

# HANDS - ON Nuclear Medicine PHYSICS Workshop

April 10-11, 2010  
Iowa City, IA

## **MTMI**

Medical Technology  
Management Institute

This workshop provides  
12 hours of  
Medical Physics  
Continuing Education Credit  
(MPCEC)

*Making Technology Work for You!*

## About the Workshop

The trend to tie reimbursement for imaging procedures to accreditation of these procedures is driving an increased demand for medical physics support services. To assist medical physicists and others prepare themselves to deliver support toward nuclear medicine accreditation, MTMI has developed two continuing education programs. A 3-day seminar entitled “The Physics of Nuclear Medicine” provides a review organized around the four modules defined in the American College of Radiology (ACR) accreditation standards for nuclear medicine facilities. A second program “Hands-on Nuclear Medicine Physics Workshop”, which is described in this brochure, provides an opportunity to receive practical training on the testing and quality control procedures required for ACR and ICANL accreditation and for ongoing technical support of nuclear medicine facilities. An understanding of the principles and concepts presented in the first program or a background in nuclear medicine physics is needed to take maximum advantage of the hands on program. The hands-on training program is organized with small group laboratory sessions using NM equipment and phantoms to demonstrate testing and QC procedures and is conducted by an experienced faculty.

**Attendance is limited, please register early.**

## Who Should Attend

This workshop is for medical physicists and others looking for training on performing QA and acceptance testing procedures on Nuclear Medicine Equipment. Prior attendance at the MTMI Physics of Nuclear Medicine Seminar or a comparable level of training on the physics of nuclear medicine is recommended. Some more technically oriented and experienced nuclear medicine technologists and vendor personnel may also find this workshop of value.

## Acknowledgements

*MTMI* would like to express appreciation for the assistance of Mark Madsen, Ph.D., and members of the faculty in designing the workshop content.

## Educational Objectives

Upon completion of this workshop, participants will have learned:

- The technology and imaging capabilities/limitations of PET scanners.
- Performance/QC testing procedures for SPECT and SPECT/CT units.
- Performance/QC testing procedures for PET and PET/CT units.
- Applications and analysis of cardiac nuclear medicine procedures.
- Performance/QC testing procedures for gamma cameras.

## Faculty

Mark Madsen, Ph.D.  
Professor  
University of Iowa  
Iowa City, IA

James Halama, Ph.D.  
Assoc. Professor of Radiology  
Loyola University  
Maywood, IL

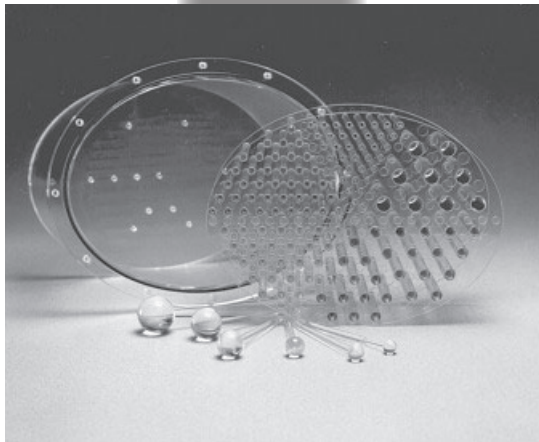
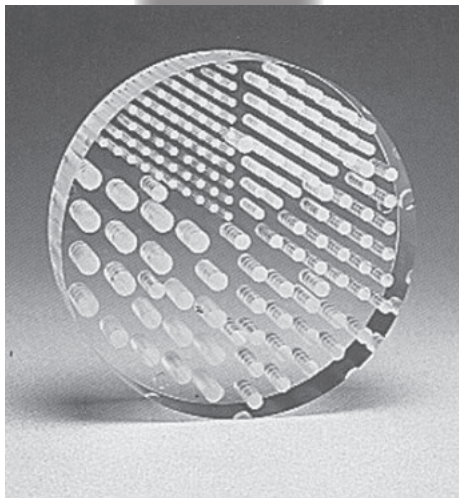
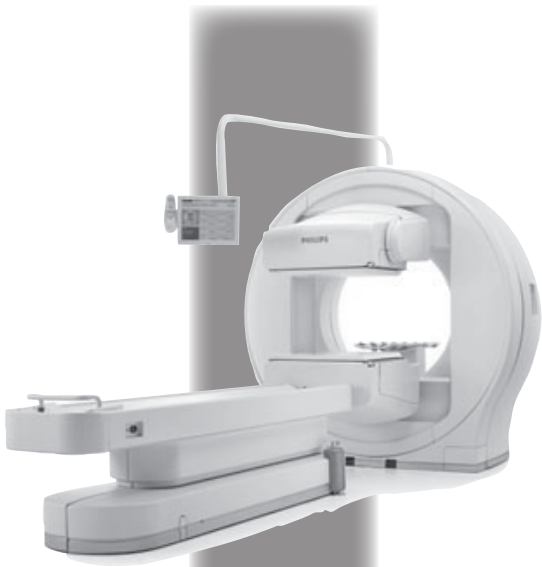
John Sunderland, Ph.D.  
Director of PET Imaging Center  
University of Iowa  
Iowa City, IA

Tim Turkington, Ph.D.  
Assoc. Research Professor  
Duke University  
Durham, NC

Beth Harkness, M.S.  
Medical Physicist  
Henry Ford Hospital System  
Detroit, MI

## Continuing Education Credit

Approval has been received from CAMPEP for up to 12.0 hours of Medical Physics Continuing Education Credit (MPCEC) for qualified medical physicists. This program has also been submitted to the SNMT for Voice Credits for Nuclear Medicine Technologists.



## Workshop Schedule

.....	
7:30 am	<b>Registration and Coffee</b>
8:00 am	<b>Introduction</b> ..... Barnes
8:10 am	<b>Gamma Camera QC</b> ..... Harkness
	<ul style="list-style-type: none"> <li>• Review of gamma camera instrumentation</li> <li>• Gamma camera specifications</li> <li>• Overview of NEMA, ICANL, ACR tests</li> <li>• Common artifacts</li> </ul>
8:50 am	<b>Review of PET Principles and Instrumentation</b>
	..... Turkington
	<ul style="list-style-type: none"> <li>• Positron production and interactions</li> <li>• PET scanner performance requirements</li> <li>• Scatter and coincidence corrections</li> </ul>
9:30 am	<b>Informal Discussion and Break</b>
9:55 am	<b>Lab Orientation</b> ..... Madsen
10:00 am	<b>Lab Session 1</b>
11:30 am	<b>Lunch (provided)</b>
12:15 pm	<b>Lab Session 2</b>
1:45 pm	<b>Lab Session 3</b>
3:15 pm	<b>Informal Discussion and Break</b>
3:45 pm	<b>Performance/QC Testing of SPECT and SPECT/CT Units</b> ..... Halama
	<ul style="list-style-type: none"> <li>• SPECT basics</li> <li>• SPECT instruments</li> <li>• ACR and ICANL accreditation</li> <li>• SPECT artifacts</li> </ul>
4:25 pm	<b>Questions and Discussion</b> ..... Faculty
5:00 pm	<b>Adjourn for the Day</b>
.....	
7:30 am	<b>Coffee</b>
8:00 am	<b>Cardiac Nuclear Medicine Applications and Analysis</b>
	..... Madsen
	<ul style="list-style-type: none"> <li>• Cardiac SPECT procedures</li> <li>• Specialized instrumentation</li> <li>• Radionuclide transmission</li> <li>• Cardiac SPECT/CT</li> </ul>
8:40 am	<b>Performance/QC Testing of PET &amp; PET/CT Units</b>
	..... Sunderland
	<ul style="list-style-type: none"> <li>• NEMA procedures (acceptance testing)</li> <li>• Intro to ACRIN imaging requirements</li> <li>• Intro to ICANL and ACR PET imaging accreditation components</li> </ul>
9:20 am	<b>Informal Discussion and Break</b>
9:40 am	<b>Lab Session 4</b>
11:10 am	<b>Lab Session 5</b>
12:40 pm	<b>Discussion and Wrap-up</b>
1:00 pm	<b>Workshop Adjourned</b>
.....	
<b>Lab A - Gamma Camera QC</b>	<b>Lab B - Cardiac Nuc Med Apps</b>
•Routine QC	•SPECT     •Cardiac gating
•NEMA Resolution/Registration	•Attenuation correction QC
•ACR phantom images	•Motion correction
•Collimator evaluation	•Software analysis
<b>Lab C - SPECT Performance/QC</b>	<b>Lab D - Performance/QC of PET &amp; PET/CT</b>
•Uniformity	•Periodic calibration and normalization procedures     •Daily QC
•Center of rotation and pixel calibration	•Absolute calibration
•SPECT phantom/resolution	•ACR PET image quality phantom
<b>Lab E - PET SNM Clinical Trials Network Phantom Testing</b>	
•Description of SNM Clinical Trials Network Phantoms	
•Testing with the SNM CTN chest phantom	•Procedures & analysis of results

## Membership

Membership in the Medical Technology Management Institute includes:

- ◆ discounts on *MTMI* services ◆ member newsletter
- ◆ web access to replace certificates ◆ yearly transcripts
- ◆ special benefits throughout the year exclusive to members

Joining *MTMI* with this registration qualifies you for the member discount. Indicate your interest in membership on the registration form or call *MTMI*. Annual membership dues for physicists is \$59. Discount effective immediately.

## Registration

To register for this seminar:

- 🖨 go to [www.mtmi.net](http://www.mtmi.net) or
- 📄 complete the registration form below and
- ✉ mail it with your tuition (check or credit card) to *MTMI*, or
- ☎ call (800) 765-6864 using MasterCard or Visa, or
- ☎ fax the form to (262) 717-9171 w/credit card info

Refunds, minus a \$50 administration fee, will be granted for cancellations received prior to 10 days before the course. Cancellations received within 10 days of the course will receive a credit toward a future *MTMI* program, minus the \$50 processing fee. No refunds will be made after the course.

*MTMI* reserves the right to cancel any scheduled program because of low advance registration or other reasons. *MTMI's* liability is limited to a refund of any program tuition paid.

## Other MTMI Programs for Physicists:

- The Physics of Nuclear Medicine
- Hands-on Multi-Slice CT Workshop
- A Review of CT Imaging
- 14<sup>th</sup> Annual Mammography Update
- Hands-on Workshop for Surveying Digital Mammography Units
- Hands-on MRI Workshop
- Hands-on Physics of Ultrasound

go to [www.mtmi.net](http://www.mtmi.net) for more information

## Location & Accommodations

Iowa City, IA - April 10-11, 2010

### Workshop Location:

University of Iowa Medical Center  
200 Hawkins Dr.  
Iowa City, IA 52242

### Accommodations:

Sheraton Iowa City  
210 South Dubuque Street  
Iowa City, IA 53340  
319-337-7037

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

Room Rate: \$99 single/double

Make reservations by 3/19/10 and identify yourself as part of the *MTMI* group. Shuttle to and from workshop will be provided.

Call 800-765-6864  
2 weeks before the workshop if you have special needs.



Registration Form **Hands-on Nuclear Medicine Workshop** Iowa City, IA - April 10-11

Please Print Clearly - This is how your name will appear on your certificate.

Name: \_\_\_\_\_ degree/title \_\_\_\_\_

Home Address \_\_\_\_\_ City \_\_\_\_\_

State: \_\_\_\_\_ Zip code: \_\_\_\_\_ e-mail \_\_\_\_\_

\* registration confirmation will be sent to this e-mail address - **print clearly**

Day phone ( ) \_\_\_\_\_ Eve. phone ( ) \_\_\_\_\_ FAX ( ) \_\_\_\_\_

I am a  medical physicist;  nuclear medicine technologist;  other (specify) \_\_\_\_\_

I work in the following areas:  Mamm.,  X Ray,  CT,  MR,  Nuc Med,  Ultrasound,  Rad Therapy,  Brachy Therapy.

Please enclose \*payment to *MTMI*:  \*\$995

*MTMI* member discount:  \*\$960

Yes, I want to become an *MTMI* member!  \$59 (discount effective immediately)

Check enclosed

Total enclosed:

\$ \_\_\_\_\_

**\*payment may be made by check (made out to *MTMI*) or credit card**

Credit Card Number \_\_\_\_\_  Master Card  Visa

Expiration Date: \_\_\_\_\_ Signature \_\_\_\_\_

Return to: *MTMI* ♦ 20900 Swenson Dr., Suite 650 ♦ Waukesha, WI 53186

800-765-*MTMI*(6864) or 262-717-9797 or fax 262-717-9171 or e-mail [custservice@mtmi.net](mailto:custservice@mtmi.net)

Your satisfaction with *MTMI* programs is guaranteed, a guarantee we are confident you won't need to use.