinary radiation oncology continuing education event where participants learn how to build a culture of quality and safety for improved delivery of radiotherapy. This year's School will be held at the Fairmont Mt. Tremblant, in Mt. Tremblant Quebec, from January 27th to 31st, 2013 The Winter School brings together experts in human and team performance, software design, law and ethics, quality management, and the application of quality tools in radiation oncology. Participants will learn the tools and techniques to meet the demand for greater safety and quality in contemporary radiotherapy. Whether you are returning or are a first-time attendee, the 4th COMP Winter School is the place to gain new insights on how to advance quality and safety throughout your program. And with new faculty and new topics in 2013, the 4th Winter School will engage all radiation oncologists, radiotherapists, and medical physicists as we improve the delivery of radiation in our programs.

Learn from the experts in quality and safety

The Winter School faculty includes experts in human performance, team performance, and software safety – all central components of our operations – so that participants can apply fundamental principles of process design in radiation oncology. A session on the ethical and legal basis of quality provides context on the imperative for working towards better quality and safety.

Learn from the leaders in radiation oncology

The Winter School faculty includes leading radiation oncologists, radiotherapists and physicists who will describe how a culture of quality has led to improved performance in their cancer centres. We keep the Winter School audience small, so you can strike up a conversation with the faculty during the school. Pose your quality questions to the faculty, and hear their opinions in our interactive Faculty Fishbowl at the end of the meeting.

Learn from your peers

We rely on you - the participant - to share learning opportunities with your peers. Present your work in our Project Gallery – the Winter School's informational, conversational marketplace of ideas about quality and safety – to brainstorm with your colleagues in the national and international community. Whether it's over breakfast, at coffee breaks, in Project Galleries, or at the course banquet, the Winter School provides all attendees with great opportunities to share best practices for the benefit of our patients.

TOPICS

- Ethical Basis of Qaulity
- Human Visual Performance; Software Selection
- Quality in a New Cancer Centre
- QA in Changing RT Technology; Quality Case Studies in RT
- Legal Issues
- Quality Management
- Software Reliability/ Hazard-Rsk Analysis
- Applications of SPC to Quality & Safety; Tools for Quality Improvement
- Human/Team Performance

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- John French, FCAMRT MSc. CHE, BC Cancer Agency, RT Program
- Robyn Grant, L.L.B., Borden Ladner Gervais LLP
- Thomas McGowan, MD, MBA, FRCPC, Credit Valley Hospital
- Vera Pantelic, PhD, McMaster University
- Todd Pawlicki, PhD, University of California at San Diego
- Svetlena Taneva-Metzger, PhD, Toronto General Hospital

Testimonials from 2012 Winter School participants

"This is the best conference I have been to. I found it very helpful to hear from other experts outside our field about quality and human performance variation. I wish I had learned of some of these things earlier in my career. We are very motivated to implement many practical quality improvement activities at our institution as a result of this meeting."

"It was a very multidisciplinary environment with lots of opportunities for interaction. The sessions were VERY informative and highly relevant to quality in RT."

Dates to remember

Abstract submission opens: September 10, 2012

Registration opens: October 1, 2012

Abstract submission closes: November 2, 2012

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2012

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Chief Examiner's Report 2012

Robert Corns
Chief Examiner CCPM

Exam work: Several projects were taken on this year. These include splitting the question banks, translating the written exams into French, and revising the Diagnostic Radiological Imaging Physics exams.

The project to split the exam format from large thematic questions to individual was started by the previous Chief Examiner, Michael Evans, who split the Radiation Oncology exams. Three years later, we have completed the other exams in MRI, Diagnostic Radiological Imaging and Nuclear Medicine.

The College also began to translate the written question banks into French last year. This work is nearly complete and the French exams for Radiation Oncology, Nuclear Medicine and Diagnostic Radiological Imaging were posted on the CCPM web site last fall. The MRI exam is being worked on. Proudly, we had our first candidate take an all French MCCPM exam this year.

One feedback comment we had from candidates was the Diagnostic Radiological Imaging Physics Exams were dated with many film-based questions. Keeping eights sets of exams up to date (Parts III & IV in 4 categories) with current practices is challenging and I would like to thank Harry Ingleby and Daniel Rickey for revising the Diagnostic Imaging exams.

Membership Written Examination: The written membership exam was held on March 10, 2012 and 36 candidates took this exam — 28 candidates in Radiation Oncology and 8 in Diagnostic Radiology. One exam was written in French and 35 exams were written in English. The examination was held in 11 locations across the country. Out of these 36 candidates, 24 passed the examination — 20 in Radiation Oncology and 4 in Diagnostic Radiology.

Membership Oral examination: The Membership oral examinations were held in May in two cities. A total of 29 candidates took the Membership Oral exam — 25 in Radiation Oncology, and 4 in Diagnostic Radiological Imaging. There were 24 new candidates and 5 re-sits. The oral examination for the Radiation Oncology subspecialty was held in Montreal using six parallel sessions over two days. In addition, a French exam session was given for 2 candidates. The Diagnostic Radiological Imaging Physics exam was held in Winnipeg. A total of 25 candidates passed — 21 in Radiation Oncology and 4 in Diagnostic Radiological Imaging Physics.

The successful candidates for this year's MCCPM examination were:

Jean-François Aubry	Thorarin Bjarnason DR	Hugo Bouchard
Malik Brunet-Benkhoucha	Lee Chin	Shahin Fattahi
Andre Fleck	Danielle Fraser	John Kildea
Daniel La Russa	Michael Lamey	Matthew Larocque
Emily Poon	Ananth Ravi	Arman Sarfehnia
Monica Serban	Edwin Sham	Gabriela Stroian
Yogesh Thakur DR	Elena Tonkopi DR	Fabiola Vallejo-Castañeda
Roxana Vlad	Robert Weersink	Chang-Ying Yang DR
Weiguang Yao		

Fellowship Exam: The FCCPM exams were held in Halifax in July. A total 17 candidates presented and were examined in two parallel sessions over two days by 13 examiners. All 17 candidates were in the Radiation Oncology specialty and 13 candidates passed.

The successful candidates for this year's FCCPM examination were:

Wamied Abdel-Rahman	Derek Brown	Fred Cao
Thomas Chow	Ermias Gete	Derek Hyde
Michelle Nielsen	Tony Popescu	Russell Ruo
Wendy Smith	David Spencer	Alasdair Syme
Ivan Yeung		

On behalf of the CCPM, I would like to congratulate all new Members and Fellows.

Finally, I would like to point out the tremendous level of support I have received from the Board and the CCPM community at large in running this exam. Whenever I have asked for help it has always been forthcoming, and the strength and success of the CCPM is a reflection of the commitment of its members. In particular I would like to thank the following people that helped out either as invigilators, with logistical support, on the exam committee, the marking committee, the appeals committee, as MCCPM oral examiners, as FCCPM oral examiners and fellow Board members (apologies if I missed anyone).

Alistair Baille	Boyd McCurdy	Brenda Clark
Brian Keller	Cathy Neath	Chantal Boudreau
Cheryl Duzenli	Claudia Leavens	Clement Arsenault
Conrad Yuen	Craig Beckett	Daniel Rickey
Darcy Mason	David Wilkins	Ellen Wilcox
Ernest Osei	Francois Deblois	Geetha Menon
Gisele Kite	Glenn Wells	Greg Salomons
Harry Ingleby	Heping Xu	Horacio Patrocinio
Isabelle Gagne	James Robar	Jean Theberge
John Schreiner	Linda Crelinsten	Marc MacKenzie
Matt Schmid	Michael Evans	Mike Oliver
Parminder Basran	Peter McGhee	Renée Larouche
Richard Wassenaar	Robert Doucet	Russel Ruo
Sherry Conners	Stephen Sawchuk	Stuart Burnett
Tony Popescu	Vitali Moiseenko	Will Parker
Xia Wu		

Message from the COMP President

continued from page 99

Canada", some key elements from the Strategic Plan will be put in place within the next 12 to 24 months. For those who were at this year's Annual General Meeting, you may remember that I showed a word cloud. It is reproduced here. The intent is that it provide a visual overview of topics that are of importance to you, as COMP members, and provide direction for us, the COMP Board, to invest efforts in the advancement of Medical Physics in Canada. As discussed above, providing more CE was by far the most important item for the membership. We've listened to you and implemented changes at the 2012 AGM; this is just the beginning. COMP will help to provide more high quality, low cost CE through participation at regional meetings such as WESCAN, AQPMC and others. We also have thoughts regarding an exciting new CE opportunity dedicated to medical physics students and physics assistants. Finally, COMP will be looking into having some of its CE content available online.

Je ne reprendrai pas ici tous les éléments du document de planification stratégique, mais j'utiliserai cette chronique pour vous faire part des derniers développements, et ce sur une base régulière. Un autre changement important annoncé à la réunion annuelle et entrera en vigueur en janvier 2013: les nouveaux membres étudiants du COMP auront congé de frais pour la première année. De plus, une initiative étudiante a été approuvée par les membres. Le COMP facilitera, à travers une contribution financière, un échange entre deux étudiants au doctorat de différents programmes.

I, and the Board, would certainly like to commend the Student Council for their dynamism. Over the past few years, Alejandra Rangel and Nadia Octave have created a living entity that has now been passed on to the next generation (and a Student Council Board that is now composed of 4 students). COMP acknowledges this effort and has decided to waive the 1st year membership fee for new students. Marco Carlone (Councillor for Science and Education) has compiled a top ten list of reasons for students to become COMP Members, which I am reproducing here (with his permission):

1. Student Council: a voice within COMP.
2. Subsidized ASM fee (a good meal at least).
3. Networking with fellow students.
4. Meeting future employers.
5. Statistics show that students who join COMP have a better pass rate for the CCPM exam.
6. New student exchange program.
7. First year membership fee waived for students.
8. Know more about what is happening in medical physics in Canada.
9. Now I know what CNSC is really doing.
10. YIS competition.

To conclude, exciting new developments are happening within COMP, driven in large part by members' requests. We urge you to continue your active participation, provide feedback, comments and to get involved. This is the only way forward for an organization like COMP.

À la prochaine!

Halifax 2012 – COMP ASM

By Parminder Basran, PhD, FCCPM

This year's meeting was held in Halifax Nova Scotia at the Westin Hotel, located by the banks of the Atlantic Ocean. It was a week of hot and heavy physics, with the temperatures in the high 20s pretty much all week. I had been to Halifax several years ago and loved it then, so I was excited to return.

I arrived a day early for a COMP meeting and had a few hours to explore the city. For those who don't know, Halifax's population is about 400,000, offers a mix of university, government, military, harbour and retirement communities, which is quite similar to Victoria (my home). The conference hotel was located adjacent to Pier 21-Canada's Immigration Museum, the Maritime Museum of the Atlantic, and the Historic Properties with restored 19th century buildings, now packed with boutiques and restaurants. Halifax is a great walking city and so I got to explore many neighbourhoods by foot. I also took the passenger ferry out to Dartmouth and back – cheap and fun entertainment. For about 5 bucks I got great views of the inlet, cities, harbour-activity, and surrounding islands on the frequently used commuter ferry.

The COMP fun began on Wednesday night at the Icebreaker. It's always great hooking up with old colleagues, and meeting new ones (see pictures). This was quickly followed by the opening lecture from Dr. Rob Rutledge. He's a radiation oncologist in Halifax and offers some interesting insight on stress in the health care environment. We were entertained with an interactive presentation, participated in some (perhaps awkward) meditating, and were subjected to a lot of interesting factoids about stress in the workplace. Medical physicists are highly prone to burn out due to the high-stress environments they tend to work in. My take away message from this presentation was if you don't take the time to take care of yourself, you can't take care of anybody else.

After Dr. Rutledge's presentation, Dr. Jake Van Dyke, previously working for the IAEA and from London, Ontario, hosted a non-COMP related and informal presentation on a concept similar to MÉDECINS SANS FRONTIÈRES / Doctors Without Borders: Physicists without Borders. The idea was to help provide some expertise to developing nations on how to use the technology of radiation oncology safely and efficiently. This would be done on a completely voluntary basis, as is done with Doctors Without Borders. While organizations like the IAEA are heavily involved in such efforts -particularly in facilitating treatment equipment in developing countries- there still remains a significant void in helping facilities become proficient in delivering safe, high-quality radiation oncology. Such an organization of medical physicists does indeed exist in France (Physicien Médical Sans Frontières, see http://www.pmsf.asso.fr/), and partnerships with this organization were discussed. There is a lot of work to be done, particularly in non-French speaking developing countries. There was lengthy discussion on what steps we could take to advance this cause. And based on the number of participants attending, there was a lot of interest from COMP members.

Before the science began on Thursday, Philips had sponsored a 5K fun run and so, against my doctor's wishes, I decided to partake. The bus out to Point Pleasant Park from the hotel was full of outdoor enthusiasts willing to wake up at sunrise (my watch documents it!) for a friendly jog in the park. The park lies on a rocky 75-hectare (185 acre) promontory jutting into the Atlantic Ocean . Initially inhabited by the Mi'kmaq, it was transformed into a military bastion in the 1700s, and later converted to a park in the mid 1800s. Paths hug the shoreline, providing joggers and walkers great views of marine activity flowing in and out of the harbour. Running along the shores of the park with backdrops of the ocean, scattered island's and the rising sun was a great way to start the day.

Relatively new to the COMP meetings are the Educational sessions, held at 8 am in the morning. All of the presentations were of excellent quality. I particularly enjoyed the one on IGRT given by Doug Moseley from PMH, quietly wondering when those PMH physicists ever sleep with all the great work they seem to generate.

Each of the morning sessions were followed with scientific sessions. Having attended quite a few AAPM and ASTRO meetings, I appreciate the single track sessions offered at COMP meetings: it provides a 'community' vibe. But the best of the conference is usually the JR Cunningham Young Investigator Symposium with, once again, strong showings from Québec, Montréal, London, and Ottawa (winners of the YIS are available on the COMP website, located here https://www.medphys.ca/media.php?mid=3416).

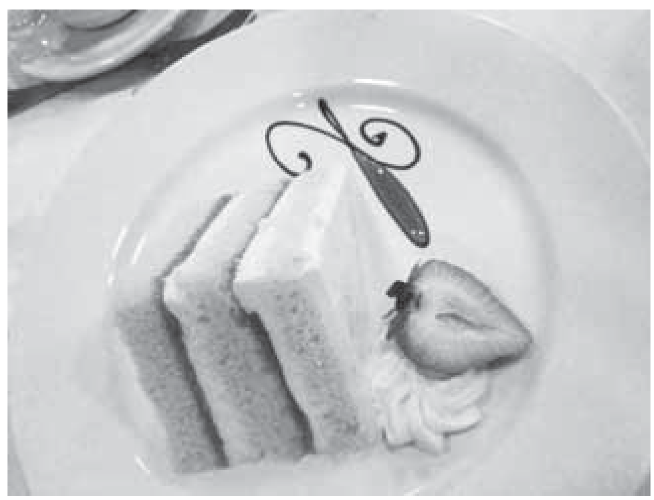
Following the (rather efficient) CCPM meeting came the Poster Reception: an opportunity to hook up with acquaintances, make new ones, and talk some science with a beer in your hand.

That evening, I headed out to the harbour-front for a stroll. The City of Halifax has done a wonderful job rejuvenating their harbour-front by expanding the pedestrian-friendly boardwalk. The Halifax Jazz Festival was on all week and the harbour-front was bustling with activity. I visited a great brewpub with some colleagues. Halifax is a great city for wine, beer and lobster.

On Friday we had the Gold Medal award presentation, awarded to Dr. Dave Rogers of Carlton University, with an introduction given by Rock Mackie from the University of Wisconsin. We all know what impact Dr. Rogers has made in the field of medical physics. The presentations, however, provided some insight on Dr. Rogers as an educator, scientist, advocate of the pure sciences, husband, and father.

After lunch was the scientific session on Radiation Therapy and Verification Imaging, followed once again with a pretty efficient meeting of the COMP AGM (wow!). During the COMP AGM, the first batch of Fellows of COMP were awarded (see below and https://www.medphys.ca/media.php?mid=3415 for details).

Afterwards followed the banquet, which was the highlight of the meeting. Pier 21 has an important historical context as being one of the first major ports of entry for immigrants to Canada, now restored into a museum and banquet area. It was fascinating to learn about the immigrant experience during the early 1900s, with one-way tickets across the Atlantic Ocean costing a few dollars (which must have been a fortune back then). Perhaps the most entertaining part of the entire conference was the lobster dinner. I was expecting a waiter/waitress to plop a big fat lobster on my plate, and indeed that happened (see picture below), but in a much more entertaining way. We were treated to a procession of lobsters led by John Grant, a Medical Physicist from the Cape Breton Cancer Centre -kilt and all- playing the bagpipes. It was awesome. After we stuffed our bellies, the blues band began to croon. We all know the musical prowess of medical physicists in Canada, so it did not come as a surprise when local medical physicist James Robar jumped on stage to join the band to play some slide guitar. Not to be outdone, Jerry Battista jumped onstage to play guitar alongside the band with a borrowed guitar. There was a lot of dancing, laughing, and fun times.



The Saturday morning Continuing Education session focused on professional matters and patient safety. There was a great presentation on patient safety law delivered by two professors (Lorraine Lafferty and William Leahy) at the Schulich School of Law, Dalhousie University. William Leahy was a deputy minister in the Nova Scotia Department of Labour and offered some interesting insights on the professional status of Medical Physicists at a governmental/provincial level. This was followed by another scientific session on brachytherapy and other topics and the next thing I knew the conference was over! Time to catch a plane in two hours!

Halifax provided a beautiful venue for this years' ASM, and I want to applaud the local arrangements committee: not only did they organize a highly successful and well-executed conference, they arranged the perfect weather for it as well. I didn't get a chance to visit many of attractions of Halifax, such as the Citadel, Government House, or revisit Peggy's Cove, but perhaps next time I'll make it a vacation/conference. Next year in 2013, we have a joint meeting with CARO in Montréal held in September rather than the summer months. If I don't see you at the Winter School, I will see you at COMP/CARO!

Students and the Student Council at the 2012 ASM

Michael Balderson
Department of Physics and Astronomy, Radiation Oncology Physics, University of Victoria

Bassey Bassey
Department of Physics and Engineering Physics, University of Saskatchewan

Jason R Crawford
Department of Physics and Astronomy, Medical Physics, University of Victoria

Sarah G Cuddy
Carleton University, University of Ottawa Heart Institute

Alejandra Rangel
Department of Medical Physics, Carlo Fidani Peel Regional Cancer Centre, The Credit Valley Hospital, Mississauga, Ontario

Nadia Octave
Département de radio-Oncologie, Hôtel-Dieu de Québec, Centre Hospitalier Universitaire de Québec; Department de Physique, de Génie Physique et d'Optique, Université Laval, Québec

Students were once again a central part of the Annual Scientific Meeting in Halifax, NS. A total of forty-six students were registered, representing Canadian universities from coast-to-coast, and composing roughly 25% of those in attendance.

On the second day of the conference, the SC held an annual meeting that was open to all students and interested attendees. This year, the two founding co-chairs of the SC, Nadia Octave and Ale Rangel, handed the reigns over and two new co-chairs were selected: Michael Balderson from the University of Calgary and Jason Crawford from the University of Victoria.

In the first half of the meeting, several significant updates were provided in regards to the Student Council's activities over the last year. The SC announced COMP's approval of the "Student Exchange Program". This program is directed to PhD students who are interested in a research partnership with one other institution in Canada during a summer term. The convocation will be launched by COMP with the help of the SC at the end of this year with the exchange taking place during the summer 2013. For more information, please contact Alejandra Rangel, arangel@cvh.on.ca

From left: Michael Balderson, Jason Crawford, Alejandra Rangel, Bassey Bassey

Students were advised on the refreshed Terms of Reference document of the SC, which outlines its objectives, functions and organization. Also discussed was the newly created Student Advisory Group (SAG). The SAG is composed of medical physics students who each come from a separate institution in Canada, and this ensemble of students will serve as a bridge for communication between the SC and the greater medical physics student population. The purpose of such a group is to promote active participation of students in raising and discussing matters of interest that can be brought to the attention of COMP. Since the meeting, seven institutions are represented by this group and the SC is actively recruiting new volunteers for the SAG.

The second half of the meeting was reserved for presentations from three speakers who represented a diversity of backgrounds and emphasized the different career choices available to medical physics students. First, Dr. Peter McGhee, former COMP president, provided students with a brief review of COMP organizational structure and future intentions of the organization, as well as presented information provided by Dr. Craig Beckett on employment trends and demographics. Next, Dr. David Wilkins, past president of CCPM, spoke of the role of CCPM and outlined the opportunities, challenges and rewards of hospital-based career paths. Finally, Crystal Angers, a Medical Physicist at the Ottawa Hospital, presented her extensive experience with a non-hospital-based career in the private sector.

Later that evening, students were invited to a social night out at Durty Nelly's, an Irish style pub in downtown Halifax. Students were accompanied by a number of COMP board members, and enjoyed live performances of East Coast music at the warm and friendly establishment.

The Student Council would like to acknowledge and thank the many people who generously contributed to these student-oriented events and particularly Marco Carlone for his constant support and mentorship.

A message from the former Student Council Co-chairs:

The COMP Student Council has now three years of service to the student community in Canada. The call was launched at the 2008 COMP edition in Quebec City, when Marco Carlone and Stephen Pistorius first introduced the idea of COMP having a student council. We were given the task to raise a student body that could represent the broader student community as part of the COMP membership. We had only the two of us and we embarked on this project with lots of motivation.

The first official meeting of the council took place at the AGM of COMP in 2009 in Victoria. Since then, we have worked on establishing links among the student community through the use of emails, a facebook group and preparing meetings as well as social events for students during the COMP conference every year. We have worked on bringing useful information to students through developing the student-related site as part of the COMP website; we have invited board members and recognized professionals to talk on topics of interest for the students in sessions organized at the AGM as well. We have also ambitioned bringing new opportunities to students and thus worked in the design and approval of a "COMP student exchange program" for which we are happy to open the first convocation this December. Students now have a stronger voice in COMP, a total of 12 students from all over the country are participating in either the Student Council or the Student Advisory Group and we encourage all of you, who want to make a difference in our community, to come forward.

As the former co-Chairs of the SC, it has been a pleasure to work for our student community during these first three years; it was a rich experience on both professional and personal sides. We feel confident that the new team will continue to build the group's history and bring new opportunities to medical physics students in Canada.

Ale Rangel & Nadia Octave

COMP 2012 in Halifax Highlight Reel

The winning YIS talk in action!

Jake Van Dyk winning a bottle of wine.

Mauro Tambasco and Michelle_Neilsen with Stephen Breen (who is avoiding eye contact with the camera for some reason).

Gisele Kite and Nancy Barrett, the glue of COMP, with Peter McGhee.

COMP Gold Medal Winners all in a row (L to R): Ervin Podgorsak, Jack Cunningham, Aaron Fenster, Dave Rogers, and Jake Van Dyk.

The audience!

Jake Van Dyk running over time (but it was a great talk!).

The devouring of the lobster.

Francois Therriault-Proulx, the YIS winner, posing with Jack Cunningham and James Robar (Francois looks like he's scared to get any closer to Jack).

Brenda Clark and John Grant enjoying some sort of "beverages".

When a former COMP president meets a new COMP president: Peter McGhee and Luc Beaulieu with the gavel, Robert's Rules, and the ceremonial beer.

John Grant piping in the lobster at the banquet.

And there was dancing!

And the blues with Joe Murphy and the Water Street Blues Band and special guest Jerry Battista.

More blues with special guest James Robar.

And then the Zydeco started with inappropriately shaped washboards.

This is a typical scene from the banquet.

For many more pictures from COMP 2012, go to the COMP Facebook page!!

FCOMP List

The Canadian Organization of Medical Physicists (COMP) awarded its Fellow of COMP awards at its annual scientific meeting held in Halifax from July 11 – July 14, 2012. This is the inaugural year for the FCOMP award which recognizes those who have made a significant contribution to the field of medical physics and to COMP through one or more of the following:

- service to the COMP
- a demonstrated body of work showing an outstanding contribution to research and development in the medical physics profession
- a demonstrated body of work showing an outstanding contribution to professional practice
- through educational activities or mentorship, particularly regarding the education and training of medical physicists, medical residents and allied health personnel

All of the 2012 recipients are either COMP Gold Medallists and/or former Presidents of COMP.

The recipients of this year's awards are:

Clément Arsenault
Jerry Battista
Sherry Connors
Jack Cunningham
Peter Dunscombe
Gino Fallone
Aaron Fenster
Paul Johns
Peter O'Brien
Michael Patterson
Ervin Podgorsak
Stephen Pistorius
Dave Rogers
Jake Van Dyk

AWARD WINNERS AT 2012 ANNUAL SCIENTIFIC MEETING – HALIFAX

Gold Medal	**David W.O. Rogers**, Carleton University, Ottawa, ON
Sylvia Fedoruk	**Andriy Andreyev**, University of British Columbia *Andreyev A. and Celler A., "Dual-isotope PET using positron-gamma emitters," Physics in Medicine and Biology, 56, Vol. 14, July 2011; 4539-4556.*
Young Investigators Symposium	**1st Place: François Therriault-Proulx,** University of Texas MD Anderson Cancer Center, Houston, TX and Université Laval, Québec, QC *"A new optically encoded single-fiber plastic scintillation detector for multi-point radiation dosimetry"* **2nd Place: Elsayed Ali,** Carleton University, Ottawa, ON *"A validated approach for clinical linacs to accurately determine the photon spectra and the incident electron energy"* **3rd Place: James Renaud,** McGill University, Montreal, QC *"Development of a graphite probe calorimeter for absolute clinical dosimetry: Numerical design optimization, prototyping and experimental proof-of-concept"*
Best Oral	**1st prize: L. Mathew, A. Sawaminath, J. Szabo, M Wierzbicki** Juravinski Cancer Centre & McMaster University, Hamilton, ON *"Planning Target Volume Margin Suitability in Lung Stereotactic Body Radiation Therapy: A Preliminary Evaluation using Cone-beam Computed Tomography"* **2nd prize: Malcolm McEwen, I. El Gamal** National Research Council *"Quantitative Air Communication Testing of Ion Chambers for Megavoltage Dosimetry"*
Best Poster	**1st prize: Patrice Munger,** Hôpital Maisonneuve-Rosemont, Montreal, QC *"Dynamic Delivery Quality Assurance on Elekta Linacs"* **2nd prize: Robert Corns,** BC Cancer Agency – Fraser Valley Centre *"Improved Dose Accuracy for Plan Checking IMRT Breast Plans"*

Professor David W.O. Rogers Awarded the Gold Medal

Rock Mackie
Morgridge Institute for Research,
University of Wisconsin

David W.O. Rogers was awarded the COMP/OCPM Gold Medal at a ceremony in Halifax on July 13, 2012. The Gold Medal is COMP/OCPM's highest award for a member who has made an outstanding contribution to Canadian medical physics in the areas of research, education or service to the field. Dr. Roger's speech was attended by several other Gold Medal winners, including Drs. Jack Cunningham, Ervin Podgorsak, Aaron Fenster and Jake Van Dyk. I was honored to be asked to introduce Dave. Following his introduction he thanked his colleagues, students and post-doctoral fellows who have worked with him over the years. Most importantly he acknowledged the contribution and support of his wife and colleague, Dr. Joanna Cygler.

Dr. David W.O. Rogers has had two outstanding careers in the field of medical physics. For two decades he was at the National Research Council (NRC). In 1984 the decision was made for the Radiation Standards group at the NRC to be closed down. Dr. Rogers lead a national campaign to have the decision reversed. One tactic was to persuade Jay Ingram to invite Jack Cunningham on his weekly radio show "Quirks and Quarks" to discuss the closure. Jack Cunningham was particularly persuasive and the decision was revisited. A new Ionizing Radiation Standards (IRS) group was formed with Dr. Rogers as the leader. During the Rogers tenure, the IRS became one of the most respected radiation standards group in the world. While there he became almost synonymous with the Electron Gamma Shower (EGS) Monte Carlo simulation code. He and his team, which also included Monte Carlo giants Dr. Alex Bielajew and Dr. Iwan Kawrakow, systematically investigated and improved the code system especially for low energy applications. The BEAM code and EGSnrc is one of the main tools used for radiotherapy research and development. This code is the basis for modern radiation ionization dosimetry and the kernel database for convolution algorithms. At most of the meetings in our field about half of the talks on Monte Carlo simulation acknowledge using Rogers' group's BEAM code. At Carleton University's Physics Department, he and his academic team continue to improve, document, instruct and use in new ways the EGS Monte Carlo code and solve problems in radiation science. In this position, Dr. Rogers is the recipient of a prestigious Canada Research Chair.

Professor Rogers has a keen mathematical mind, a sound understanding of the physics of photon and charged particle transport, a strong grasp of computer science and is a gifted algorithm designer. He is not only extremely capable theoretically, but he has a strong grasp of the rigors of metrology. He is able to quickly get to the heart of a problem, sort out the relevant facts and determine if it should be solved experimentally, analytically, computationally or some combination of each one. He is extremely productive. In his current Carleton position, he has consistently published 6 to 8 papers a year in the field's best journals. Because of the quality, productivity and importance of his work to our field he likely has the highest citation index of any researcher in medical physics.

Professor Rogers is not only an outstanding research scientist but also an accomplished teacher and mentor of students. He has given innumerable workshops around the world on the EGS code system and he has given a heralded series of workshops on the BEAM code at the NRC. The students he mentored in his career were extremely well trained and most have gone on to successful careers at academic centers. With Dr. Joanna Cygler, he was the Scientific Co-director and Proceedings Co-editor of the American Association of Physicists in Medicine (AAPM) Summer School in 2009 at Colorado College on Clinical Dosimetry Measurements in Radiotherapy. He has been a magnet for post-doctoral fellows, who flock to his group from around the world for his unique mix of Monte Carlo simulation and precise dosimetry metrology knowledge.

In addition to his service to COMP/OCPM, Dr. Rogers also works tirelessly for international medical physics organizations. He has been an elected Board member-at-large of the AAPM and has been on the Editorial Board for Medical Physics for decades. He is on the AAPM Science Council. He was selected as the 2010 Coolidge Award winner, the highest award given by the AAPM. It was won because of his work in the AAPM but also because of his international impact to research and teaching in our field. It is hoped that Dr. Rogers will continue to be an outstanding researcher, educator and member of the scientific community for many years to come.

COMP Gold Medal talk:
D. W. O. Rogers
Halifax, Friday 13th, July 2012

I want to start by thanking Rock Mackie for the kind introduction. It is especially meaningful since, as well as being a good friend, I consider Rock to be the finest radiotherapy medical physicist of his generation and so I am especially honoured that he came here to introduce me.

I also want to thank all my colleagues in COMP for this very special award. It is a great honour to join the ranks of previous recipients, people for whom I hold the greatest respect, from **Jack Cunningham, Sylvia Fedoruk** and **Doug Cormack** to **Ervin Podgorsak, Aaron Fenster** and **Jake van Dyk**. I am pleased to be numbered in their company.

When one is informed about receiving such an award, two things go through your mind. The first is to realize how much of the award you owe to the many wonderful people in your life.

In my case, first and foremost this means my wife **Joanna Cygler.** As most of you know, as an academic and a standards lab person for my entire career, my direct knowledge of clinical physics is minimal. But Joanna has been a great source of information and constantly acted as a reality check whenever I got too excited about an 0.7% effect. More importantly she has been a wonderful and loving partner in this adventure called living and for that I am eternally grateful.

But in addition I have been blessed to work with some outstanding physicists over the years:

- starting with my PhD supervisor, **Ted Litherland**, who was awarded the CAP's Gold Medal while I was his student, and he still holds an NSERC grant!
- to my collaborator, **Ralph Nelson** of SLAC, who is the grandfather of the EGS code system and has been a good friend for many years;
- to my collaborators on the OMEGA project (Ottawa Madison Electron Gamma Algorithm), **Rock Mackie** and **Paul Reckwerdt.** Not only was it stimulating working with them to develop the BEAM code system, but it was a joy to watch them first develop the Pinnacle treatment planning system and then Tomotherapy. I happened to be visiting their bunker when they took the first 6 MeV accelerator out of the box to install in their prototype. It was like kids with a box of candy.

  But before any of that, **Rock** played a major role in saving the entire Ionizing Radiation Standards section at NRC by generating lots of newspaper headlines when, in 1984, the Conservative Mulroney government laid off the entire group I worked in.
- Along those same lines, I owe a great deal to **Jack Cunningham** for many things, but in particular for the fact that he bent the truth slightly on CBC's Quirks and Quarks when asked, during that same period in 1984, if closing the standards lab at NRC would lead to more people dying of cancer, and he gave a simple `yes' answer. From that moment on our group was destined to avoid closure.
- So, with Jack's help, I continued to work at NRC with many fine colleagues, in particular with **Iwan Kawrakow,** the genius behind the physics in the EGSnrc code system and **Blake Walters** and **Ernesto Mainegra-Hing** who helped make EGSnrc and BEAMnrc useful, and more recently with **Malcolm McEwen** whose incredible experimental skills have made various projects possible and fun.
- Which brings me to my colleagues at Carleton University: **Paul Johns,** the driving force behind our CAMPEP graduate program and **Tong Xu, Gabriel Sawakuchi** and **Rowan Thomson** who create an enjoyable and stimulating work and research environment.

One of my greatest pleasures comes from the students, PDFs and RAs who, aside from doing most of the heavy lifting in research, have also become good friends and gone on to outstanding careers in medical physics

While my list is not as long a someone like Ervin Podgorsak's, it is too long to mention everyone, but I'd like to mention J**an Seuntjens, Charlie Ma, Rowan Thomson, Alan Li, Ahmed Meghzifene** and **Ge Zeng** who were all RAs/PDFs in my group at some point.

Similarly, I have been blessed with many outstanding graduate students such as **George Ding** (now the head of medical physics at Vanderbilt), **Daryoush Sheikh-Bagheri,** and **Lesley Buckley, Randy Taylor** and **Dan LaRussa** who now all work at the Ottawa Cancer Centre. Of course I cannot forget my current students,

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2012 COMP Annual Scientific Meeting Delegate Survey

Thank you to the 64 participants who took time to respond to the survey. Further congratulations go to Jorge Alpuche of CancerCare Manitoba whose name was drawn from the survey participants to win a $50 Chapters gift certificate. Once again delegates came away from our Annual Scientific Meeting (ASM) with a positive impression of the event. Of those that responded, 72% rated the value for the registration fee as excellent or very good.

All respondents were asked to indicate the aspects of the ASM that they liked most. The top four include:

1. Networking Opportunities (16)
2. Continuing Education Sessions (15)
3. Young Investigator Symposium (10)
4. Location and Social Events (11)

In the survey conducted in September of 2011 by the Science and Education Committee, respondents suggested that the ASM program should be expanded to include more invited speakers, panel discussions and continuing education sessions. In response to this feedback, 5 hours of continuing education, delivered by invited speakers, was added to the 2012 ASM program.

In addition to the open lecture delivered by Dr. Rob Rutledge, the following six continuing education sessions were included in the program:

1. The Fundamentals of Medical Linacs, *Malcolm McEwen*
2. Dotting the I's and Crossing the T's of IGRT, *Doug Moseley*
3. Using Light to Image Molecular Features of Cancer as well as Linac Radiation Beams, *Brian Pogue*
4. The Benefits and Challenges of MR Imaging at High Field: A Medical Physics Perspective, *Steven Beyea*
5. Patient Safety and Law: Liability, Insurance and Regulation, *Lorraine Lafferty and William Lahey*
6. Modern Quality for Modern Radiotherapy, *Marco Carlone*

The following table summarizes the rating received for each criteria for the 7 presentations (1 Open Lecture plus 6 continuing education sessions). In most cases, all of the presentations were rated 4 or 5 for each criteria.

Summary of Ratings for each Criteria					
Rating Criteria	1 Strongly Disagree	2	3	4	Strongly Agree
The speaker was knowledgeable				2	5
The speaker made difficult concepts easier to understand				6	1
The AV material was clear				7	
The topic was interesting				6	1
I learned something new				6	1
The content was relevant				5	2
I want to know more about this subject			2	5	

The following table summarizes the feedback received on all other aspects of the ASM:

Aspect of the Conference	Poor	Fair	Good	Very Good	Excellent	N/A
Registration	0.0%	3.1%	17.2%	34.4%	**39.1%**	6.3%
Abstract Submission Process	0.0%	4.7%	12.5%	18.8%	**25%**	39.1%
Conference Materials	0.0%	6.3%	17.2%	53.1%	21.9%	1.6%
Accommodations	0.0%	9.4%	12.5%	**34.4%**	23.4%	20.3%
Meeting Room & Facilities	0.0%	1.6%	23.4%	**53.1%**	21.9%	0.0%
Meals	0.0%	6.3%	20.3%	31.3%	**40.6%**	1.6%
Ice Breaker Reception	0.0%	1.6%	18.8%	35.9%	26.6%	17.2%
Scientific Sessions	0.0%	1.0%	18.7%	**42.6%**	26.6%	11.1%
Young Investigator's Symposium	0.0%	1.6%	4.7%	29.7%	**60.9%**	3.1%
Poster Reception	0.0%	0.0%	25.0%	**39.1%**	28.1%	7.8%
Gold Medal Ceremony	0.0%	0.0%	12.5%	**42.2%**	32.8%	12.5%
Banquet	0.0%	0.0%	12.5%	23.4%	**59.4%**	4.7%
Value for the Registration Fee	1.6%	3.1%	21.9%	**42.2%**	29.7%	1.6%

Respondents shared the following suggestions to improve the meeting:

1. There is an opportunity to improve the poster session to maximize the engagement between the presenter and viewer.
2. Delegates would benefit from having the conference materials available in advance.
3. The continuing education sessions were very well-received and the next step would be to increase the interaction between the speaker and the participants as well as create opportunities for discussions on the topics among the participants themselves.

Future Meetings

The 2013 ASM will be a joint meeting with CARO that will be taking place from September 18th to 21st in Montreal. The 2014 ASM will be taking place in either Calgary or Banff/Lake Louise. According to the survey, 61% of respondents would prefer Banff/Lake Louise if the costs were similar. We will keep you posted and would like to thank you once again for participating in the survey. We will use the information gathered as we prepare for future meetings. If you would like to see the full results of the survey, please contact Nancy Barrett at nancy@medphys.ca.

New COMP Members

Please welcome the following new members who have joined COMP since our last issue:

Last Name	First Name	Institute/Employer	Membership Type
Aubry	Jean-François	CHUM - Hôpital Notre Dame	Full
Bonenfant	Eric	Université Laval	Student
Bouchard	Hugo	Centre Hospitalier Universitaire de Montréal	Full
Burton	Christiane	Western University	Student
Guillemette	Maxime	Centre Hospitalier Universitaire de Québec	Full
Harder	Samantha	BC Cancer Agency - Vancouver Island	Student
Hillier	Chris	Cape Breton Cancer Centre	Student
Paudel	Moti	University of Alberta	Student
Ravi	Ananth	Sunnybrook Odette Cancer Centre	Full
Serban	Monica	McGill University Health Centre	Full
Stroian	Gabriela	Jewish General Hospital	Full
Teeter	Matthew	London Health Sciences Centre	Full
Tonkopi	Elena	Nova Scotia Cancer Centre	Full

COMP Gold Medal talk

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Justin Sutherland, Elsayed Ali and **Bryan Muir,** all of whom are giving oral talks at this meeting (and incidentally, who will soon be graduating and will make worthy additions to any department).

So one thing that goes through your mind when you are told you have been awarded the Gold Medal is how much you owe to all the wonderful people in your life, and the second thing is to wonder `What can I possibly say in my acceptance speech?'

I toyed with the idea of giving the inverse of **Aaron Fenster's** Gold Medal talk from a couple of years ago when Aaron urged people to ensure their practical developments were commercialized, something his organization has been very successful at. After all, much of my work has been the reverse of that model since I have worked with groups that developed open source software which was given away for free for research purposes, or in developing dosimetry protocols which have no commercial value but do find widespread application. I was lucky to work at NRC in an era in which this type of research was supported. However, with the Conservative government's approach to research funding, which is currently taking over in Canada, the approach I followed may no longer be possible, so I cannot push that point too hard, except to say that future progress depends on a much more enlightened government funding of science than we currently are seeing (and we must be willing to pay higher taxes to see that it happens).

Given that lunch is awaiting us, I won't use this soapbox to once again make my pitch for the importance of all medical physicists being involved in research. Suffice it to say that I am convinced that this is one of our most important roles, and if we are always too busy with the day-to-day clinical demands (and I know how overwhelming these can seem to be), then in time we will have failed our patients and find ourselves relegated to a still important role but essentially as technologists. But when I listen to the high-quality research from the young people at this conference, I have considerable hope for the future of medical physics research in Canada.

In finishing, I want to thank COMP and for this honour which I really appreciate, and I want to thank those many people who have been such an important part of my career in this field, you have made it fun and very rewarding at a personal level. And a special thanks to Joanna.

Colin E. Webber 1942 – 2012

Professor, Physicist, Radiation Safety Expert, Researcher, Teacher, Mentor, and most importantly loyal friend; that was Colin Webber to the McMaster University and Hamilton hospital community. Dr. Webber died September 4, 2012 in Brantford, Ontario.

Colin obtained his first degree from the Honours School of Physics at the University of Birmingham in 1963; this was followed by an M. Phil in Biochemistry in 1969 and a Ph.D in Physics in 1981 , both from the University of Surrey. From 1964 onwards, he held hospital positions in medical physics in London, England and Southampton, England. It was in London where Colin first met and worked with Dr. Steve Garnett and when Dr. Garnett was recruited to join McMaster's Faculty of Medicine and McMaster University Medical School in 1969, he wisely persuaded Dean John Evans to appoint Mr. Webber as Lecturer in the Department of Radiology of the fledgling medical school. At the same time, Colin was appointed as physicist in Nuclear Medicine at McMaster University Medical Centre.

Dr. Webber's inquisitive mind and determination ensured a successful research career. His CV documents the awarding of 15 peer-reviewed research grants totaling $5.6M as either principal investigator or co-investigator in the last 10 years alone. From 1970 to 2010, he served as the principal supervisor of 34 MSc students and 14 PhD students, and sat on many more graduate student committees. At the time of his death, he had been the author or co-author of 180 peer reviewed publications and 4 book chapters, with one final article still in press to be published later this year. Of course this enumeration does not include the countless additional students and researchers to whom Colin generously provided advice and support as they pursued their studies.

Colin was a leader in the field of bone research and in many instances he was a man who was ahead of his time. His endless enthusiasm for the science and learning was an inspiration to students and faculty. Indeed, Colin developed a method of applying Compton scattering methodology for measuring trabecular bone mass in the calcaneus well before commercial techniques for measuring bone mass had been developed. He had a student develop a prototypical model of a dual photon absorptiometry unit with minimal resources as a part of a PhD project at a time when huge resources were being spent to develop these types of units commercially. Because of his knowledge in the field, he had access to and helped to bring many of the novel measurement techniques, including the first pQCT and pMRI units, to McMaster University. These units are now being more widely used by university centres interested in bone and joint research across Canada. As a result of this expertise, Colin was elected to the Scientific Advisory Council of Osteoporosis Canada.

Colin was responsible for developing the "Bone Interest Group" in Hamilton. This was a diverse group of academics interested in the field of bone research. The group included nuclear physicists, engineers, kinesiologists, dieticians and nutrition scientists, rehabilitation scientists, medical scientists, nuclear medicine specialists, radiologists, physiatrists, geriatricians and rheumatologists and all of their attendant graduate students. Quarterly meetings were held, providing researchers and their graduate students with a forum to present their research interests and results. During these meetings, Colin often asked the astute questions that would provide perspective to the project and would offer advice that would make a good project great.

Colin also provided leadership as part of a monthly MRI users group and provided practical advice around a wide variety of musculoskeletal projects. In addition, he met on a weekly basis with those students involved with musculoskeletal research, providing guidance and an extra educational opportunity. He had patience for all of those students who would contact him. He challenged individuals to think and to have the commitment and courage to embark on novel projects.

Although Colin was recruited to the Department of Radiology and was based in Nuclear Medicine, he also had a profound effect on the development of Health Physics, Medical Physics and Radiation Biology at McMaster University. He was a key member of a group of faculty who launched graduate and undergraduate programmes in these subject areas from the Department of Physics in the Faculty of Science at McMaster in the mid 1970s. He led the further development of these programmes through much of the 1980s, supervised many graduate students in, for example, the MSc in Health and Radiation Physics and taught undergraduate and graduate level courses, of which "Isotopes In Vivo" was perhaps the classic. Colin also had a significant influence on the development of the profession of Medical Physics in Canada. He was one of the founding fellows of the Canadian College of Physicists in Medicine. Amongst his many grants and research contracts was one from the Ontario Ministry of Labour, which enabled him to set up the first bone lead (Pb) laboratory in Canada. Through this and subsequent work, McMaster remains a premier centre for this work, with individual patients coming from as far as South Australia, and a significant partnership with Health Canada on bone Pb is now reaching its culmination. In a similar vein, in the past few years, Colin had been advocating for the establishment of a strontium measurement facility at McMaster and he stimulated the drawing together of the team that is now exploiting this aspect of Colin's vision. This illustrates one way in which Colin's great legacy continues to gain momentum.

Finally, Colin possessed a rare ability to draw individuals together and encourage them to work as a team in the best interests of the program, institution or patient. He encouraged all who worked with him, whether a student, professional colleague or administrative assistant, to aim just a little higher. He was a source of sage advice and a constant calm presence within what can be a challenging environment. A kind gentle giant in the field of musculoskeletal research and practice, neither he nor his many contributions will be forgotten and, perhaps most importantly, his work will continue to live through the on-going efforts of the many students whom he taught.

Hamilton, ON September 2012

Karen Y. Gulenchyn	Ronnie Barr	Val Yakemchuk
David Chettle	Alexandra Papaioannou	Rick Adachi
Tom Farrell		

Message from the Editor

Christopher Thomas, PhD, MCCPM
Nova Scotia Cancer Centre

Hello to everyone out there! Since this is my first column as editor of InterACTIONS, allow me to introduce myself: my name is Christopher Thomas, and I'm a Medical Physicist at the Nova Scotia Cancer Centre in Halifax. If we didn't meet face-to-face at COMP this year, you no doubt saw me busily taking pictures for the conference or organizing the musical entertainment for the banquet.

By the time you read this, I'll have finally finished sorting through the ridiculous number of photos I took and will have posted some of them to the COMP Facebook page (you do have a Facebook account, right? And, no, I don't get kickbacks from Zuckerberg). Parminder's recap on the meeting in this issue also includes some photos and you'll also find a page or two of some of my photos in this issue. Because of COMP, this issue is BIG. Not NYC phone directory big, but nonetheless, there is a lot here. I hope you enjoy what we've put together for you.

At this time of year, we've swept through COMP and AAPM with RSNA looming on the horizon. I didn't make AAPM, but COMP, wow! (if I do say so myself). We worked hard to put together an interesting and fun meeting for you all, and from what I've heard, we succeeded. Besides the usual excellent caliber of presentations, we had fantastic music and food for you, a fun fun run, and a great host city for exploring. I know I had a great time meeting up with old friends, making new ones, and sharing a pint or two at the Hart & Thistle pub. Being a big Blues and food fan, the banquet was definitely my favourite part of the social events. Just to remind you, the band was Joe Murphy and the Water Street Blues Band, local Blues legends, and I highly recommend checking out some of their CDs. I really hope some of you got to get out and do some sightseeing while you here, as I honestly think Halifax and N.S. gets overlooked sometimes.

Thanks for reading and we hope to bring you more great articles as always. In closing, I'd like to thank Idris Elbakri for all his help in getting me started here, as well as the always helpful and indispensible Gisele Kite and Nancy Barrett. Also, thanks to Parminder Basran for additional assistance. And so, I'd just like to add that I'm looking forward to the challenge of this position over the next three years and to getting to meet more of all of you. Take care and see you next issue!

Dates to Remember

Inter*ACTIONS* Winter
Issue Deadline is
December 1, 2012!

Conference on 3D Radiation Dosimetry
(formerly known as DOSGEL)
November 6 – November 8, 2012
Sydney, Australia

2012 RSNA Annual Meeting
November 25 - November 30
Chicago, IL

4th Annual COMP Winter School
January 27 - January 31
Mt. Tremblant, QC