



WHAT'S HAPPENING IN THE CSN?



NSF Center for Sustainable Nanotechnology

WELCOME TO NEW CSN MEMBERS!



Welcome to new CSN postdocs **Hina Ashraf** (White group, left) and **Zhongyi Wan** (Cui group, middle), and grad student **Rhea Caldwell** (Haynes group, right),

Welcome (and farewell) to our 2024 SURE Students!



This year's SURE program started in June... and it's already time to say goodbye! Thank you all for being part of the center!



Many SURE students gathered at UMN for the orientation meeting June 12

2024 SURE students ([research groups](#)):

Sebastian Aguero (Fairbrother)
Iris Barone (Riley)
Stefanía Borges Rivera (White/Dimpka)
Noemi Carranza (Hudson-Smith)
Katherine Crutchfield (Stoddard)
Don Dao (White/Dimpka)
A'vandia Fedd (Green)
Valentina Flammini (Peresin)
Kaylan Gadson (Green)
Rebecca Gardner (Wheeler)
Zhazira Iskakova (Daly)
Alexis Kentebe (Burks/Toledo)
Halley Le (Rozenzweig)
Natalia Mena Santiago (Mason)
Chi Nguyen (Kabengi)
Amelyn Phang (Hernandez)
Imani Phillips (Curry)
Sigrid Real-Aguilar (Carlson)
Alejandra Rodriguez Nazario (Haynes)
Yalexander Sánchez (Santana)
Dillon Shintani (Tollefson)
Aria Tauraso (Mason)
Chinny Tiu (Haynes)

Honorary SURE students

Arham Alan (Hernandez)
Isabella Allen (Mensch)
Carolina Da Fonseca Guedes (Hudson-Smith)
Vincent DeMaria (Mensch)
Samantha Hauth (Peresin)
Rima Jamous (Haynes)
Ava Lukasavige (Peresin)
Britta McKinnon (Klaper)
Heather Muentner (Haynes)
Adriana Schroeder (Murphy)





Alicia Tripp (Hamers group) successfully defended her thesis, entitled "Surface Functionalization of 2D Nanomaterials," in April. Alicia Accepted a position as analytical facilities manager at Cornell. Congratulations Dr. Tripp!



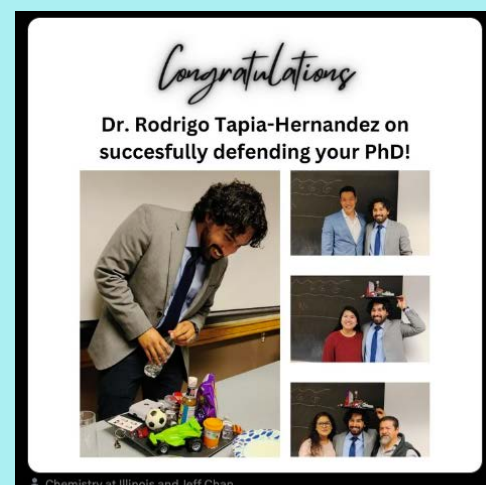
Connor Protter (Hamers group) successfully defended his thesis, entitled "The Surface Interactions and Applications of Copper Sulfide" in May. Congratulations Dr. Protter!



Mahima Unnikrishnan (Murphy group) successfully defended her thesis, entitled "Implications of Nanoparticle-Protein Interactions on Protein Assembly and Conformation" in May. Congratulations, Dr. Unnikrishnan!



Shreyasi Sengupta (Rosenzweig group) successfully defended her thesis, entitled "Surface Modifications of InSe and MXene Two-Dimensional Materials and their Impact on the Chemical Stability and Interactions with Bacterial Models Relevant to the Environment," in July. Congratulations, Dr. Sengupta!



Rodrigo Tapia-Hernandez (Feng group alum) defended his thesis at the University of Illinois at Urbana-Champaign. Congratulations, Dr. Tapia-Hernandez!



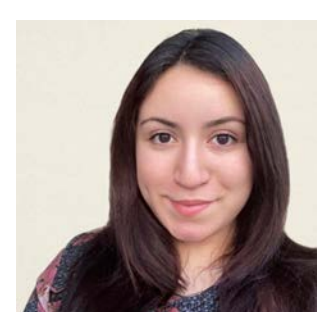
Wandi Xu (Hernandez group) was elected as the new SPRING Board Liaison for a term running June through December 2024.



CSN Affiliate **Kathryn Riley** was **promoted** to Associate Professor of Chemistry and Biochemistry at Swarthmore College.



Ravithree Senanayake (Hernandez group alum) accepted a position with Thermo-Fisher.



Lissett Diaz (Klaper group) passed her dissertation exam.



Alanis Lopez (Klaper group alum) will participate in the Pharmacy Scholars Program this summer, then she will be starting her journey to become a pharmacist at Nova Southwester University in Puerto Rico.



Elizabeth (Liz) Laudadio (They/Them) • 1st
Patent Technical Specialist
23h • Edited •

I've started a new job as a Patent Technical Specialist for **Nixon Peabody LLP**! I'm excited to engage with the scientific community and move innovation forward in a new way.

Liz Laudadio (Hamers group alum) shared on LinkedIn that they have started a new job as a Patent Technical Specialist

The winners of 2024 Merck Research Award for Underrepresented Chemists of Color



Beza Tuga (Haynes group) was selected for a [2024 Merck Underrepresented Chemists of Color Research Award](#).



Wilanyi Alvarez Reyes (Haynes group) was recognized at the [University of Minnesota 23rd Annual Chemistry Graduate Student Research Symposium](#).



Cheng-Hsin Huang (Haynes group) was awarded the inaugural Shih-Tung King Memorial Fellowship in the UMN Chemistry Department, which recognizes outstanding contributions of international graduate students.

Savannah Phillips (Fairbrother group) was selected for the William Hooper Grafflin Fellowship for outstanding advanced-year graduate students by the Department of Chemistry at Johns Hopkins University.



Wilanyi Alvarez Reyes (Haynes group) was selected for the 2024-2025 Wayland E. Noland Excellence Fellowship that recognizes amazing contributions as a UMN researcher.

Milestones and Awards



Caroline Anastasia (Fairbrother group, front row 2nd from right) was a finalist selected from among over 60 graduate students at Johns Hopkins' "Empower Your Pitch" contest for communicating a 3-minute pitch aimed at explaining thesis research to a general audience. Caroline presented her CSN work on how gold nanoparticles interact with model plant surfaces.



Kushani Mendis (Rosenzweig group, 2nd from left) was runner-up for the annual 3 Minute Thesis competition at UMBC for her presentation entitled "Quantification of Protein Corona Formation on Luminescent Nanoparticles by Fluorescence Techniques." The competition included three training workshops designed to help students effectively communicate their research to non-specialist audiences.



Bob Hamers was the recipient of the [Hilldale Award in the Physical Sciences](#), given annually by UW-Madison to recognize one faculty member in primary areas of the university on the basis of combined research, teaching, and service.

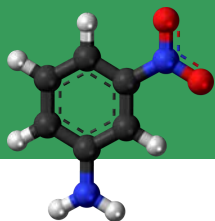


CSN Affiliate **Shana Stoddard** won the [Kirschstein Diversity in Science Award](#) from the American Society for Biochemistry and Molecular Biology. She delivered an award lecture entitled "[Believe Without Boundaries](#)."

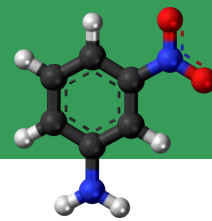


Beza Tuga (Haynes group, left) was an invited participant in the 2024 DuPont GOLD Seminar Competition. In addition, **Beza** and **Miriam Krause** (right) were awarded University of Minnesota College of Science & Engineering [DEI Showcase Awards](#) (for graduate students and staff, respectively).





CSN PUBLICATIONS



Find the most recent list of all center publications on the [CSN Google Scholar](#) page.

Beza Tuga, Andrea T. Ligocki and Christy L. Haynes (2024). Leveraging Swelling Polymer Nanoparticle Reversibility for Cargo Loading. *ACS Applied Nano Materials*. 7 (6), 6616-6625. Read the online publication [here](#).

Eric Ostovich and Rebecca Klaper (2024). Using a Novel Multiplexed Algal Cytological Imaging (MACI) Assay and Machine Learning as a Way to Characterize Complex Phenotypes in Plant-Type Organisms. *Environmental Science & Technology*. 58 (11), 4894-4903. Read the online publication [here](#).

Shital Vaidya, Chaoyi Deng, Yi Wang, Nubia Zuverza-Mena, Christian Dimkpa and Jason C. White (2024). Nanotechnology in agriculture: A solution to global food insecurity in a changing climate? *NanoImpact*. 34, 100502. Read the online publication [here](#).

Tana L. O'Keefe and Christy L. Haynes (2024). Review of Oxidative Dissolution and Sulfidation of Select Nanoparticles in the Environment: Impact on Applications. *ACS Applied Nano Materials*. 7 (8), 8392-8406. Read the online publication [here](#).

Yi Wang, Chaoyi Deng, Lijuan Zhao, Christian O. Dimkpa, Wade H. Elmer, Bofei Wang, Sudhir Sharma, Zhenyu Wang, Om Parkash Dhankher, Baoshan Xing and Jason C. White (2024). Time-Dependent and Coating Modulation of Tomato Response upon Sulfur Nanoparticle Internalization and Assimilation: An Orthogonal Mechanistic Investigation. *ACS Nano*. 18 (18), 11813-11827. Read the online publication [here](#).

Savannah G. Phillips, Alyssa R. Lankone, Sophia Sommerkamp O'Hagan, Nasim Ganji and D. Howard Fairbrother (2024). Gas-Phase Functionalization of Phytoglycogen Nanoparticles and the Role of Reagent Structure in the Formation of Self-Limiting Hydrophobic Shells. *Biomacromolecules*. 25 (5), 2902-2913. Read the online publication [here](#).

Tana L. O'Keefe, Chaoyi Deng, Yi Wang, Sharmaka Mohamud, Andres Torres-Gómez, Beza Tuga, Cheng-Hsin Huang, Wilanyi R. Alvarez Reyes, Jason C. White and Christy L. Haynes (2024). Chitosan-Coated Mesoporous Silica Nanoparticles for Suppression of Fusarium virguliforme in Soybeans (Glycine max). *ACS Agricultural Science & Technology*. 4 (5), 580-592. Read the online publication [here](#).

Ravithree D. Senanayake, Clyde A. Daly, Jr. and Rigoberto Hernandez (2024). Optimized Bags of Artificial Neural Networks Can Predict the Viability of Organisms Exposed to Nanoparticles. *The Journal of Physical Chemistry A*. 128 (14), 2857-2870. Read the online publication [here](#).

Yinhan Wang and Rigoberto Hernandez (2024). Construction of Multiscale Dissipative Particle Dynamics (DPD) Models from Other Coarse-Grained Models. *ACS Omega*. 9 (15), 17667-17680. Read the online publication [here](#).

Mahima Unnikrishnan, Yuhuan Wang, Martin Gruebele and Catherine J. Murphy (2024). Nanoparticle-assisted tubulin assembly is environment dependent. *Proceedings of the National Academy of Sciences USA*. 121 (28), e2403034121. Read the online publication [here](#).

Christian O. Dimkpa, Christy L. Haynes and Jason C. White (2024). Reducing greenhouse gas emissions with nanofertilizers. *Nature Sustainability*. 7 696-697. Read the online perspective piece [here](#).

CSN Media & Other Recognition



Christy Haynes was featured in a [UMN Chemistry profile](#) entitled "hUMNs of Chemistry," where she discussed her journey in STEM and other fun topics.



Della Mosley was featured in a *Yes Magazine* article entitled "[Safe \(Sacred\) Spaces LGBTQ people are creating queer churches where no one's identity is a sin.](#)"



Cathy Murphy was appointed to The National Academies of Sciences, Engineering, and Medicine ad hoc committee to conduct a quadrennial [review of the National Nanotechnology Initiative](#).



CSN Talks & Presentations

Gordon Research Conference (GRC) on Nanoscale Science and Engineering for Agriculture and Food Systems

The CSN had great representation this year at the [Nanoscale Science and Engineering for Agriculture and Food Systems GRC and Graduate Research Symposium](#) (GRS).

From the **Haynes** group: **Wilanyi Alvarez-Reyes, Cheng-Hsin Huang, Christy Haynes, & Beza Tuga**



Beza Tuga (Haynes group) receiving recognition as Chair of the GRS from **Jason White**



Back row L-R: **Chaoyi Deng, Elias Buurma, Howard Fairbrother, Juan Pablo Giraldo**. Middle row: **Cheng-Hsin Huang, Christy Haynes, Wilanyi Alvarez Reyes, Jason White**. Front row: **Beza Tuga, Catherine Jalomo, Savannah Phillips, & Marina Youngblood**

CSN Talks & Presentations



Eleni Spanolios (Haynes group) helped organize the Midwest Retreat for Diversity in Chemistry in Peoria, IL



Shreyasi Sengupta (Rosenzweig group) presented her CSN research at the 20th Annual USM NSF PROMISE AGEP Research Symposium at the University of Maryland, College Park in February. Shreyasi also presented at several other events at UMBC, including the 2024 Chemistry and Biochemistry Graduate Research Day (March), the Graduate Student Association Research Symposium (April), and the College of Natural and Mathematical Sciences Graduate Research Festival (April).



Della Mosley, Mike Schwartz, and Miriam Krause presented at the [National Convening for the State of Mental Health in STEM](#) in May. Mike and Miriam presented a talk entitled "Spotlighting Wellness-Centered Initiatives in STEM," while Della gave the closing keynote address. The convening was co-organized by CSN Affiliate **Kerrie Wilkins-Yel**.



Christy Haynes gave an invited talk about CSN work at the 2024 Blavatnik Science Symposium at the New York Academy of Sciences.



Jason White presented at the National Academies of Sciences, Engineering, and Medicine's Committee on the Quadrennial Review of the National Nanotechnology Initiative (June 2024), as well as at the SETAC Europe 34th Annual Meeting, Seville Spain (May 2024)

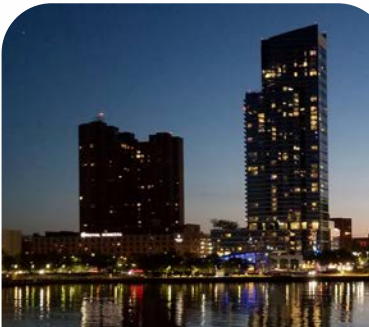


All-Hands Baltimore

April 30 - May 2, 2024 at Johns Hopkins University



Dinner at the
Baltimore
Aquarium



Outreach at
the Maryland
Science Center



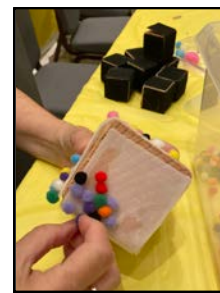


The **Hernandez** group received an ACCESS Allocation for their project entitled "Nonequilibrium Molecular Dynamics Simulations, XI." The allocation provides nearly \$100,000 in computational resources by the NSF in advanced computing infrastructure for the U.S.

More In-Person Outreach



Jennifer Bjorklund (Mason group) assisted with the Science Accelerating Girls' Engagement (SAGE) program hosted by Brookhaven National Lab, showing a group of female high school students what it's like to be a computational chemist and the different fields that her work impacts. She shared her career journey as well as some information about her work, including the CSN projects on battery cathode materials and nano-enabled agriculture.



Safia Jilani (Haynes group) and **Miriam Krause** presented two nano-themed demos at the [CONvergence](#) sci fi/fantasy media convention over 4th of July weekend. "Nanoblocks" (left) is designed to demonstrate the concept of surface area to volume ratios, and "Living Room Electron Microscopy" shared the TEM demo (right) developed by **Natalie Hudson-Smith** (Haynes group alum)



Latest from Sustainable Nano

See Sustainable-Nano.com for all CSN blog posts & podcast episodes

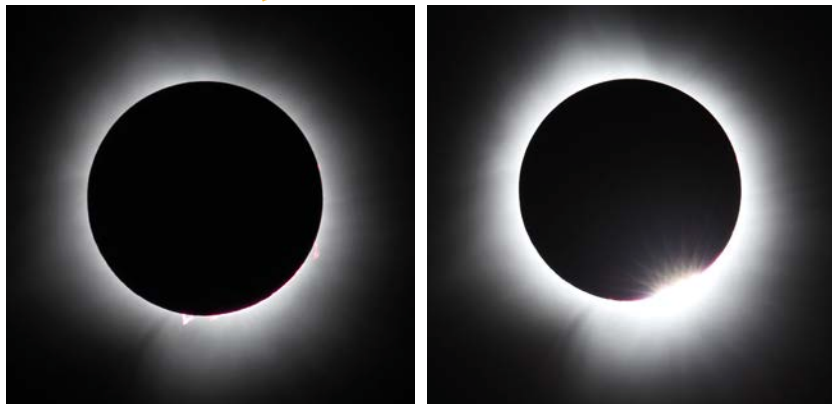


Blog posts & podcast episodes published since the last newsletter:

- [How crochet can be used to model nanoscience](#) by Abby Stitgen (Haynes group)
- [What are nanoparticle proteomics?](#) by Cathy Murphy
- [Nanoparticles within your grasp: Art as an educational tool](#) by Giulia Mantovani (Wheeler group alum)
- [Nano in food: inside and out](#) by Ravithree Senanayake (Hernandez group alum)
- [Podcast episode 45: The World is Really Ready for Change](#) with Bob Hamers interviewing Mike Curry

Part of "Alchemy in the 21st Century" by Giulia Mantovani, featured in her blog post





Solar eclipse images by **Bob Hamers**. Left: the corona and clear prominences at 3:00, 6:00, and 7:00 positions. Right: The "diamond ring" occurs when the sun is beginning to peek out from behind the moon.



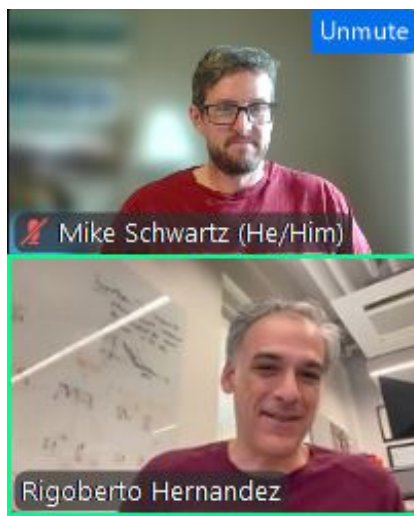
Participants in Madison were delighted by a spectacular display of the aurora borealis, or "Northern Lights" in May, and **Bob Hamers** captured these photos.



Riley Lewis and **Eleni Spanolios** won this year's **Haynes** group pie contest with their "**Peace (peach) Pie**."

Bob shared these observations on the chemistry of the aurora:
The pink color of the prominences visible at the edge of the sun reveals the presence of hydrogen atoms, as H atoms excited up to their 3p electronic state give off light at 656 nm, corresponding to the 3p→2s transition of H atoms, often referred to as the "H-alpha" line. Likewise, in the aurora borealis, the colors come from charged particles ejected from the sun getting trapping in the earth's magnetic field where they excite oxygen and other gases in the earth's upper atmosphere. The most prominent green and red colors come from emission from atomic oxygen at 557 nm (green) and 630 nm (red), both of which arise from "forbidden" electronic transitions that are enabled by collisions in the upper atmosphere. Sometimes blue can also be observed from N₂⁺ ions that give rise to a magenta color. If you have a chance to see this incredible phenomenon, remember that there's a lot of chemistry going on up there! It's spectroscopy in the sky!

Mike Schwartz (top) and **Rigoberto Hernandez** (bottom) Zoom twinning!



Safia Jilani (Haynes group postdoc) attended the Ford Foundation Fellowship conference at the National Academies in Washington, DC, and took the opportunity to visit "Science Santa"



FALL ACS



CSN alum **Autumn Qiu** will be hosting a symposium at the Fall ACS meeting in Denver. Come enjoy the talks focused on "Analytical Advancements for Emerging Contaminants."

CSN Affiliate **Mike Curry** and **Mike Schwartz** are co-chairs for a Presidential Symposium at ACS Denver, entitled "Strategies for Meaningful and Engaging Partnerships: Leveraging the Innovation of HBCU Research." The goal of the symposium is to highlight success stories for collaborations between HBCUs and non-HBCU institutions.



Dr. Sherine Obare
North Carolina A&T State University
Building impactful collaborations
with HBCU/MSIs for successful
research outcomes



Dr. Mohammadreza Hadizadeh
Central State University
Enhancing diversity in
semiconductors: CSU's innovative
partnerships with industry



Dr. Issifu Harruna
Clark Atlanta University
Developing, implementing and sustaining
a partnership in research and education
between an HBCU & non-HBCUs

See our full list of CSN presentations at ACS on [this spreadsheet](#)

Opportunities!

CSN Affiliate Shana Stoddard is organizing a virtual 2024 Women of Color in Academia Institute October 17-19



learningconceptsinstitute.com/event-list

Applications are open for the 2025 **Christine Mirzayan Science and Technology Policy Graduate Fellowship Program**, deadline Sept 9. Aimed at graduate students or recent graduates who are interested in exploring career options in science policy.

The Fellowship is from March 3 - May 23, 2025 at the National Academies of Sciences, Engineering, and Medicine in Washington, DC. Details at mirzayanfellow.nas.edu

NATIONAL ACADEMIES Sciences
Engineering
Medicine

Two CSN alumni have shared faculty position openings for fall 2025:



HAVERFORD COLLEGE

From **Clyde Daly (Hernandez group)**: The **Haverford College** Department of Chemistry has an opening for a tenure-track Assistant Professor, broadly defined. Details at apply.interfolio.com/149947

LAFAYETTE COLLEGE

From **Arielle Mensch (Hamers/Orr groups)**: **Lafayette College** has a tenure-track biochemistry position and a general chemistry laboratory coordinator position starting Fall 2025, and a visiting assistant professor position for organic for Jan 2025 - July 2026. Details at chemistry.lafayette.edu.



LOST IN CYBER-SPACE?

Links to frequently requested CSN documents and information sources.

Newsletter submissions:

Awards, highlights, lab exchanges, publications, FUN, etc. [link](#)

CSN Documents and Downloads

- Nanodatabase Login: [link](#)
- Nanodatabase Help page: [link](#)
- CSN calendar: [link](#)
- CSN Operations Guide: [link](#)
- CSN participants list (Names, group, and email addresses): [link](#)

CSN Reporting Forms

- Report lab exchange activities: [link](#)
- Report Outreach Activity: [link](#)
- Report Awards and Other Activities: [link](#)

CSN SuggestionOx (Anonymous Feedback to Admin)

- Admin (goes to Christy): [link](#)
- SPRING Board liaison: [link](#)

ADMIN EMAILS

- Bob (rjhamers@wisc.edu)
- Christy (chaynes@umn.edu)
- Miriam (mkrause@umn.edu)
- Mike (mpschwartz@wisc.edu)



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