

ENERGY AND PHOTON SCIENCES DIRECTORATE NEWSLETTER

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MEET OUR NEW COLLEAGUES:

Kari Barry, NSLS-II

Thomas Brookbank, NSLS-II

Stefan Cianci, NSLS-II

Rebecca Cummings, CMPMSD

Eliot Gann, NSLS-II

Albert Liu, CMPMSD

Arpita Mitra, CMPMSD

Michael Monteleone, NSLS-II

Evan Musterman, NSLS-II

Padraic Shafer, NSLS-II

Fei Yan, CMPMSD

William Zbytniewski, NSLS-II

We start with the important message from Lab Director JoAnne Hewett:

Over the past few days, our social media feeds and news channels have been filled with horrifying images, videos, and first-hand accounts of violence against civilians, kidnappings, and deaths in the Middle East. I know many of our staff have family, friends, and colleagues in the region, and wanted to let you know that our focus is on supporting members of the Brookhaven Lab community during this time.

Sadly, this is not the only active conflict now and there are seemingly daily reports of atrocities from around the world. For us - as a lab with such an international workforce and international science enterprise - it is indeed a difficult time.

We have resources available if you need help. If you are struggling, please contact your supervisor or the Employee Assistance Program (<https://intranet.bnl.gov/hr/occmcd/eap.php>).

Our job is to focus on our science mission, but we are all human and these events can and do affect us deeply. At these times of stress, and indeed always, I ask you all to continue to treat each other with understanding, compassion, and empathy - and to take care of yourselves.

A MESSAGE FROM JIM

2023 has brought many changes. We have a new Lab Director, Deputy Director for Science, Deputy Director for Operations and Associate Lab Director for Environmental, Safety and Health. We opened the Child Development Center and we have just switched to Workday as our new management system for processes related to human resources that include time management, benefits, hiring and onboarding. We are bringing some reliable food alternatives on site as an experiment in "if you build it, they will come". These are just steps in trying to mitigate our transportation, food and housing challenges that were all too apparent this summer.

The number of simultaneous changes is unprecedented for the Lab. It is very important that we handle this change with grace and consideration. If there was ever a time for kindness and tolerance, it is now. We have also had many reviews this year and are preparing for a triennial review at CFN. We have extraordinary challenges in our scientific programs with new initiatives coming out of DOE at a dizzying rate. We cannot forget that underlying both the Inclusive and the Emotional Quotient Quarterly Themes is our need to show respect for all our colleagues. We can disagree respectfully, and we can ask others to do things in a respectful way.

Congratulations to Esther Tsai, a Scientist in the Electronic Nanomaterials Group of the Center for Functional Nanomaterials (CFN), for winning an Early Career award entitled, "Virtual Scientific Companion for Synchrotron Beamlines."

Congratulations to Materials Scientist Tatiana Pyatina who will lead a newly-funded DOE Energy Earthshot Research Center aimed at developing sustainable materials for geothermal wells. The "Center for Coupled Chemo-Mechanics of Cementitious Composites for EGS" (C4M) focuses on exploring the chemical and mechanical properties of cement composites and other materials used in enhanced geothermal systems (EGS).

Congratulations to our Pinnacle award winners from EPSD: Jim Wishart from the Electron and Photo-Induced Processes Group in Chemistry and Valentina



Jim Misewich

Bisogni in the Soft X-ray Scattering and Spectroscopy Group in NSLS-II were selected as recipients of the Science and Technology Award. David Bergman, from AD Power systems of NSLS-II, was selected as a recipient of the Engineering Award. Linda Hanlon, Executive Assistant to the ALD, was the recipient of the inaugural Distinguished Administrator Award. Kudos to all!

This quarter brings us National Hispanic Heritage Month, running from Friday, September 15 through Sunday, October 15, 2023. It is followed by Native American Heritage Month in November. With appreciation for the many programs currently supported by DOE that aim to find ways to make alternate energy sources that will help turn the tide on global warming and lead to a sustainable future for all our children, the quote this quarter comes from the indigenous population of our country:

“Treat the earth well: it was not given to you by your parents, it was loaned to you by your children. We do not inherit the Earth from our Ancestors; we borrow it from our Children.”

– Tribe Unknown

From the EPSD DEI Council

POSTERS: You may see various colorful posters in buildings on site from the Lab Diversity, Equity and Inclusion (DEI) Office centered around ideas of respect. We have ones in ISB, CFN and NSLS-II and will have more in our other buildings. It is important that we all prioritize these ideas. We may not always agree in our ways of approaching our jobs or other aspects of life, but we all owe each other respect and courtesy.

PEER COUNSELLORS: From the Lab DEI resource pages “All the DEI Councils offer Peer Counseling to employees which is an informal avenue that provides an alternative safe place for staff to discuss concerns that might not rise to the level of the Lab’s formal complaint process that typically requires investigation through the Lab-Wide Employee Support System. Peer Counseling is for staff who would like to discuss something that is on their mind and gain some ideas and advice, for example:

- A difference of opinion or conflict with a fellow employee or supervisor,
- A problem that is bothering them that they could use assistance in charting a path forward.

The Peer Counselor may work with a staff member to help resolve an issue but will not conduct an investigation and does not represent an investigative body. The intent is that these conversations will remain confidential to the extent possible. However, if the Counselor believes there is a potential violation of law, U.S. Department of Energy Regulations, and/or Brookhaven Science Associates requirements, or an imminent hazard, the EPS Peer Counselor must promptly refer the matter to the appropriate Laboratory manager for action and resolution.”

The EPSD [Peer Counselors](#) are members of the DEI Council that operate under the guidelines described above and welcome conversations about any workplace concerns with EPSD employees and guests. Be assured that confidentiality is an utmost priority within the constraints of Lab policy. Our current EPSD roster of Peer Counsellors is:

Diane Cabelli (Ext. 4361, cabelli@bnl.gov),
Michael Cowell (Ext. 7076, cowell@bnl.gov),
Kenneth Evans-Lutterodt (Ext. 2095, kenne@bnl.gov),
Vivian Stojanoff (Ext. 8375, stojanof@bnl.gov),
John Tranquada (Ext. 7547, jtran@bnl.gov), and
Grace Webster (Ext. 3227, gwebster@bnl.gov).

We are currently undergoing retraining or training of new members to the DEI Council so expect the list will be updated in the next Newsletter. We welcome emails or phone calls to either discuss issues or to arrange for times for private conversations.

ANONYMOUS COMMUNICATION: On the EPSD DEI website we have a process to receive [anonymous messages](#) to the DEI Council and Jim Misewich. These really are anonymous to all of us. In addition, there are green envelopes in many mail rooms that can be used to mail anonymous comments and/or suggestions to the Council. The envelopes are pre-addressed; you need to only put in your comments and place it in the interoffice mail, and they will be routed directly to the EPSD DEI Council Chair (Cabelli). The anonymous communications will be answered on the “Ask Jim” webpage.

DEI PERFORMANCE GOALS: Lab employees are required to have DEI goal(s) on their performance appraisal goal setting document. To help, the Lab DEI pages include a [guidance document](#) with suggestion for goals that meet the requirement of personal, group and organizational impact. In addition, we have a web page with [suggested goals](#).

In 2023

It’s October so it is the time when Nobel prizes are awarded. This year’s prizes carry the themes of decades of basic research that culminates in millions of lives saved during a global crisis and the international ties found in scientific research. The prizes this year can also be used to draw attention to some DEIA themes and two of the laureates have Lab connections.

The Nobel Prize in Physiology or Medicine went to Katalin Karikó and Drew Weissman for their discoveries concerning base modifications that enabled the development of effective mRNA vaccines against COVID-19. The unprecedented speed at which the mRNA vaccines were produced rested on decades of foundational basic research. This led to millions of lives saved around the world and is accelerating our return to pre-COVID ways of interaction. Kariko, who received her Doctorate at the University of Szeged, Hungary collaborated with Drew Weissman at the University of Pennsylvania. [The stories](#) about her funding challenges, the difficulty they had getting this research published and their meeting over a copy machine are remarkable. Moreover, [seminal work in RNA transcription in vitro](#) was carried out by William Studier in the Biology Department

at BNL in the mid-80's. An additional message here is about the value of serendipitous meetings that can only occur when you are physically present.

The Nobel Prize in Physics was awarded to Pierre Agostini, Ferenc Krausz and Anne L'Huillier for experimental methods that generate attosecond pulses of light for the study of electron dynamics in matter. L'Huillier, a French Physicist, is only the fifth woman to win the Nobel Prize in Physics. She is currently at the University of Lund in Sweden. Krausz was born in Hungary and is currently at the Max Planck Institute of Quantum Optics in Germany and a Professor of Experimental Physics at Ludwig Maximilian University of Munich. Agostino, a French Physicist who was born in Tunisia, brings another Lab connection as he is a Professor Emeritus at The Ohio State University but prior to going to OSU in 2004, he was a [visiting scientist in the Chemistry Department at BNL working with Lou DiMauro](#).

The Nobel Prize in Chemistry was awarded to Mounji G. Bawendi of the Massachusetts Institute of Technology (MIT), Louis E. Brus of Columbia University and Alexei I. Ekimov of Nanocrystals Technology Inc., "for the discovery and synthesis of quantum dots, nanoparticles where the size determines their properties." They are components of televisions, LED devices and used in medicine, among other things. Bawendi was born in Paris, of Tunisian parents, and educated in the USA. Brus was born and educated in the US and his Nobel prize winning research is part of the proud history of Bell labs. Ekimov is a Russian physicist who carried out his Nobel prize winning research in St. Petersburg and came to the US in 1999.

There are three lessons to take with us from the Nobel Laureates this year. The first, and most direct, is the power of science to save lives. The decades of foundational basic research that led to mRNA vaccines is what enabled us to produce these vaccines at an unprecedented speed. This led to millions of lives being saved around the world. The potential of mRNA vaccines to address other diseases is enormous. Besides saving lives, the power of basic research to be translated into the devices and treatments that affect us profoundly is seen in the ever more realized promise of quantum dots and nanoparticles.

This leads to the second theme or observation and that is the Lab connection to these prizes. We produce world-class facilities for cutting-edge science and have seen the power of these facilities many times. We must not underestimate the power of our laboratory science. Notably, the work this year is associated with our science departments, Chemistry and Biology. It underscores that we are a powerhouse of ideas and provide a fertile environment for creativity.

The final lesson is the strength of the international community of science. When you look at where the laureates were born, trained and did research and currently live, we have Hungary, Sweden, Tunisia,

France, Germany, Russia and the USA. Science is international, people move through different locations throughout their lives and careers, and these successes, as well as our entire Lab community, demonstrate the power of diversity. This is seen at the Lab in the highlights of science in EPSD which further show how diversity is our "superpower".

On another Nobel Prize note, the Nobel Prize in Economics went to Claudia Goldin of Harvard University. She is only the third woman to win the prize in economics. Her citation states she "provided the first comprehensive account of women's earnings and labour market participation through the centuries" and "her research reveals the causes of change, as well as the main sources of the remaining gender gap." Her research on the impact of children, unpaid extended work hours and other gender-related items on salary and participation in the work force speak to all of us.

Services at the Lab

We have food trucks coming to Brookhaven Square Park each weekday. In addition, a pilot program (Berkner Café Pop-Up) has been launched where The Artisan by Rollin' Ghost will serve lunch in the cafeteria from 11:00 am to 1:30 pm on Wednesday, Thursday and Friday.

Uncle Giuseppe's is now a part of this program and will provide Grab & Go options on Monday and Tuesday that include wraps, sandwiches, soups, salads, heat and serve meals, snacks and beverages. You can just go or [pre-order online](#).

DEI Quarterly Themes Initiative

The first quarter of the new fiscal year has the Quarterly Theme program taking a hiatus for catchup. There are training courses scheduled for the first two themes (Emotional Intelligence followed by Inclusion). This will allow those who have not had discussions with their direct reports on either or both of these topics the time to participate in this program. The DEI Office has provided a wealth of resource materials and questions to aid in these discussions; [Emotional Intelligence](#) and [Inclusion](#), to facilitate the process. Please avail yourselves of these resources.

Events in the Past Quarter

Our new Lab Director, JoAnne Hewett, held an [All-Hands meeting](#) on August 8th. This meeting included comments from John Hill, the Deputy Director for Science and Technology, and U.S. Department of Energy (DOE) Brookhaven Site Office Manager Robert Gordon and was followed by a Question-and-Answer session.

On September 11th, the Brookhaven Lab community gathered to remember the "tragedy, heroism, and sacrifice of so many during and after the 2001 terrorist attacks at the World Trade Center, Pentagon, and in Shanksville, Pennsylvania". Lab Director JoAnne Hewett, Police Chief Erton Rudder and U.S. DOE Brookhaven Site Office Manager Robert Gordon all participated in the [ceremony](#).

The Lab DEI Office has a new program, [Diverse Perspectives](#), that will be comprised of short videos where

members of the Lab community give their perspective on DEIA, the Lab and their community. [Debbie Bauer](#) gave the inaugural interview.

Upcoming Events this Quarter

National Hispanic Heritage Month occurs from Friday, September 15 through Sunday, October 15, 2023. As the time is closer, please watch for events listed on the Lab calendar.

[Healthfest celebrates health, safety, and wellness in October.](#) Events begin Tuesday, October 17 and continue through the remainder of October. Events include running, biking, swimming, table tennis, Reiki healing, a Halloween walk and culminates with a Breast Cancer Awareness talk. Please watch the calendar for these events and see the [healthfest website](#).

November is Native American Heritage Month chosen because it generally concludes the harvest and because it is a time of giving thanks. For a description of the complicated history of the native population of Long Island, see [The Thirteen Tribes of Long Island](#).

From the Employee Engagement Survey

The EPSD Working Group has finished discussing the written feedback from the directorate's 2022 survey responses and has been meeting with Jim Misewich and DEI Chair Diane Cabelli to discuss ways to address things. In response to the feedback, Jim has invited one of the volunteers from the Working Group to his Senior Management Meetings. The group also recommended support organizations like HR, Business Operations, and Facilities be invited to all-hands meetings to promote collaboration and understanding. The group continues to work on Jim's responses and looks forward to continuing working with him and the DEI Council.

The ongoing work in response to the Lab-wide DeepDive Survey results from 2022 can be viewed on the [Employee Experience Website](#). You can also revisit the all-hands briefing from Brookhaven Lab former Director Doon Gibbs and other lab leaders joined by Scott Young of CultureIQ by re-watching the [DeepDive Survey Results Briefing Video](#). You can see pages from the Employee Experience website that share directorate [Employee Experience | Directorate Actions \(bnl.gov\)](#) and Lab-wide Action updates [Engagement Survey | Efficiency and Agility \(bnl.gov\)](#).

Highlights of Science in EPSD

Congratulations

Congratulations to the members of EPSD who have partnered and received Reaching a New Energy Sciences Workforce (RENEW) Grants for research with students and faculty at Historically Underrepresented Institutions:

Building a Diverse Nuclear Energy Workforce: Hunter College/Brookhaven Partnership to Investigate Technetium-99 and Rhenium Speciation in Molten Salts; James F. Wishart, Anatoly I. Frenkel (CO).

Co-designing Foundational Capabilities to Diversify the Scientific Workforce; John Hill (NSLS-II).

Congratulations to member of EPSD Qun Liu, a Structural Biologist at EPSD, who received Biopreparedness Research Virtual Environment (BRaVE) funding to lead a project titled ["Unlocking the molecular basis of plant-pathogen interactions to create resilient bioenergy crops"](#) that uses the National Synchrotron Light Source II (NSLS-II) and the Laboratory for BioMolecular Structure (LBMS).

Congratulations to Toshifumi Sugama, from the Interdisciplinary Science Department, who received the Outstanding Research Award from Geothermal Rising, a non-profit organization advocating for the advancement of geothermal energy around the world. He was ["recognized for developing several materials that make geothermal energy accessible and reduce reliance on fossil fuels"](#).

Our Outreach

CFN: [Armando Rúa Named Moore Foundation Experimental Physics Investigator](#). Rúa's ambitious work leveraged advanced capabilities at Brookhaven Lab and our educational programs supporting underrepresented groups have monumental impacts!

C2QA/OEP/DEI: [FOQUSing on the Future of Quantum](#) The Faculty Outreach for Quantum-Interested Universities program is taking action to ensure the field and its opportunities are equitable and accessible. This program prepares underrepresented students from all STEM disciplines to enter the world of QIS.

Our Science

CFN: Silicon Ally: [Penn Engineers Grow Full Wafers of High-Performing 2D Semiconductor That Integrates With State-of-the-Art Chips](#). Researchers at the University of Pennsylvania School of Engineering and Applied Science have grown a high-performing 2D semiconductor to a full-size, industrial-scale wafer that can be deposited at temperatures low enough to integrate with a silicon chip.

CFN: [Strength Is in This Glass's DNA](#). Researchers create a lightweight, high-strength material using two unlikely ingredients - DNA and glass.

CFN: [Making Big Leaps in Understanding Nanoscale Gaps](#). Lab researchers and collaborators build structures from 2D materials and study how energy and charge move between layers for future devices.

NSLS-II/CFN: [Scientists use ORNL's Summit Supercomputer to Learn How Cicada Wings Kill Bacteria](#). ORNL researchers simulated the nanostructure of a cicada-wing-like surface to gain insight into its antibacterial abilities.

NSLS-II: [Transferring Information at the Speed of "Magnons"](#). Scientists at Brookhaven National Laboratory uncovered a previously unknown spectrum of magnon excitations in an antiferromagnetic thin film.

CFN: [A Non-Covalent Bonding Experience](#). Scientists discover new structures for unique hybrid materials by altering their chemical bonds.

Highlights of People in EPSD

[Xiaoqian Chen](#), NSLS-II Beamline Scientist, leads the quantum materials program at NSLS-II's Coherent Hard X-Ray Scattering beamline.

On the move in EPSD

We welcome Steven Glozek, who joins NSLS-II from Nonproliferation and National Security Department.

Help Welcome our New Colleagues to EPSD

Once again, we are introducing our newly hired colleagues to you. Join me in welcoming them to the directorate:

Kari Barry, Research Software Engineer

Supervisor: Daniel Allan

Email: kbarry@bnl.gov

Start Date: 9/11/2023

Thomas Brookbank, Mechanical Engineer

Supervisor: Toshi Tanabe

Email: tbrookban@bnl.gov

Start Date: 8/28/2023

Stefan Cianci, Electro-Mech Designer

Supervisor: Jerome Malley

Email: scianci@bnl.gov

Start Date: 9/5/2023

Rebecca Cummings, PM

Supervisor: Yimei Zhu

Email: rcummings@bnl.gov

Start Date: 7/10/2023

Eliot Gann, Lead Beamline Scientist X-ray Scattering

Supervisor: Masafumi Fukuto

Email: egann@bnl.gov

Start Date: 8/14/2023

Albert Liu, Scientist, Quantum Information Science

Supervisor: Robert Konik

Email: aliu1@bnl.gov

Start Date: 9/5/2023

Arpita Mitra, Postdoctoral Research Associate

Molecular Beam Epitaxy

Supervisor: Ivan Bozovic

Email: amitra@bnl.gov

Start Date: 8/7/2023

Michael Monteleone, RF Engineer

Supervisor: James Rose

Email: mmonteleo@bnl.gov

Start Date: 9/5/2023

Evan Musterman, Postdoctoral Research Associate, Physics

Supervisor: Andrew Kiss

Email: emusterma@bnl.gov

Start Date: 9/5/2023

Preferred Pronouns: He/him

Interests: Exploring nature, reading, and various crafts.



Padraic Shafer, Scientific Software Developer

Supervisor: Dan Allan

Email: pshafer@bnl.gov

Start Date: 7/24/2023

Fei Yan, Postdoctoral Research Associate, Low Dimensional Systems and QIS

Supervisor: Robert Konik

Email: fyan@bnl.gov

Start Date: 9/5/2023

Pronouns: She/her/hers

Interests: I am generally interested in exploring topics in physics and mathematics, especially in their overlapping regions where perspectives from both fields benefit each other. In my spare time, I enjoy hiking, puzzle-solving and movies.



William Zbytniewski, Beamline Mechanical Engineer

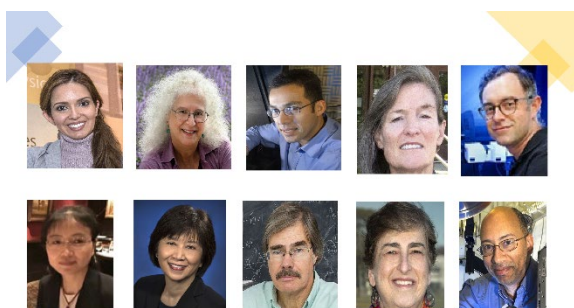
Supervisor: Evgeny Nazaretski

Email: wzbytniew@bnl.gov

Start Date: 9/18/2023

Pronouns:

Interests:



Members of the EPSD DEI Council (clockwise from top): Priscilla Antunez, Diane Cabelli, Fernando Camino (on leave), Michael Cowell, Mark Dean, Kenneth Evans-Lutterodt, Vivian Stojanoff, John Tranquada, Grace Webster and Xi Yang.



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<https://www.bnl.gov/energysci/>