

Reported by (Name):	Wesley Culberson
Organization:	University of Wisconsin – Madison
Position Title:	Assistant Professor Research Director of the UWMRRC
Activity:	Council on Ionizing Radiation Measurements and Standards (CIRMS) Annual Meeting
Meeting Dates:	Apr 18-20, 2016
Meeting Location:	NIST, Gaithersburg, MD
Payment \$:	(see below)
Reasons for Attending or not Attending	I am a technical expert on radiation dosimetry representing the interests and needs of the AAPM.
Issues from Previous Meetings or Year:	A number of radiation dosimetry standards were discussed at the previous annual meeting at NIST in Spring, 2016. The outstanding issues are published online on the Needs Report at www.cirms.org
General Description of Activities of the Organization and/or Meeting:	CIRMS is a mutli-disciplinary non-profit organization which seeks to elevate the needs of all aspects in the field of ionizing radiation, drawing on the experience and knowledge of industry, academia, and government professionals. Through this collaborative group, the needs of our field are distributed to government agencies and potential funding sources. The agenda of the meeting I just attended is attached to this report.
Issues for AAPM:	CIRMS will be working with congress in upcoming years to present the needs for standardized dosimetry particularly in areas of radiation biology that affects radiation therapy research. Also are the needs for more accurate radiation dosimetry in small fields, MRI environments, and particle therapies.
Budget Request (\$):	Total reimbursement request for the 2016 annual meeting = \$1532.69

Report to Melissa Carol Martin, MS, FAAPM, FACM President-Elect,
and the AAPM
Regarding the Council on Ionizing Radiation Measurements and Standards (CIRMS)
By
Wesley Culberson, PhD, DABR
Regina K Fulkerson, PhD
AAPM liaisons to CIRMS

The Council on Ionizing Radiation Measurements and Standards (CIRMS) is organized for educational and scientific purposes to analyze the current and future needs of ionizing radiation measurements and standards. This includes the disciplines of medical applications, industrial applications, food irradiation, and societal benefits of radiation, including homeland security. CIRMS has a broad-based membership from industry, state and federal government, and academia. The main objectives of CIRMS are the advancement and dissemination of the physical measurements and standards needed for applications of ionizing radiation. CIRMS has played an important role for the discussion of radiation measurements and standards issues and provides a platform for experts from various background, allowing them to convey and share ideas thereby enhancing the field through. Further, a single detailed needs report is compiled with information from each discipline and sent to the legislative body with the intent of gaining financial and political awareness of the needs in our field. For more information, see: www.cirms.org.

As liaisons to CIRMS for the AAPM and co- chairs of the medical subcommittee, Regina Fulkerson and I are responsible for arranging the medical breakout session and providing medical plenary speakers at the CIRMS meeting. CIRMS is generally a meeting with international flavor, so in addition to the AAPM interests, the meeting covers what is occurring around the world regarding the use of ionizing radiation.

The CIRMS annual meeting was held on the National Institute for Standards and Technology (NIST) campus in Gaithersburg, MD for three days on April 17-20, 2016. The theme of the meeting was "A Matter of Scale: Measurement Standards from the Nano to the Giga". The program is attached. The plenary sessions included presentations on medical applications, radiation event preparedness, presence of ionizing radiation in food sources, and materials processing with ionizing radiation. There were also several student presentations that covered a range of topics including three from medical graduate students: Air Kerma Strength determination for a new ^{192}Ir source, Air Kerma Strength measurements for a new direction ^{103}Pd source, and 3D gel dosimetry for use with an MR/Linac system. The student abstract winners each year are given a free year of membership to CIRMS and are encouraged to continue to be involved in the organization. Breakout sessions were on Monday and Tuesday for each of the subcommittees, which include Medical Applications, Radiation Protection, and Industrial Applications and Materials Effects. The medical plenary talks covered topics including: The need for standardization in dosimetry for proton therapy and proton therapy treatment planning, the need for quantitative imaging standards for PET/SPECT/and CT,

MRI-based accelerator dosimetry, new ICRU recommendations on important dosimetry quantities, and Monte Carlo simulations in the presence of magnetic fields. Many of the attendees to CIRMS from the field of medical physics are also active members of the AAPM with leadership roles in various subcommittees. The joint interests of CIRMS and the AAPM are enhanced at the annual meeting of CIRMS, allowing for a discussion among the experts of the fundamental origin of any measured value in the clinical setting. As the field of medical physics is rapidly evolving, CIRMS is committed to providing a forum to establish the needs of standardization for any new device or radiotherapy technique that comes to market in order to provide safe and effective treatments. This was very apparent in our discussions at the CIRMS annual meeting as several of our breakout talks concerned the lack of consistency or existence of standards or metrics to adequately and quantitatively describe image quality. As AAPM liaisons, we strive to bring awareness to the needs of accurate dosimetry through the activities of CIRMS to the AAPM members. The Medical Subcommittee agenda is attached. We are already looking forward to next years' meeting (to be held March 27th-29th, 2017) as it will be the 25th anniversary of the organization and the meeting theme will include a review of our achievements thus far, how to best address our current needs, and what will be areas of interest for the future. Please let us know if you would like to discuss any items further or have any questions about our experiences.

Respectfully submitted by
Wesley Culberson
Regina Fulkerson



24rd Annual Meeting

**“A MATTER OF
SCALE:
MEASUREMENT
STANDARDS FROM
THE NANO TO THE
GIGA”**

April 18 - 20, 2016

**Plenary
Agenda**

National Institute of Standards and
Technology (NIST)
Gaithersburg, MD

Wednesday, April 20

Continental Breakfast

8:30 am

Welcome Back

Dr. Walter E. Voit
President, CIRMS

9:15 am

Plenary Session IV

Dr. Christopher H. Sommers
USDA-ARS-NEA

“The Role of Extraintestinal

*Foodborne Pathogens in Human
Illness”*

9:30 am

Plenary Session V

Dr. Zhichao Lin, FDA

*“FDA Compliance and Emergency
Response Programs for*

*Safeguarding Nation’s Food
Supply from Radioactive
Contamination”*

10:00 am

Coffee Break

10:30 am

**Report on Needs in Ionizing
Radiation**

Dr. Walter E. Voit
UT Dallas

10:45 am

Closing Address/New Officers

Dr. Mark S. Driscoll
SUNY at Syracuse

12:00 pm

Lunch

12:30 pm

ExComm Meeting

1:00 pm

Adjourn

2:30 pm

Please save the date:

**25th Annual Meeting
CIRMS 2017
March 27-29, 2017**



Council on Ionizing
Radiation Measurements and
Standards

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**2015 CIRMS 23rd ANNUAL MEETING
"FUNDAMENTALS OF IONIZING RADIATION"**

Monday, April 18, cont'd

		11:15 am	Student Travel Grant Awards Presentations: CIRMS Student Travel Grant – sponsored by NIST Manik Alma, University of Wisconsin - Madison "Primary Air-kerna Strength Measurements of a New Directional Pd-103 Low-dose Rate Brachytherapy Source" CIRMS Student Travel Grant – sponsored by NIST Khalid Gameil, National Research Council of Canada, Carleton University "Digitization of the National Research Council of Canada Ionizing Radiation Standard's Triple to Double Coincidence Counter" CIRMS Student Travel Grant – sponsored by Bruker BioSpin Yvonne Roed, UT MD Anderson Cancer Center "Investigation of Gel Dosimetry for Quality Assurance of Magnetic Resonance-Guided Radiotherapy" CIRMS Student Travel Grant – sponsored by Landauer Blake Smith, University of Wisconsin – Madison "Determining the Air-kerna Strength for the BEBIG Model Ir2.A85-2 Ir-192 source" CIRMS Student Travel Grant – sponsored by Hopewell Designs, Inc. Kejia Yang, University of Texas at Dallas "Shape Memory Polymers Enabled by Radiation Crosslinking"
8:30 am	Continental Breakfast Registration		
9:00 am	President's Welcome Dr. Walter E. Voit President, CIRMS		
9:15 am	Welcome to NIST Dr. Lisa R. Karam, Chief Radiation Physics Division Physical Measurement Laboratory, NIST, MD		
9:30 am	Intro to NEEDS REPORT Dr. Walter E. Voit CIRMS' President University of Texas at Dallas		
9:45 am	Keynote Address Dr. Mark S. Driscoll SUNY at Syracuse "Curing Carbon Fiber Reinforces Composites for Automotive Application"		
10:15 am	Discussion Coffee Break	12:05 pm 12:15 pm 12:45 pm	Poster Summaries Poster Viewing Lunch
10:30 am			
10:45 am	Plenary Session I Dr. Audrey Macleod NRC, Canada "Modular Survey Spectrometer and Compton Imager"	1:45 pm	Concurrent Working Group Sessions: IAME, MA Working Group Session I Coffee Break Working Group Session II Adjourn Day 1

Tuesday, April 19

8:30 am	Continental Breakfast		
9:15 am	President's Welcome Dr. Walter E. Voit President, CIRMS		
9:30 am	Plenary Session II Dr. John E. Bayouth University of Wisconsin "Measurement Considerations in an MR-guided Radiation Therapy Environment"		
10:00 am	Randall S. Caswell Award for Distinguished Achievement in the Field of Ionizing Radiation Measurements and Standards presented to: James A. Deye, PhD Coffee Break	10:30 am 10:45 am	Plenary Session III Dr. Brad Lundahl Johnson & Johnson "Dosimetric Techniques for Low Energy E-beams" Poster Summaries Poster Viewing Lunch Concurrent Working Group Sessions (continued) Working Group Session III Coffee Break Working Group Session IV
5:30 pm	Adjourn Day 2/Ride to Hilton		
6:15 pm	Bus from Hilton Hotel to Buca di Beppo Italian Restaurant		
6:30 pm	Dinner at Buca di Beppo		

MEDICAL APPLICATIONS SUBCOMMITTEE

**Medical Applications Agenda: Monday April 18, 2016
Lecture Room A**

Chairs: Wes Culberson (University of Wisconsin), Regina Fulkerson (Standard Imaging) and
Ronnie Minniti (NIST)

Breakout Session I: Proton Therapy

- 1:45-2:15 Wayne Newhauser, Ph.D., Louisiana State University
The Physics of Proton Therapy
- 2:15-2:45 Chris Beltran, Ph.D., Mayo Clinic
Needs for Treatment Planning and Quality Assurance in Proton Spot Scanning Therapy
- 2:45-3:15 Vahagn Nazaryan, Ph.D., Hampton University Proton Therapy Institute
Functional and Safety Aspects of an Efficient Proton Therapy Facility Design
- 3:15-3:30 Questions for speakers and discussion on "current needs"
- 3:30-3:45 Break

Breakout Session II: Standards in Nuclear Medicine and Quantitative Imaging

- 3:45-4:15 Brian Zimmerman, Ph.D., NIST
Standards for PET
- 4:15-4:45 Eric Frey, Ph.D., Johns Hopkins University
Concepts, applications, and requirements for Quantitative SPECT/CT
- 4:45-5:15 Marios Gavrielides, Ph.D., Food and Drug Administration
CT Phantoms
- 5:15-5:30 Questions for speakers and discussion on "current needs"
- 5:30 Adjourn

Medical Applications Agenda: Tuesday April 19, 2016
West Square Lecture Room

Kitware - open-source
imaging
GEGR

Chairs: Wes Culberson (University of Wisconsin), Regina Fulkerson (Standard Imaging) and
Ronnie Minniti (NIST)

Howard Hsieh MI
M.S. - Computer Science

Breakout Session III: Quantitative Medical Imaging and Radiation Therapy

CEO, Imaging Technologies, Accumetra

1:45-2:15

Ricardo Avila, M.D., Accumetra, LLC

Quantitative Imaging Optimization; Dosimetry of CT Imaging in the Thorax

2:15-2:45

Michael Boss, Ph.D., NIST

Developing Standards for Quantitative Magnetic Resonance Imaging

Quantitative MRI

Federal Laboratory Consortium (FLC)

Award for Excellence in Tech Transfer

2:45-3:15

Geoff Ibbott Ph.D., MD Anderson Cancer Center

Reference Dosimetry in the Presence of Magnetic Fields

Professor and chair, Dept of Radiation Physics, Fellow Cornell

3:15-3:30

Questions for speakers and discussion on "current needs"

MD Anderson Cancer Center

3:30-3:45

Break

Breakout Session IV: Topics in Radiation Dosimetry

3:45-4:15

Stephen Seltzer, Ph.D., NIST

New ICRU Recommendations on Key Data for Ionizing Radiation Dosimetry

4:15-4:45

Ernesto Mainegra-Hing, Ph.D., NRCC - Canada

Transport under Magnetic Fields with the EGSnrc Simulation Toolkit

4:45-5:15

Ramanathan Ganesan, Ph.D., Australian Radiation Protection and Nuclear Safety Agency

Calibration of dosimeters for small fields at ARPANSA

5:15-5:30

Questions for speakers and discussion on "current needs"

5:30 Adjourn