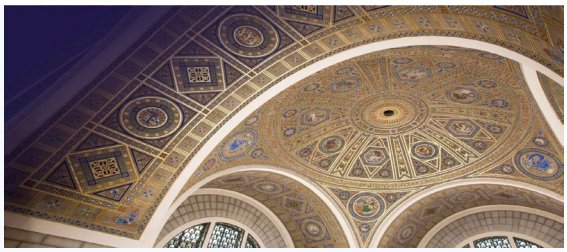
NATIONAL ACADEMIES Sciences Engineering Medicine

Nuclear and Radiation Studies Board | Division on Earth and Life Studies

44th Meeting of the Nuclear and Radiation Studies Board
June 6, 2024, Keck 101
Hybrid Meeting (In-Person & Virtual)

PUBLIC AGENDA



Location
The Keck Center – Keck 101, 500 5th Street NW, Washington, DC 20001

Click here to join OPEN Sessions.

Meeting ID 959 4712 2235
Passcode N/A
Phone
US: +1 301 715 8592 or +1 312 626 6799 or +1 470 250 9358 or +1 646 518 9805 or +1 646 558 8656 or +1 651 372 8299 or +1 253 215 8782 or +1 602 753 0140 or +1 669 219 2599 or +1 669 900 6833 or +1 720 928 9299 or +1 971 247 1195 or +1 213 338 8477 or 888 475 4499 (Toll Free) or 877 853 5257 (Toll Free)

THURSDAY, JUNE 6, 2024 (ALL TIMES LISTED ET)
KECK 101

NOTE: A market with food and snacks available for purchase and complimentary coffee is in the former refectory area on the 3rd floor.

***OPEN SESSION* – Zoom link to join OPEN Session**

12:30 pm **Call to Order and Welcome to NRSB's Open Session**
William H. Tobey, Chair

12:35 pm **Water Characterization of Navajo Unregulated Sources**
Jani C. Ingram, Ph.D., Regents' Professor of Chemistry and Biochemistry, Principal Investigator of the Partnership for Native American Cancer Prevention, Director of the Bridges to the Baccalaureate Program, Northern Arizona University

1:15 pm **Strategic Partnerships and Engagement: Overview, Key Initiatives, and Strategic Role in the NNSA**
Njema J. Frazier, Ph.D., Director, Strategic Partnerships and Engagement, Office of Policy and Strategic Planning, Office of the DOE Undersecretary for Nuclear Security and Administrator, National Nuclear Security Administration

2:00 pm **Spent Fuel and High-Level Waste Disposition Program**
Paul Murray, Deputy Assistant Secretary for Spent Fuel and High-Level Waste Disposition, Office of Nuclear Energy, U.S. Department of Energy

2:45 pm **Intermission**

3:00 pm **FLASH Effects: Focus on *in-Vitro* Studies**
Manuela Buonanno, Ph.D., Assistant Professor of Radiation Oncology, Center for Radiological Research, Columbia University

3:45 pm **Status of U.S. and International Production of Molybdenum-99 without Highly Enriched Uranium**
Max Postman, Foreign Affairs Specialist, Office of Material Management and Minimization, National Nuclear Security Administration

4:25 pm **Characterization of Radiation Dose and Effects: Status and Thoughts about the Future**
J. Patrick Fitch, Ph.D., Associate Laboratory Director for Chemical, Earth and Life Sciences, Los Alamos National Laboratory

5:10 pm **ADJOURN OPEN SESSION**

SPEAKER BIOGRAPHIES

Manuela Buonanno is an Assistant Professor of Radiation Oncology at the Center for Radiological Research at Columbia University. Her work concerns the biological effects of ionizing radiation. Her current studies aim at exploiting the biophysical properties of ionizing radiation [low-energy transfer (LET), dose, dose rate] to devise more effective radiotherapy treatments. Her research interests include the effects of high dose rates (FLASH) of protons, and the stimulation of the immune response by different types of radiation (LET). Dr. Buonanno also investigates antimicrobial applications of far ultraviolet (UVC) light, including prevention of surgical site infections and viral transmission. A long-standing member of the Radiation Research Society (RRS), Dr. Buonanno is Chair of the Education and Website Committee, she produces scientific podcasts for RRS and teaches radiation sciences to students, scientists in other fields, and the general public. She received her BS in physics from the University of Naples ‘‘Federico II’’ in Italy and her PhD in biophysics from Rutgers University. In 2016, she was awarded the Jack Fowler Award by the RRS and the University of Wisconsin.

Since May 2024, **Pat Fitch** has been Deputy Director of Los Alamos National Laboratory (LANL) responsible for Science, Technology, & Engineering. STE is a diverse team with significant impact at national and global scales. Their successes range from fundamental science to production/operations, use scientific and technical approaches from theory/modeling to field observations, and advance applications from deep underground to extraterrestrial locations like Mars. Previously, he had been LANL Associate Director responsible for Chemical, Earth, and Life Sciences. Prior to LANL, Pat was President of the Battelle National Biodefense Institute, LLC, that stood up the National Biodefense Analysis and Countermeasures Center (NBACC) – one of the nation’s largest maximum biocontainment laboratories (BSL-2, 3, and 4) and home to the National Bioforensic Analysis Center. For over a decade he managed NBACC for the Department of Homeland Security as an FFRDC. His biodefense, pathogen, and toxin R&D interests were preceded with work at Lawrence Livermore National Laboratory on biodetection systems, the human genome, medical devices, imaging, national security, and computer architectures and algorithms. He was part of a team that developed and demonstrated the world’s fastest computer. Pat received a Ph.D. in Electrical Engineering from Purdue University and BS degrees in Physics and Engineering Science from Loyola, Baltimore. Pat is a Fellow of the AAAS, recipient of three Secretary of Energy Achievement Awards, two FLC Excellence in Technology Transfer Awards, an IEEE international best paper award, an ABSA national best poster award, and an LLNL S&T Award. Pat has chaired and participated in several activities of the National Academies (NASEM)—most recently the 2022 expert meeting for the assessment of methods and tools for identification of pandemic origins.

Njema Frazier, Ph.D., is a member of the U.S. Senior Executive Service (SES) and currently serves as the Director of Strategic Partnerships and Engagement for the National Nuclear Security Administration (NNSA), Washington, District of Columbia. This office supports, promotes, and oversees industry, academic, and interagency partnerships and engagements that utilize NNSA laboratory facilities, infrastructure, and expertise to promote scientific and economic growth across the nation. This work directly supports sustainment and expansion needs for both the national security enterprise (NSE) and the nation that can be achieved via formal and informal science and technology partnerships and engagements. Prior to her current assignment, Dr. Frazier led a $1.3B weapons science R&D program to direct, plan, coordinate, and execute experiments in fields ranging from nuclear physics, hydrodynamics, plasma physics, and materials science, to high energy density and ignition science. Since joining NNSA in 2001, Dr. Frazier has served as an Acting Director, Acting Deputy, and Physicist/Subject Matter Expert (SME) for a number of NNSA's flagship scientific and technical programs established to ensure the United States maintains a safe, secure and effective nuclear weapons stockpile without explosive testing. She also spent three years representing NNSA on detail as a Visiting Professor at National Defense University. Prior to joining the NNSA, Dr. Frazier was a professional staff member for the U.S. House of Representatives Committee on Science for four years. A long-time trailblazer in science, Frazier was the first African-American woman to graduate with a Bachelor's degree in physics from Carnegie Mellon University, as well as the first to receive a Ph.D. in theoretical nuclear physics from Michigan State University. As the co-founder of the DOE POWER (Professional Opportunities for Women at Energy Realized) Employee Resource Group and member of both the National Society of Black Engineers (NSBE) National Advisory Board and the Mellon College of Science Dean's Council, she continues to champion both STEM and diversity, equity, inclusion, and accessibility (DEIA) in education and the workforce. Currently, Frazier serves on the NNSA DEIA Executive Board, and is a representative for a number of working groups and taskforces stemming from Presidential Executive Orders and Vice-Presidential initiatives. Throughout her career, Dr. Frazier has received wide recognition for her leadership and professional excellence, including selection as a Leadership Ambassador for the Department of Energy OneDOE Campaign; DOE Champion for the Minorities in Energy Initiative (MEI); recipient of the National Defense University, Joint Civilian Service Commendation Award; recipient of the National Nuclear Security Administration Distinguished Service Award; Ebony Magazine, Power 100 Honoree; Black Engineer of the Year, Science Spectrum's Trailblazer Award recipient; and Black Girls Rock! STEM Tech recipient.

Jani C. Ingram, PhD is a Regents' Professor in the Chemistry & Biochemistry Department at Northern Arizona University and a member of the Navajo Nation. Her research focuses on investigating environmental contaminants with respect to their impact on health in at risk populations funded by NIH, NSF, and EPA. She is the principal investigator of the Partnership for Native American Cancer Prevention and the director of the Bridges to Baccalaureate program. She received a Doctoral degree in chemistry from the University of Arizona. She was a staff scientist at the Idaho National Laboratory for twelve years before joining the faculty at Northern Arizona University in 2002.

Paul Murray is the Deputy Assistant Secretary for Spent Fuel and High Level Waste Disposition. He manages the U.S. Department of Energy's consent-based siting initiative and directs research to establish an integrated system for the storage, transportation, and disposal of the nation's spent nuclear fuel and high-level radioactive waste. Prior to joining the Office of Nuclear Energy, Paul served as the chief technology officer and senior vice-president for Orano Federal Services from 2007 to 2023. Throughout his tenure, Paul actively engaged with the Nuclear Energy Advisory Committee, focusing on infrastructure enhancements and fostering a vision for the High Burn-up Demonstration Project at Dominion. He also collaborated closely with both domestic and international stakeholders, including U.S. utilities, international utilities, and local host communities, to facilitate the development and siting of new nuclear facilities. Paul's professional journey began with the UK Ministry of Defense, where he

honed his expertise in the refit, commissioning, and design of propulsion systems and reactors for nuclear submarines. Paul graduated from Liverpool University, where he earned an honors degree in mechanical engineering. He later joined the United Kingdom Atomic Energy/AEA Technology, contributing to the design, construction, commissioning, and operation of reprocessing plants, advanced reactors, advanced fuels, and associated waste treatment facilities. In 1996, Paul crossed the Atlantic to the United States, playing a crucial role in transferring nuclear technology from the UK. His dedication led him to work at various environmental management sites across the country, contributing to the United States' efforts in nuclear technology development and environmental stewardship. Paul's profound commitment to advancing nuclear energy, coupled with his extensive experience and leadership, make him an invaluable asset to the Office of Nuclear Energy. His vision, strategic thinking, and dedication continue to shape the industry, fostering a future of safe, sustainable, and innovative nuclear energy solutions.

Max Postman is a Foreign Affairs Specialist within the Department of Energy's National Nuclear Security Administration (DOE/NNSA), with over fifteen years of experience supporting the organization in multiple roles. He currently works in the Office of Reactor Conversion and Uranium Supply within DOE/NNSA's Office of Defense Nuclear Nonproliferation. Mr. Postman is the Program Manager for the Molybdenum-99 Program, with responsibility for overseeing financial assistance to U.S. companies working to produce this vital medical isotope, as well as associated research and development by DOE/NNSA national laboratories. Previously, Mr. Postman has held roles in DOE/NNSA related to nuclear export controls, strategic planning, budget, and nuclear cleanup.