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# Newsletter



## NEW ENGLAND CHAPTER OF THE HEALTH PHYSICS SOCIETY

**Volume XXXIX No. 5**  
April 2003

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## NECHPS Annual Meeting

Margaret McCarthy, Program Chair

The program for the annual meeting has been firmed up. Please bear in mind that there may be minor alterations as I am submitting this information for the newsletter in March [*Margaret has been very patient enduring the newsletter editor's incessant requests*]. Due to the snow and ice storms of last December, Jacob Shapiro's new book, Radiation Protection, A Guide for Scientists, Regulators, and Physicians, 4<sup>th</sup> Edition, will finally emerge and be raffled off during the business meeting. No charge for the grand event except one's presence, but you must be a quorum attendee to win.

The morning session keynote speaker will be Ken Kase, President-Elect of the National, followed by Professor Calabrese, a highly published faculty member at one of our own New England universities. His central interest, toxicology, has branched into the ionizing radiation field. Christina Briggs from the Department of Justice in Washington, DC will give a brief introduction of the newly designed program, HDER, (Homeland Security Defense Emergency Reuse Program) for the reuse of calibrated radiation detectors. These instruments are not the old Civil Defense survey equipment I used in my science teacher workshops, but are fully calibrated ones. Ms. Briggs' preview talk will allow you to make a choice for the afternoon sessions.

Session A will be Ms. Briggs and the in-service HDER training. Both Ninni Jacob and I attended the first training session at the annual meeting in Tampa, FL in June 2002. The second session was at the mid-year in San Antonio, TX. Now NECHPS has brought it to the greater Boston area.

Session B was designed both for those HPs who petitioned me for a talk on accelerator decommissioning, as well as the medical physics folks who asked me to include some updates in medical physics.

The meeting will close with student presentations. Please review the program [*see last page*] and then read on.

For this buffet meeting you do not have to moo,

cluck, or splash for me on a choice of food. Instead, please make a reasonable tentative choice on Session A or Session B. The parallel sessions will involve maneuvering for added space and the AV accouterments. Ms. Briggs will have the requisite number of notebook materials and certificates of training to disperse. I need to have numbers. Please respond to the broadcast email [*upcoming*] or contact me directly on preferred session. For those of you who require continuing education credits, I shall have that information by the response time.

Also, if you have a student paper, poster session, or honor notation to have showcased at our annual meeting, please contact me. Contacting me at work after the third week in May is problematic as the semester has ended; there is a voice message that I answer within a few days.

Lastly, do you wish overnight accommodations?

My contact information follows.

Work Phone: 413-755-4624 (with vox)  
Email: [mem@schoolph.umass.edu](mailto:mem@schoolph.umass.edu)  
Home phone: 413-268-7863

See you in June!

### Membership Dues

Members are reminded that they should pay their dues *as soon as possible* to ensure that membership status remains in good standing. You may check your dues status by looking at the mailing label attached to this newsletter - the label will have a statement in the upper right corner: "Paid thru July 2003", for example.

Remember that the current By-Laws state that dues are \$10.00 per year, however, a payment of \$40.00 will get a member 5 years of Chapter membership.

You can pay at Chapter meeting or send your payment to:

Ron Thurlow, NECHPS Treasurer  
21 Myrtle Ave  
Newburyport, MA, 01950.

## News from the MIT Reactor

Dr. John Bernard and Kathleen O'Connell

As a result of renewed interest in maintaining the United State's leading edge in nuclear engineering education and research, the MIT Nuclear Reactor Laboratory (MITR) is poised to take on a leadership position among university research reactors. This positive direction is due, in large, to the efforts of many dedicated individuals (academic and government) who envisioned and made possible a way to improve the nation's nuclear educational infrastructure. Because of the grant funds received through the DOE's Innovation in Nuclear Infrastructure and Engineering (INIE), the MITR will continue to be a first class, state-of-the-art university research reactor facility. In addition, the rekindled interest nationwide has also resulted in increased usage of the MIT Research Reactor by faculty members of the MIT Nuclear Engineering Department, other MIT faculty members and researchers, as well as outside researchers.

Clinical trials of the boron neutron capture therapy (BNCT) were resumed in 2002. To date, three cancer patients have participated in the BNCT protocol using the new fission converter. Professor Otto Harling is the principal investigator for these clinical trials. The intensity of the fission converter beam is the highest intensity beam available anywhere in the world. The beam quality has also been experimentally verified and it is of near theoretical purity. The Fission Converter Medical Facility was conceived, designed, and built by Professor Harling, along with his students and MITR Staff. It is a state-of-the-art medical facility that reflects MIT's reputation for scientific and technological excellence and is currently the best facility of its type. Professor Harling has also directed the conversion of the epithermal beam that was originally used for the original BNCT clinical trials to an improved thermal beam neutron irradiation facility that will be used for clinical studies of shallow tumors and for small animal research in NCT. Professor Jeffrey Coderre (MIT-Nuc. Eng. Dept.) is conducting research with rats using the MITR's thermal neutron and epithermal neutron beams to determine the effects of the radiations produced by NCT on the normal lung and will provide the radiobiological information required to calculate doses to the lung during BNCT. This research will provide the basic data required for

a decision as to whether or not BNCT for lung tumors is possible.

The MIT Research Reactor has a unique technical capability that involves the use and installation of in-core loops for materials and advanced fuels research. Three important in-core loop projects are currently being conducted. These are: a) Shadow-Corrosion Loop: This project is funded by EPRI and is under the direction of Professor Ronald Ballinger (MIT-NED). It involves the study of corrosion effects mitigated in some yet not understood manner by radiation fields present between metals; b) Fueled Irradiation Loop: This project is under the direction of Professor Mujid Kazimi (MIT-NED) and involves the design and operation of an in-core facility to evaluate a new design for internally-cooled annular fuel for PWR; and c) High Temperature Irradiation Loop: This project is under the direction of Professor Mujid Kazimi and Professor Ballinger with the support of Professor Jeffrey Freidberg (MIT-NED). The object of the research is to develop a high-temperature (850 °C) in-core facility for studying the dimensional stability of materials that would be used in both the pebble bed reactor and fusion machines.

Other neutron science projects are being conducted, such as Professor David Cory's neutron interferometer project. The goal of this project is to use modern methods and technology of spin coherence control and measurement combined with neutron interferometry to extend the precision and application of this field. The work is a collaborative effort between Professor Cory's group and that of Dr. M. Arif of NIST. In addition, Dr. Richard Lanza (MIT-NED) in collaboration with NIST is conducting research that will demonstrate the practicality of phase contrast thermal neutron imaging using new neutron imaging detectors, which are capable of imaging at very low neutron fluxes.

The NRL continues to make its neutron activation analysis (NAA) facilities and expertise available to industry, other universities, private and governmental laboratories, and hospitals. The U.S. Department of Energy's Reactor Sharing Program supports a large portion of NAA experiments performed at the MIT NAA facility. Some of the research being primarily conducted utilizing the MIT NAA facilities include: a) NAA analyses of human hair samples and brain

tissue to investigate a possible link between mercury and autism. This research involves two separate studies and each study is being conducted by Dr. John Machuzak, Dr. George Grady, and Dr. Michael Ames; b) Dr. Xudong Huang (MGH) and Dr. Atwood (Institute of Pathology, Case Western) are conducting an in-depth investigation on the metal ions content of brain tissue from different neurodegenerative conditions using INAA to study concentrations of certain transition metal ions that are increased in the brain of individuals with Alzheimer's disease.

Some of the above projects are being funded or partially funded by the INIE Grant, however, they are also supported through funding sources such as the U.S. DOE, National Institute of Health, and/or EPRI.

Those who wish to see the new fission converter facility can come in for a tour, however, because of security considerations all tours are by appointment only. Other restrictions may apply. Please call first! [617-253-4211]

## **BELLE Conference**

### **NON-LINEAR DOSE-RESPONSE, RELATIONSHIPS IN BIOLOGY, TOXICOLOGY AND MEDICINE**

An international conference at the University of Massachusetts, Amherst, MA (May 28 - 30, 2003)

The Nonlinearity Conference addresses some of the most critical challenges facing the field of toxicology, pharmacology, radiation biology and medicine today, that is, the significance of the biological effects of low level exposures. Toxicology is in rapid transition from that of a high dose hazard assessment profession to one that addresses the nature of more realistic exposures, which are pre-dominantly in the low dose zone. Knowledge of low dose effects is becoming a driving force in the field of risk assessment and chemotherapeutics. This conference provides a significant opportunity to bring together leading scientists across the broad range of biological disciplines to seek common understandings on how biological systems respond to low level stresses and their implications within society. One of the critical goals of the conference is to recognize that professionals in different fields of biology have utilized

different terminologies for similar appearing dose response phenomena. These terms include: adaptive, bidirectional, dual effects, opposite effects, biphasic, hormetic, non-monotonic, u-shaped, j-shaped, and paradoxical. The convergence of scientists from multiple disciplines on this topic is designed to provide a greater interactive focus on the topic of low dose responses and hopefully prevent further professional/academic isolation with respect to language, concept and interpretation of low dose effects. The conference will also provide the most current advances in the areas of nature of the dose response with respect to chemical and radiation induced stresses as well as a host of effects of pharmaceutical agents that have profound biomedical and risk assessment implications. It is our hope that you share the belief of the BELLE Advisory Committee that determining the nature of the dose response in the low-dose zone will drive the future of toxicology, pharmacology and risk assessment and will take the opportunity to attend this conference on **NON-LINEAR DOSE-RESPONSE RELATIONSHIPS IN BIOLOGY, TOXICOLOGY AND MEDICINE.**

Edward J Calabrese, Ph.D.

Paul T. Kostecky, Ph.D.

Conference Directors

BELLE Office

Phone: 413-545-3164

Fax: 413-545-4692

Email: [belle@schoolph.umass.edu](mailto:belle@schoolph.umass.edu)

[www.belleonline.com](http://www.belleonline.com)

FOR CONFERENCE INFORMATION Please contact the conference coordinator: Denise Leonard 413-545-1239 or visit [www.belleonline.com](http://www.belleonline.com).

## **New Members**

If you know anyone who wants to join NECHPS, tell him/her to visit the website ([www.nechps.org](http://www.nechps.org)) or contact John Sumares at 617-727-6214.

## **New Address??**

To change your address or contact information, visit the NECHPS website at [www.nechps.org](http://www.nechps.org) or contact Mike Whalen at 617-727-6214.

## Spring/Summer Meeting of the NEAAPM

Peter Biggs, President-elect, NEAAPM

Fellow NEAAPM members and Medical Physicists,

It is my pleasure to announce the annual spring/summer meeting of the NEAAPM. This will be held on Friday, June 6th, in historic Plymouth, MA, at the Radisson hotel, close to the water. This will be an all-day meeting with exciting speakers covering all aspects of medical physics, including 4D CT, digital mammography, and new developments in nuclear medicine, so please mark this on your calendar as a must event. We shall apply for up to 5 hours of CAMPEP credits for this meeting. Rooms have been reserved at the hotel for Friday and Saturday nights at a special rate. The deadline for these reservations is May 9th. To expand the social activities of this meeting, Tamara Focht, board member at-large, is willing to set up a golf outing, either on Thursday afternoon or Saturday morning. If you have a strong interest in this please contact her directly by e-mail at [tfocht@capecodhealth.org](mailto:tfocht@capecodhealth.org).

### Free Meeting!

If you've got something you'd like to submit for the NECHPS Newsletter, please pass it along. We'll accept HP news updates, editorial pieces, or just about anything of interest to the New England Health Physics community. The article featuring recent developments at the MIT Research Reactor is a perfect example of the type of submission that is of interest.

If your submission finds its way into the Newsletter, you'll earn free admission for yourself or a guest to one of the chapter meetings (excluding the Annual Meeting).

You can e-mail submissions to Doug LaMay at [dlamay@mit.edu](mailto:dlamay@mit.edu). WordPerfect and MS Word submissions are both acceptable. You can also fax short submissions or announcements to (617) 252-1533.

## NECHPS Special Awards Given Out at the Rhode Island Science and Engineering Fair

Ninni Jacob

The Rhode Island Science and Engineering Fair was held on March 15, 2003, at the Community College of Rhode Island (CCRI). NECHPS was invited to send judges for the fair. The projects that were radiation-related (ionizing or non-ionizing) were judged and three winners were chosen. One first-place grant of \$100 and two second-place second grants of \$50 were given out. The first-place grant winner was Shawn Reilly, Ferri Middle School, for his project entitled "Radiating Radish Seeds". The second-place grant winners were: Victoria North of St. Philomena School for her project "Can a Color TV Collect Radon in a home", and Kourtney Hundertmark for her project entitled "The Effects of UV Radiation on Bacterial Infected Clams." Honorable Mention was given to Brennen Morton of Ponagansett Middle School for his project entitled "Does Radiation Increase Plant Growth?" He was the winner last year and he followed up on his project. It was interesting to note that he had done some research about the Health Physics Society as well.

The certificates were given out at the Awards Ceremony on March 20, where teachers, parents and students were present. I was able to give a brief description about the mission and activities of the Health Physics Society. I think this kind of publicity helps to raise the radiation awareness of the public, and the students, which might lead to more radiation-related projects in following years.

### Results from Membership Poll: Part II

Many thanks to those who responded to the second survey for "going electronic" with the chapter Newsletter. Over 60 people requested to receive each issue via e-mail, with over 55 people indicating a preference for PDF format. Doing business this way should save the chapter about \$400.00 per year.

Watch for the first electronic copies to "hit the stands" with the next issue; in the meantime, don't forget to keep me updated if you change your e-mail address.

## NECHPS Nominations

In accordance with article VI, Section 2 of the Chapter bylaws, the NECHPS Nominating Committee submits the following candidates for Chapter Offices during the 2003-2004 chapter year.

*President-Elect:* Chris Martel  
*Treasurer:* Mike P. Whalen

*Directors:*  
two-year term: David C. Medich  
Anthony L. Honnelio  
Paul Tyree  
one-year term: Robert Scott

In accordance with Article VI, Section 3 of the chapter by-laws, additional nominations may be made to this committee by May 5, 2003, which is 30 days prior to the annual meeting. Nominations shall be in the form of a petition naming a nominee or nominees for any or all of the prospective vacancies, said petition bearing the signatures of at least five chapter members in good standing.

For your information, the following will be continuing to serve during the 2003-2004 chapter year:

*President:* Margaret McCarthy

*Immediate  
Past-President:* Edward Maher

*Secretary:* Elizabeth Brackett  
*Directors:* Doug LaMay  
John Sumares

The Nominating Committee wishes to thank all those who have agreed to have their names placed in nomination, and those who are continuing for the various chapter offices and wishes them well. The Committee also thanks the outgoing members, namely, Ron Thurlow, Treasurer, John Anderson, Jr, Haro der Hagopian, and Wiliam B. McCarthy, directors for their years of service.

Respectfully submitted:

Nominating Committee  
Ninni Jacob, Chair  
William Lorenzen,  
Thomas O'Connell

## ***NECHPS Annual Meeting***

**Date:** June 4<sup>th</sup>, 2003

**Location:** Westford Regency, Westford, MA

### **Tentative**

**Program:** 7:45 Reception/Registration  
8:30 Opening Remarks, Margaret E McCarthy, Program Chair  
8:45 Current Status of the HPS, Ken Kase, President-Elect, Health Physics Society  
10:15 Break / Vendor Exhibits  
10:45 Beneficial Effects of Ionizing Radiation, Edward Calabrese, Ph.D., Professor  
UMass-Amherst  
11:30 Brief Overview of Homeland Security Defense Emergency Reuse (HDER) Program,  
Christina Briggs, Department of Justice  
11:45 Buffet Lunch  
12:45 NECHPS Business Meeting and  
Snow Storm Special- Drawing for Jacob Shapiro's New Book

### *Afternoon- Parallel Sessions (1:30-3:00)*

#### *Session A:*

1:30 Overview of HDER Program Training (certificate of training at completion), Christina  
Briggs, Department of Justice,

#### *Session B:*

1:30 William Irwin, Decommissioning of Harvard Accelerator

2:15 John Copeland, Medial Effects of Radiation

3:00 Break (Coffee, Tea, Soda & Cookies)

3:15 Student Presentations

4:00 Adjournment

**Cost:** \$55.00 Members, \$65.00 Guests, and \$30.00 Students

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### ***The registration deadline is May 23<sup>rd</sup>, 2003!***

Please note, you can make payment after 5/23, up to and including the day of the event (pay "at the door"); however, no matter when you make payment, you *must* register by May 23<sup>rd</sup>.

If you register then decide to cancel, you must do so before May 23<sup>rd</sup>, or you are responsible for payment.

Mail registration (with check to NECHPS) to: Margaret McCarthy  
30 North Farms Road  
Haydenville, MA 01039-9724

OR E-mail to register: **mem@schoolph.umass.edu**  
OR Register online at: **www.nechps.org**  
OR Call: (413) 268-7863

## DIRECTIONS TO THE WESTFORD REGENCY

219 Littleton Road, Westford, MA 01886



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### Directions

#### Traveling North

On Interstate 495, take Exit 32 and turn right at the end of exit ramp. Proceed to the first intersection and turn right on Route 110 west. The Westford Regency is 1/4 mile on your right.

#### Traveling South

On Interstate 495, take Exit 32 and turn left at the end of the exit ramp. Proceed to the first intersection and turn right on Route 110 west. The Westford Regency is 1/4 mile on your right.

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For additional information please call: (978) 692-8200 or go to:

<http://www.westfordregency.com>.