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Council on Ionizing Radiation Measurements and Standards

"Advancing Radiation Measurements and Standards for Disruptive Technologies"

2024 Annual Meeting Agenda

April 29 - May 1, 2024
In-Person meeting held at The Universities at Shady Grove
Building 2 Conference Center, 9630 Gudelsky Drive, Rockville, MD

Monday, April 29, 2024 (All times are EDT)

Morning Plenary Session in Main Ballroom (1st floor)

8:00	**Registration** Coffee provided	(60 min)
9:00	**Welcome**	(15 min)
9:00	***President's Welcome & Sponsor Introductions*** Amitava Adhikary, Ph.D., President, CIRMS	
9:05	***Introduction to Needs Report*** Frédéric Tessier, Ph.D., 1st Vice President, CIRMS	
9:15	**Plenary Session**	
9:15	***How NIST supports radiation measurements for disruptive technologies*** Alan Thompson, Ph.D. – Chief of Radiation Physics Division National Institute of Standards and Technology (NIST)	(15 min)
9:30	***Cross-industry collaboration: Accelerating innovation and enhancing outcomes for the radiation processing industry*** John Logar – Senior Director, Sterility Assurance Johnson & Johnson	(45 min)
10:15	**Morning Coffee Break**	(15 min)
10:30	**Plenary Session**	
10:30	***Microscopic Monte Carlo simulation for FLASH therapy*** Xun Jia, Ph.D., M.S. – Chief of Medical Physics Division, Professor of Radiation Oncology and Molecular Radiation Sciences Johns Hopkins University	(30 min)
11:00	***Development of Canadian absorbed dose standards for ultra-high dose rate (FLASH) electron beams*** James Renaud, Ph.D. National Research Council Canada	(30 min)
11:30	**Poster Blitz Session** Session Chair: Frédéric Tessier, Ph.D., 1st Vice President, CIRMS	(30 min)
12:00	**Poster Viewing** Interactive poster session	(30 min)
12:30	**Lunch** Boxed lunch provided	(60 min)
1:30	**Concurrent breakout sessions. See table on next page**	(90 min)
3:00	**Afternoon break and poster viewing** Coffee and snacks provided	(30 min)
3:30	**Concurrent breakout sessions. See table on next page**	(90 min)
5:00	**Adjourn Day 1**	

Monday, April 29, 2024 (All times are EDT) – Three Concurrent Sessions

Session	Medical Applications		Radiation Processing & Material Effects		Radiation Protection & Homeland Security
Room	**Main Ballroom (1st floor)**		**Room 3052 (3rd floor)**		**Room 3062 (3rd floor)**
Chairs	Wesley Culberson, Ph.D., University of Wisconsin-Madison Regina Fulkerson, Ph.D., Varian Matthew Mille, Ph.D., National Institutes of Health Sergio Morato Rafet, Ph.D., National Institutes of Health		Ileana Pazos, Ph.D., National Institute of Standards & Technology Kim Morehouse, Ph.D., Food and Drug Administration-Retired Spencer Mickum, Ph.D., STERIS		Stephanie Healey, Ph.D., Food and Drug Administration
Time	**MONTE CARLO RADIATION TRANSPORT SIMULATIONS - Joint Medical & RPME Session in Main Ballroom (1st floor)**			**Time**	**CONSEQUENCE MANAGEMENT**
1:30	***The role of modeling and simulation in industrial processing*** Thomas Kroc, Ph.D. Fermilab			**1:30**	***Preparation of mixed alpha standard sources by using U-234, U-238, Pu-239 and Am-241 radionuclides with molecular plating process*** Supriyadi Sadi, Ph.D. Centers for Disease Control and Prevention
1:50	***Multiscale Monte Carlo simulations for radiation therapy*** Jose Ramos-Mendez, Ph.D. University of California, San Francisco				
2:10	***Simulation of x-ray imaging devices for regulatory evaluation*** Andreu Badal, Ph.D. U.S. Food and Drug Administration			**2:00**	***Challenges and strategies in the development of radiation biodosimetry tests for patient management*** Merrilline Satyamitra, Ph.D. National Institutes of Health
2:30	***Personalized dosimetry in the age of AI: A multi-physics framework integrating machine learning and Monte Carlo for radioactive aerosol exposure assessment*** Shaheen Dewji, Ph.D. Georgia Institute of Technology			**2:30**	***Needs Report Discussion***
2:50	***Needs Report Discussion***				
3:00	**Afternoon break and poster viewing**				
Time	**FLASH RADIOTHERAPY**	**Time**	**CHIPS ACT**	**Time**	**REFERENCE/CALIBRATION SOURCES AND STANDARDS**
3:30	***Suitability of noble gas-filled ionization chambers for dosimetry of electron FLASH radiotherapy*** Ahtesham Khan, Ph.D. University Wisconsin-Madison & Northwestern Memorial Hospital	**3:30**	***A new simplified and ultra-fast dose simulation software tool*** Mark Murphy, M.S. Pacific Northwest National Laboratory	**3:30**	***Calibration standards and proficiency testing samples in radioactivity analysis*** Evgeny Taskaev, Ph.D. Eckert & Ziegler Analytics
3:50	***The impact of spatial and temporal dose distributions on achieving the FLASH effect for scanning proton beams*** Yannick Poirier, Ph.D. University of Maryland School of Medicine	**3:50**	***Understanding the atomic-scale origins of radiation damage in semiconductor devices through electron paramagnetic resonance measurements*** Jason Ryan, Ph.D. National Institute of Standards and Technology	**4:00**	***Development and adoption of new reference neutron fields within the U.S. radiation protection framework*** Andrey Mozhayev and Roman Piper Pacific Northwest National Laboratory
4:10	***Efficient image-guided irradiations on high-throughput eFLASH platforms*** Kevin Bryne, Ph.D. University of Maryland School of Medicine	**4:10**	***The role of radiation testing in modern space flight missions*** Justin Likar, M. Eng. Johns Hopkins University Applied Physics Laboratory		
4:30	***Imaging and Radiation Oncology Core's development of a remote credentialling system for FLASH radiotherapy*** Hayden Scott, M.S. MD Anderson Cancer Center	**4:30**	***Overview of the influences of Total Ionizing Dose (TID) on magnetic tunnel junctions for radiation-hard memory*** Brankdon Zink, Ph.D. National Institute of Standards and Technology	**4:30**	***Needs Report Discussion***
4:50	***Needs Report Discussion***	**4:50**	***Needs Report Discussion***		
5:00	**Adjourn Day 1**				

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Tuesday, April 30, 2024 (All times are EDT)

Morning Plenary Session in Main Ballroom (1st floor)

8:00	**Registration** Coffee provided	(60 min)
9:00	**Welcome** Amitava Adhikary, Ph.D., President, CIRMS	(5 min)
9:05 **9:10**	**2024 ICRU Gray Medal Presentation** *The prestigious Gray Medal was established by the ICRU in 1967. The medal is awarded for outstanding contributions in scientific fields of interest to the ICRU and honors the late Louis Harold Gray, former member and Vice-Chairman of the ICRU and eminent medical physicist and radiobiologist. The medal is awarded with frequency determined by the ICRU and is usually awarded in rotation, to recipients in the fields of Radiation Oncology, Medical Imaging and Basic Science.* **Plenary Session**	(5 min)
9:10	***Gray Award Acceptance*** Stephen Seltzer, Ph.D. – Senior Scientist National Institute of Standards and Technology (retired)	(30 min)
9:40	***Consideration of material effects in electron beam sterilization*** Leo Fifield, Ph.D. Pacific Northwest National Laboratory	(30 min)
10:10	**Morning Coffee Break**	(20 min)
10:30	**Plenary Session**	
10:30	***Development of specialized Large Language Models for radiology report processing*** Xiang "Shaun" Li, Ph.D. – Assistant Professor of Radiology Harvard Medical School	(30 min)
11:00	***Leveraging multi-omics based technologies based biomarker development for predicting radiation late effects*** Amrita Cheema, Ph.D. – Professor, Department of Oncology Georgetown University	(30 min)
11:30	***Challenges in medical X-ray imaging and radiation protection dosimetry and the need for updated standards*** Paula Toroi, Ph.D. – Principal Advisor, Radiation Metrology Laboratory STUK – Radiation and Nuclear Safety Authority, Finland	(30 min)
12:00	**CIRMS Photo / Lunch / Career Roundtable Mentoring Session** Group photo followed by provided lunch and concurrent career roundtable	(90 min)
1:30	**Concurrent breakout sessions. See table on next page**	(90 min)
3:00	**Afternoon break and poster viewing** Coffee and snacks provided	(30 min)
3:30	**Concurrent breakout sessions. See table on next page**	(90 min)
5:00	**CIRMS reception in Main Ballroom** Drinks and hors d'oeuvres provided	(60 min)
6:00 **6:30**	**Adjourn Day 2** **Social Gathering at RIO Lakefront (no host)** Bring your name tag and pay your own way. Dinner reservations and transportation on your own. **Yard House**, 211 Rio Blvd, Gaithersburg, MD	

Tuesday, April 30, 2024 (All times are EDT) – Three Concurrent Sessions

Session	Medical Applications		Radiation Processing & Material Effects		Radiation Protection & Homeland Security
Room	Main Ballroom (1st floor)		Room 2062 (2nd floor)		Room 2052 (2nd floor)
Chairs	Wesley Culberson, Ph.D., University of Wisconsin-Madison Matthew Mille, Ph.D., National Institutes of Health Regina Fulkerson, Ph.D., Varian Sergio Morato Rafet, Ph.D., National Institutes of Health Thomas Winters, Ph.D., National Institutes of Health		Ileana Pazos, Ph.D., National Institute of Standards and Technology Kim Morehouse, Ph.D., US Food and Drug Administration-Retired Spencer Mickum, Ph.D., STERIS		Stephanie Healey, PhD, US Food and Drug Administration
Time	**BIODOSIMETRY**	**Time**	**ELECTRON BEAM PROCESSING**	**Time**	**ENVIRONMENTAL MEASUREMENTS**
1:30	***Combined radiation injury impacts development of radiation countermeasures and biodosimetry*** Juliann Kiang, Ph.D. Armed Forces Radiobiology Research Institute	1:30	***Innovative solutions for complex challenges: How Reveam applies advanced accelerators to transform food safety and quality*** Chip Starns, Reveam, Inc.	1:30	***Scintillation response of gallium oxide to charged particle and gamma radiation*** Noel Guardala, Ph.D. The George Washington University
1:50	***Rapid biodosimetry in biofluids: Targeted approaches through small molecules*** Evagelia Laiakis, Ph.D. Georgetown University	1:50	***Electron beam processing at IBA*** Cody Wilson, M.S. Ion Beam Applications		
2:10	***Prediction of total body and partial body exposures to radiation using plasma proteomic expression profiles*** Mary Sproull, Ph.D., National Cancer Institute/NIH	2:10	***Industrial applications of electron beam processing: A perspective from E-BEAM Services*** Sam Strotman, MSS E-BEAM Services	2:00	***Novel tensioned fluid detector technology for multifarious-multiscale ionizing radiation sensing applications*** Rusi Taleyarkhan, Ph.D. Purdue University
2:30	***Biomarker development to assess radiation-induced injury*** Maureen Kane, Ph.D. University of Maryland School of Pharmacy	2:30	***Advantages and limitations of physical and virtual dose mapping of medical devices*** Nicholas Brydon, M.S. NextBeam	2:30	***Needs Report Discussion***
2:50	***Needs Report Discussion***	2:50	***Needs Report Discussion***		
3:00	**Afternoon break and poster viewing**				
Time	**X-RAY DOSIMETRY**	**Time**	**X-RAY PROCESSING**	**Time**	**RADIATION MEASUREMENTS**
3:30	***Updates from the NIST X-ray facility*** Michelle O'Brien, M.S. National Institute of Standards and Technology	3:30	***R&D for Compact Electron Cyclotron Resonance Accelerator*** Jay Hirshfield, Ph.D. and Yong Jiang, Ph.D. Omeda-P R&D Inc.	3:30	***Stochastic expansion of radionuclide inhalation dosimetry for radiation countermeasures application*** Emmanuel Matey Mate-Kole Georgia Institute of Technology
3:50	***X-ray detector calibrations at the PTB*** Stefan Pojtinger, Ph.D. Physikalisch-Technische Bundesanstalt, Germany	3:50	***PLAD – A renewable, ultra-low-cost bio-polymer solid-state gamma-neutron radiation sensor & dosimeter*** Rusi Taleyarkhan, Ph.D. Purdue University	4:00	***Re-establishing radioactive gas calibration services at NIST: Current progress*** Brittany Broder, Ph.D. National Institute of Standards and Technology
4:10	***Bridges in traceability from primary laboratories to the use of X-ray multimeters in clinical practice*** Sören Sturensson, M.Sc. RTI Electronics	4:10	***X-ray processing at STERIS*** Spencer Mickum, Ph.D. STERIS		
4:30	***Needs Report Discussion***	4:30	***Needs Report Discussion***	4:30	***Needs Report Discussion***
5:00	**CIRMS Reception in Main Ballroom**				
6:00	**Adjourn Day 2**				
6:30	**Social Gathering at RIO Lakefront (no host) - Yard House, 211 Rio Blvd, Gaithersburg, MD**				

Wednesday, May 1, 2024 (All times are EDT)

Morning Plenary Session in Main Ballroom (1st floor)

8:00 **Registration** (60 min)
Coffee provided

9:00 **Welcome** (5 min)
Amitava Adhikary, Ph.D., President, CIRMS

9:05 **Student Award Presentations** (10 min)
Presentation of awards for Junior Investigator Competition AND
Radiation Technology Essay Competition

9:15 **Presentation of Caswell Award** (5 min)
In 2000, CIRMS created the Randall S. Caswell Award to honor individuals who have made significant contributions to ionizing radiation measurements and standards for the Nation. Selection for the award is based in part on demonstration that the nominee has actively furthered the mission of CIRMS through leadership, participation, research, and/or mentoring.

9:20 **Caswell Award Acceptance**
Chip Starns – Executive Vice President/Founder (40 min)
Reveam, Inc.

10:00 **Morning Coffee Break** (15 min)

10:15 **Plenary Session**

10:15 ***Production, isolation, and characterization of stable isotope-labeled standards for mass spectrometric measurements of oxidatively-damaged nucleosides in RNA*** (30 min)
Pawel Jaruga, Ph.D. – Biomolecular Measurement Division
National Institute of Standards and Technology

10:45 ***In hot pursuit of a deployable primary standard for the massic activity of mixed-radionuclide samples*** (30 min)
Ryan Fitzgerald, Ph.D. – Radiation Physics Division
National Institute of Standards and Technology

11:15 ***Elevating AI to the status of a metrology tool in radiation physics*** (30 min)
Paul Patrone, Ph.D. – Applied and Computational Mathematics Division
National Institute of Standards and Technology

11:45 ***President's Closing & Needs Report*** (15 min)
Amitava Adhikary, Ph.D., President, CIRMS

12:00 **Adjourn Day 3**
Lunch on your own

1:00 **Laboratory Tours - ***Limited Space & Advanced Registration Required******* (180 min)
NIST Radiation Physics Laboratories, Gaithersburg, MD
*****Transportation on own*****

OR

Armed Forces Radiobiology Research Institute Laboratories, Bethesda, MD
*****Van transportation provided*****

Meeting Content

Abstracts for the talks and posters area available on our meeting content website if provided by the presenters. Presentation slides and poster files will be posted after the meeting if permission is granted.

https://cirms.org/2024-cirms-meeting

Please scan to see meeting abstracts

Poster Session

Poster #	Abstract Title	Presenting Author/Institution
1	Dosimetric analysis on AI based virtual log file patient-specific QA	Kai-Cheng Chuang *Duke University Medical Center*
2	Efficiency of removing emerging contaminants from wastewater using electron beam	Dilara Turkel Agacik *State University of New York*
3	Optimization of alpha cellulose and N-cellulose solubility in sodium hydroxide	Liz McDaniel *State University of New York*
4	Radiation-induced free radicals in UHMWPE: A comprehensive study for a period of 25 years	Afsana Sharmin *The University of Memphis*
5	Mammographic beam quality matching: Monte Carlo simulations and spectrometry	John Stasko *University of Wisconsin-Madison*
6	Ionizing-radiation induced synthesis of a novel alumina-acrylic nanogels for immobilizing chloride ion transport in concrete	Aiysha Ashfaq *University of Maryland, College Park*
7	Primary measurement methods for the determination of absorbed dose and activity of alpha-emitting radionuclides	Sean Jollota *University of Wisconsin-Madison*
8	Uncertain biokinetic parameter considerations in stochastic modeling of the human respiratory tract system for consequence management applications: A comparative analysis of uncertain biokinetic parameters in the human respiratory tract for an inhaled radionuclide	Emmanuel Matey Mate-Kole *Georgia Institute of Technology*
9	No nuclear fallout radioactivity was found on public zones around the Nevada National Security Site: A recent study	Haven Searcy *University of Nevada, Las Vegas*
10	Comparative analysis of beam qualities: Commercial small animal cabinet irradiators vs. NIST	Autumn Rasmussen *University of Wisconsin-Madison*
11	Single-laboratory validation study on simultaneous detection of alpha/beta radioactivity in food using liquid scintillation and gas-flow proportional counting techniques	Jingjing Pan *U.S. Food and Drug Administration*
12	Methionine intake modulates radiation damage in the gut	Isabelle Miousse *University of Arkansas for Medical Sciences*
13	Role of Fecal calprotectin as a potential biomarker of intestinal inflammation	Sarita Garg *University of Arkansas for Medical Sciences*
14	Review of recent efforts towards dosimetry standardization in radiation biology studies	Yannick Poirier *University of Maryland School of Medicine*
15	Investigating radical damage on DNA by microscopic Monte Carlo simulation	Youfang Lai *Johns Hopkins University*
16	Comparison of triple-to-double coincidence ratio liquid scintillation counting activity determinations of Co-60 Using FPGA and list-mode acquired data	Peyton Lalain *University of Wisconsin-Madison*
17	A novel radiomitigating medical countermeasure against acute high dose ionizing radiation exposure using a designer cerium oxide nanozyme and P7C3	Melanie Coathup *University of Central Florida*
18	Dosimetric challenges of preclinical FLASH orthovoltage x-ray system	Ehsan Tajik-Mansoury *Johns Hopkins University*
19	Anthropomorphic mouse phantoms and accurate small animal radiation studies in small animal cabinet irradiators	Gretchen Carpenter *Dartmouth College*