



YiR, the annual “Year in Review” report from the Office of Research & Graduate Studies



We are excited to share with you the “Year in Review (YiR)”; the annual report from the Office of Graduate Studies. With this YiR, we are celebrating the second year since the founding of the Poly Office of Graduate Studies (“OGS”), and our second annual report from the Office of Research (“OR”). We have continued to promote professional development and scholarship opportunities for students and explored additional partnership and internship offerings. Most notably and in partnership with SCREEN Semiconductor Solutions, students have been invited to participate in SCREEN’s Inaugural Global Summer Internship Program in Japan. Furthermore, we also signed an MOU with GlobalFoundries creating the Fab Degree Partnership Program with Poly which offers flexibility to GlobalFoundries employees. We have had a challenging year combating the global COVID-19 pandemic, which has caused disruption to on campus activities nation-wide. These challenges have only served to enhance our providing effective and timely communication and connection between both campuses and the OR/OGS. Although not inclusive of all of our activities, the YiR is to highlight OR/OGS accomplishments in the previous academic year, and to celebrate our faculty and students’ recent accomplishments.

Newsletter Contents

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- ◆ 2019 Graduate Awards



Fall 2019



Amir Hegazy



Alex Kaloyeros



Armond Minor



Stephen Ojeda-Britez



Nicholas Palmer



James Park



Sophia Rogalskyj



Brandon Seng



Katherine Smith



Nicole Traver



Anthony Valenti

Spring 2020



Casey Biederman



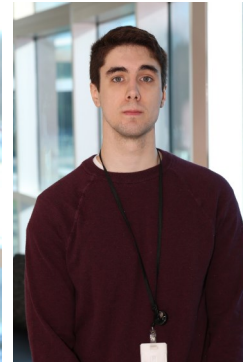
Ali Fakhry



Jordan Greenough



Soumya Kollipara



Stephen Mancini



Mohd Mueen UI Islam
Mattoo

Not Pictured: Haibo Gong



SUNY POLYTECHNIC INSTITUTE
OFFICE OF RESEARCH
AND GRADUATE STUDIES

NEW GRADUATE STUDENTS

Fall 2020

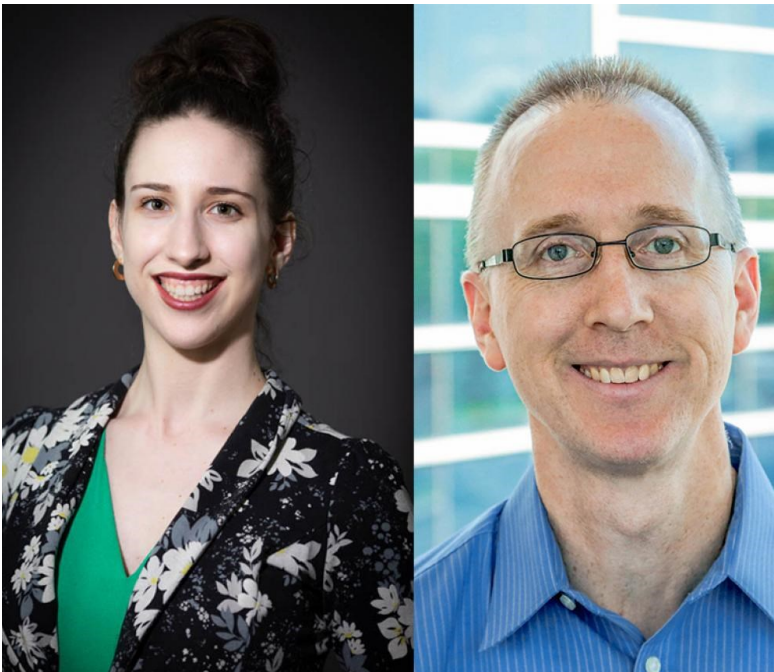
*Student Photos Unavailable due to COVID-19

Nabihah Azhari, Suhasini Gattu, Ross Pareis, Miriam Toro, Bekaye Traore,, Christopher Ajiduah, Ricardo Burke, Skylar DeBoer, Hunter Frost, Tushar Mahajan, William Mudd, Nicholas Pieniazek, Sai Samhitha Reddy.

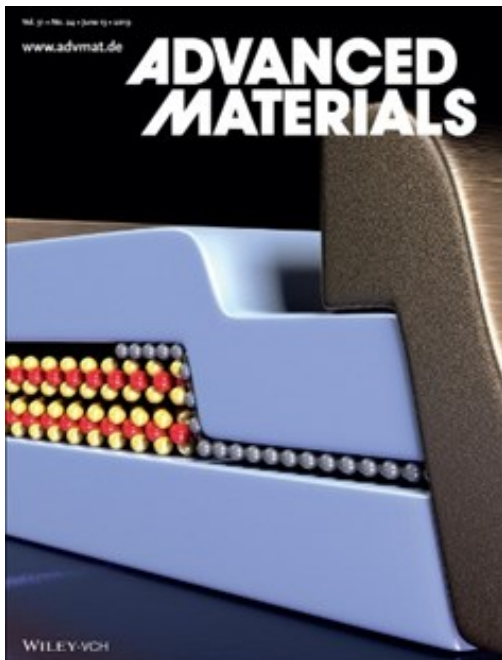


SUNY POLYTECHNIC INSTITUTE
OFFICE OF RESEARCH
AND GRADUATE STUDIES

STUDENT ACCOMPLISHMENTS



Associate Professor for Nanoengineering, Gregory Denbeaux, and Graduate Student Bridget “Bee” Boland received a \$50,000 NSF I-CORPS award for their project “I-Corps: High purity metal additive manufacturing.”



Recent PhD Graduate, Sam LaGasse's publication is featured on the cover of Advanced Materials magazine.

"For many years, metal–semiconductor interfaces have suffered from defective interfaces, causing their energy band alignment to diverge from the Schottky–Mott rule. The van der Waals interface between graphene and transition metal dichalcogenide WSe₂ takes the Schottky–Mott rule from the textbook to the laboratory. Because of the lack of Fermi-level pinning, in article number 1901392, Samuel W. LaGasse, Ji Ung Lee, and co-workers achieve perfect tuning of the graphene–WSe₂ Schottky barrier."

Schottky–Mott Limit: Gate-Tunable Graphene–WSe₂ Heterojunctions at the Schottky–Mott Limit (Adv. Mater. 24/2019)

Samuel W. LaGasse, Prathamesh Dhakras, Kenji Watanabe, Takashi Taniguchi, Ji Ung Lee
First published: 07 June 2019
<https://doi.org/10.1002/adma.201970169>

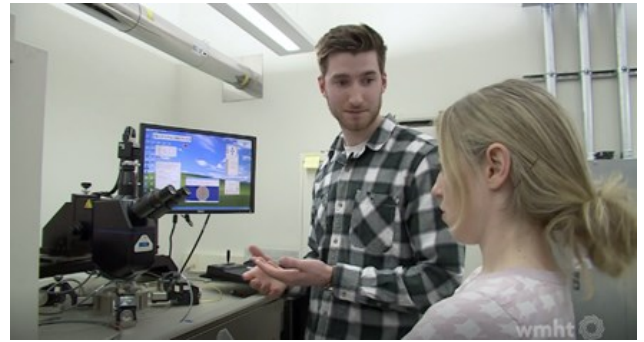


PhD student Christopher Netzband won best student paper at the International Conference on Planarization Technology 2019, held in Taiwan. He also has a paper published in the Electrochemical Society's Journal of Solid State Science and Technology (JSS). His article, "Investigation into the Effect of CMPS Slurry Chemicals on Ceria Abrasive Oxidation State using XPS" was one of the 10 most downloaded JSS articles in October 2019. (It ranked #9 for that month). Further, Christopher is also co-inventor on a provisional patent that has been filed based on his research.

PhD students, May Lee and Tristan Head received the RNA Fellowship August, 2019, **RNA Fellow** at SUNY Polytechnic Institute, Albany, NY. Funder: The National Institutes of Health RNA Science and Technology in Health and Disease.

Tristan was also awarded Best Poster 2019 at the IEEE Albany Nanotechnology Symposium, Nov 13, 2019. **Head T**, Gattu S, Jafari R, Ye X, Tokranova N, Condeelis J, Entenberg D, Cady N. *Microfluidic Imaging Windows for in vivo Observation and Manipulation of Cellular Microenvironments*. IEEE Nanotechnology Symposium (ANS), Albany, NY, 2019.





The WBG Optronix Group's and Kasey Hogan's thesis project on the development of 3D Betavoltaic Batteries was featured on WMHT's Innovation Hall series and can be found at <https://www.wmht.org/innovationhall/> and <https://www.youtube.com/watch?v=QDQWsYBeVmk>



PhD Student, Pujitha Ramesh received the American Society of Materials—Capital District Microscopy and Microanalysis Society Best Poster Award in November 2019. She also received a Best Poster Award at the Gordon Research Conference in February 2019.

Pujitha received the UAlbany GSA Professional Development Award in October 2018 and the SUNY Poly GSGA Professional Development Award in September 2018, to offset costs associated with participating in scientific conferences



PhD student, Erica Graham received The Carson Carr Fellowship



Mehek Ahmed (Undergrad) received a Travel Award for the Women in Physical Sciences (WoPhyS) 2019 Conference at the Univ. of Nebraska, Lincoln



PhD student, Sarah Rafiq was awarded a travel grant from AVS 66th International Symposium and Exhibition, and the recipient of the Graduate Community Spirit Award



The John J. Sullivan Professional Development Award

After retirement, John J. Sullivan worked as a visiting senior scientist of nanotechnology at CNSE. He received a bachelor's and master's degrees in Physics from Northeastern University. He was a U.S. Army veteran, and spent 30 years at MKS Instruments in Andover, Massachusetts. While at MKS, he was a great supporter and friend to the Albany Nanotechnology community, and was a mentor to students and staff. He retired as vice president of marketing at MKS in 2000, after a 30-year career there. John J. Sullivan, passed away in January 2010.

John was committed to CNSE's growth as a world-class research and educational institution and established that legacy by helping CNSE create a scholarship to advance that goal.

In the past, the award was given to one graduate student annually and primarily used to support research. Beginning in 2018, The Office of Graduate Studies expanded the potential impact of the award to allow for more students to benefit from this scholarship.

Recipients of the John J. Sullivan Fellowship will present their experiences at a spring colloquium.

Congratulations to the following recipients:

Jodi Grzeskowiak – Oral Presentation at American Physical Society

Bridget Boland – Presentation at Advanced Manufacturing Semiconductor Conference

Puhjitha Ramesh – Best Poster- Gordon Research Conference

Devika Vipin – Oral Presentation - SPIE Photonics West

Zach Olmsted – PhD Research with co-PI at Horner Lab in Texas

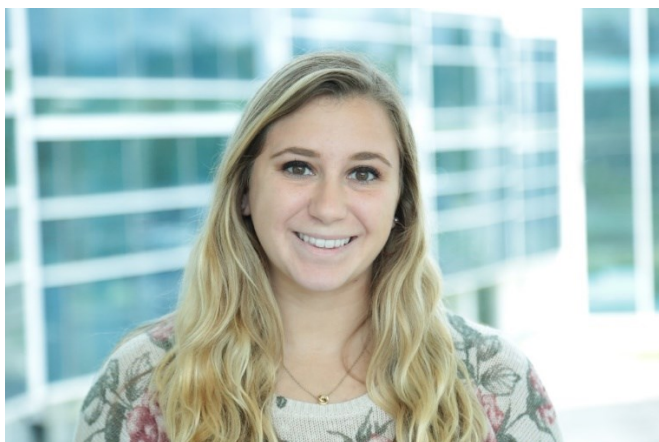
May Lee – Society for Redox Biology & Medicine Annual Meeting

Eunice Chou – International Lyme and Associated Diseases Conference

Emma Rocco – SPIE Photonics West

Sean Tozier – SPIE Photonics West

Atul Dhall – ASGSR Conference – Bethesda, MD – to present his paper on Simulated microgravity-induced genomic alterations in breast cancer cells and the ISS R&D Conference – San Francisco, CA to present his paper on Simulated microgravity-induced metabolic alterations in breast cancer cells



Chancellor's Fellowship Award

Nicole Traver was selected for the Chancellor's Fellowship Program. This fellowship is a 2 year fellowship from the SUNY Impact Foundation which includes a top-up award as well as participation in the Chancellor's Fellowship Symposium in the spring 2020 semester. During the symposium, fellows will have the opportunity to share their scholarship other fellows as well as SUNY Leadership.

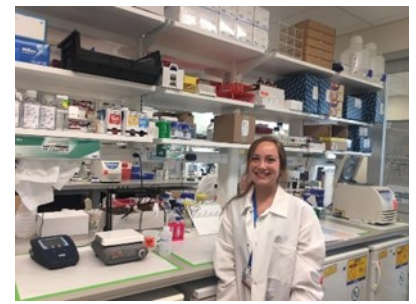
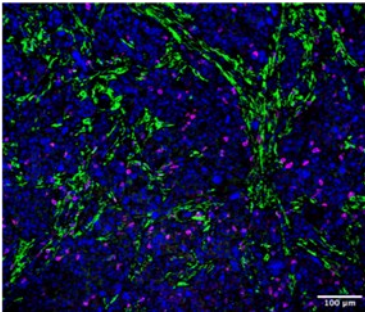


The Wendell Williams Fellowship for Research Experiences

This award is to promote research opportunities for graduate and undergraduate students and to explore potential collaborative partnerships within academia and external organizations. Students can apply for the Wendell Williams Fellowship for Research Experiences and selected students will be awarded up to \$2,000 to offset the cost of the internship or research experience. We are delighted to announce that Gretchen Long has been awarded the Wendell Williams fellowship to do research at Harvard Medical School and Brigham and Young Hospital this summer to conduct cancer research. The lab is part of the Biological and Biomedical Sciences PhD program at Harvard.

Ms. Long's summer internship at Harvard Medical School/Brigham and Women's Hospital focused on investigating how the biology of aging affects tumor growth, through characterization of immune cell populations in mice with triple negative breast cancer. Young and aged mice with triple negative breast cancer were treated similarly to the recently conducted *ImPassion130* clinical trial, which demonstrated a prolonged patient survival with a combination therapy of the FDA approved drug Paclitaxel and immunotherapy anti-PD-L1. The data that she generated demonstrated that the aged mice treated with combination therapy had more CD8+ cells than the aged control as well as young combination, suggesting there are age and treatment associated effects on immune populations that should continue to be investigated as immunotherapy progress.

Below is an image Gretchen took from a stain of a cross section of a tumor from a young mouse with TNBC treated with 30 mg/kg of Paclitaxel. The pink represent CD8+ cells, blue represents DAPI (nuclei) and the green represents smooth-muscle actin.



Doctoral Diversity Fellowship Award

Armond Minor was selected to receive the Doctoral Diversity Fellowship Award in Science, Technology, Engineering and Mathematics (STEM) for the 2019-2020 academic year. The fellowship includes a stipend plus \$2,000 for professional development and is awarded by the Office of Diversity, Equity, and Inclusion.

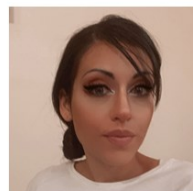
In addition, the Graduate Diversity Fellowship Program enabled Poly to award \$60,000 in scholarships to Master's students for 2019-20. These awards were given to students to off-set the cost of attendance by providing tuition assistance.



Melanie DeWitt



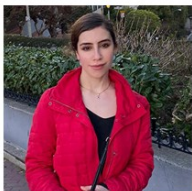
Karli Griffith



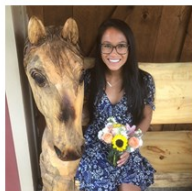
Aysel Ishayeva



Olga Tobler



Miriam Toro



Lynn Tran



Say Wah



Jiancai Zhu

2020 Diversity Fellowship Awardees



Student Ambassador Award

The Student Ambassador Award is given to students that exemplify professionalism, leadership, and the spirit of collegiality. The students this year have been instrumental in helping to elevate SUNY Poly through impactful community-centered events. These students have remained positive and pleased to talk about all of the exciting things that they've been a part of as students attending SUNY Poly CNSE.

It is with great pleasure to honor Jack Rogers:

Jack was selected to participate in SCREEN's Inaugural Global Summer Internship in Japan last summer (see below). Because of Jack's professionalism, diligent work, and pleasant demeanor – Jack helped us strengthen our existing relationship with SCREEN playing an important role for this new program to continue for CNSE students in the future. In addition, Jack has been available on several occasions to speak or meet with prospective students to discuss the graduate program along with industry opportunities that he's been a part of. Congratulations, Jack!

SCREEN Inaugural Global Internship in Japan

Jack Rodgers was selected to participate in SCREEN's *Inaugural* Global Internship Program at the Hikone Plant near Kyoto, Japan. This was a paid experience which included housing and airfare from June through late August 2019. Jack's cleanroom work was confidential, but in general he assisted in analyzing the efficiency of a wafer cleaning system by using a defect inspection tool. Subsequently, he would summarize and report specifics to team members. The experience concluded with a final presentation in front of managers. Jack was one of 3 students selected for the inaugural program – the other 2 were from an Ivy League school.

SCREEN has invited Poly students to participate again this summer 2020. We are delighted that Jack's experience was fruitful, and we are so pleased to be able to encourage Poly students to apply for next year. PhD student Jack Rogers was selected to participate in SCREEN's "Inaugural" Global Summer Internship Program.





Fab Degree Partnership Program

The Fab Degree Partnership Program based at SUNY Poly's Albany campus, not only offers a cutting-edge education to enhance employees' advanced skills, but was also developed with consideration for employee schedules and with flexible billing to facilitate participation.

Under this partnership, SUNY Poly offers undergraduate and graduate degree programs, certificate programs, and short courses to provide a targeted educational pathway for GlobalFoundries' advanced workforce. These opportunities include the chance to develop new managers, engineers, and technicians by strengthening technical skills and soft skills as well as exploring development opportunities for seasoned managers through high-tech focused curricula.

To help ensure that every interested GlobalFoundries staff member is able to take part in the program, SUNY Poly also offers flexible tuition billing terms in concert with GlobalFoundries' tuition reimbursement program. In addition, class schedules are often developed to be cognizant (or mindful) of the employee work day.

Short Courses Webinars with Industry Launched

The Office of Graduate Studies launched short-course webinar courses for industry partners, students, and faculty in August 2020. Inaugural offerings included Project Management and Finance for Engineers and Technical Managers. The short course webinar topics and scheduled times were based on industry requests .



We are delighted to congratulate the following students who have been offered internships with industry. These internships have the potential to last for the duration of the students' PhD:



Gideon Oyibo's research work at **LAM** involves assisting process engineers with testing etch recipes for advanced Logic and AI Applications.



Sophia Rogalsky's research project with **TEL** includes new metal etch for back-end applications to improve device performance at lower technology nodes (e.g. smaller devices) and process development for neuromorphic and AI Applications.

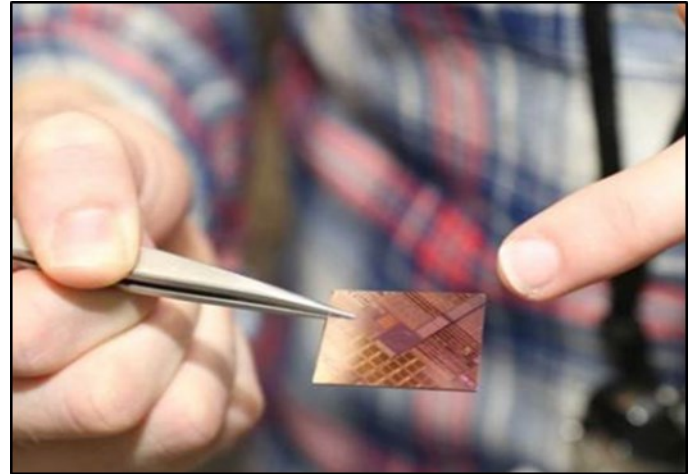


Nicholas Palmer's research project at **GlobalFoundries** is on modeling and investigating the electromigration stresses due to low frequency (10 Hz) pulsed direct current. This is an effort to understand the basic mechanism of electromigration failure.



COVID-19 Diagnostics

With support from the SUNY COVID-19 Seed Funding Program, Dr. Nate Cady, in partnership with New York State Department of Health's Wadsworth Center, and Ciencia, developed a 30-minute COVID-19 antibody test. This test allows rapid identification of those who have previously been infected with COVID-19 compared with those who have not.



COVID Matching Industrial Program (MIP) Grants

Sponsored by SUNY Poly's Center for Advanced Technology in Nanotechnology and Nanoengineering, the following projects were awarded to study questions related to the COVID-19 pandemic:

Ben Boivin "Inhibiting SARS-CoV-2 replication in hearts using functionalized nanoparticles"

Nate Cady "Dual-mode COVID-19 infection / antibody detection with a polymeric, plasmon-enhanced biosensing platform"

Andres Melendez "Therapeutic Control of Senescence and COVID-19"

Susan Sharfstein "Development of rapid cell selection technology for production of Covid-19 therapeutics"



The Office of Research issued a call for proposals for the 2019 Faculty Seed Grant Program. As part of this round of funding, SUNY Poly provided 27 seed grants to faculty members, covering a wide variety of areas, from quantum information science, which could lead to the development of novel quantum materials and new computational frameworks within quantum computational applications, to advancements in nanobioscience, which could lead to a better understanding of factors playing a role in DNA stability. This year's award winners include the following projects:

- Dr. Asif Ahmed** "Application of Numerical Modeling for Mitigation of Pavement Distress in Northeast Region Due to Climate Change"
- Dr. Robert Brainard** "Pyrophosphate Detector for DNA Sequencing"
- Dr. Wenfeng Chen** "Physical Model and Mathematical Problem in Quantum Computing and Quantum Information Processing"
- Dr. Emilio Cobanera** "Does Non-Equilibrating Thermal Dynamics Make Topological Quantum Memories Viable?"
- Dr. Andrea Dziubek** "Proposal to hold Workshop on "Geometric Mechanics and Structure Preserving Discretizations of Shell Elasticity"
- Dr. Paul Elliot** "Rapid Cure Metal Amalgam for 3D Printing"
- Dr. Amir Fariborz** "Collaboration in Low-Energy QCD"
- Dr. Andrew Gallup** "Open Science Practices and Tech Industry Collaborations"
- Dr. Ana Jofre** "Machine Identification of Face Expression and Gender in Periodical Archives"
- Dr. Susan Sharfstein** "Development of Expertise and Infrastructure for Bioinformatics"
- Dr. Joyce Shen** "Development of a 3D-Printed Wearable Tactile Sensor for Arterial Pulse Waveform Measurement"
- Dr. Kazuko Behrens** "Understanding the Neurobiological Determinants of Parental Behavior"
- Dr. Chen-Fu Chiang** "Quantum Walkers for Near-Term Quantum Technologies"
- Dr. Greg Denbeaux** "Additive Manufacturing of high purity materials - molten liquid nanodroplet vacuum impaction"
- Dr. Kathy Dunn** "Leveraging Donated Equipment to Enable Nanoscale Additive Manufacturing of Metallic and Plasmonic Oxide Nanostructures"
- Dr. Michael Fasullo** "Regulation of Deoxynucleotide Levels by tRNA Modification in Budding Yeast and Cancer Cells"
- Dr. Sypros Gallis** "Development of CMOS-Compatible Single Photon Emitters for Telecom C-band Quantum Information Technologies"
- Dr. Hisham Kholidy** "An Autonomous Security Framework for Assessing and Mitigating Risks in the Next Generation 5G Mobile Networks"
- Dr. Zhanjie Li** "Characterization of Coupled Instabilities with the Artificial Neural Network"
- Dr. Adam McLain** "Verifying the Taxonomic Status of the Nosy Hara Dwarf Lemur Population in Northern Madagascar"
- Dr. Janet Paluh** "A Neuronal Circuitry Platform for Therapeutic Cell Optimization"
- Dr. Michael Reale** "Real-Time, Automatic Facial Expression Recognition in Mixed Reality Environments for Enhancing Education"
- Dr. Edmond Rusjan** "Geometric Reconstruction of Vascular Tree Networks for Blood Flow Analysis"
- Dr. William Thistelton** "Industrial Internet of Things Cyber Physical System for Selective and sensitive Sensor Test Stations"
- Dr. Yubing Xie** "Micro-Nanofabrication of Substrates for Correlative Light and Electron Microscopy of Trabecular Meshwork Cells"
- Nate Cady** "A Fluorescent Plasmonic Biosensor Platform for Tick-borne Disease Diagnosis"
- Dr. Woongje Sung** "Power Device Modeling and Simulation"
- Dr. Scott Tennenbaum** "Biological Relevance of sxRNA"

2019 GRADUATE AWARDS

Chancellor's Award for Student Excellence

Isabel Yangzi Tian

Isabel Yangzi Tian received the SUNY Chancellor's Award for Student Excellence after receiving her Ph.D. in nanoscale engineering from SUNY Poly in December 2018. During her graduate career, she served as the president of the SUNY Poly Graduate Student Government, advocating for additional services and more professional development opportunities for soon-to-be graduates. Isabel also led the NANO Mentoring Program, training new mentors and instructing over 300 middle/high school students in hands-on nanotechnology curriculum, and her passion for science communication led to illustrations in more than 15 scientific journals.



NSF Graduate Research Fellowship

Elena Musteata



In April of 2019, SUNY Polytechnic Institute student Elena Musteata was awarded the National Science Foundation's Graduate Research Fellowship Award. She was one of 18 students across 5 SUNY campuses to be granted this prestigious research award. During her time at SUNY Poly, Musteata was a member of Dr. Nate Cady's research group, studied Biomechanical Engineering, and spent her undergraduate research working to develop a diagnostic assay for Lyme disease.



Krista with our Poly Alumni (and employees of GF) at a recent GF event.

Strategic Partnerships

The Office of Graduate Studies has been in discussions with industry partners and been invited to participate in onsite events for their employees. We are excited to develop stronger relationships with our industry partners where SUNY Poly enjoys a strong alumni base.

OFFICE OF RESEARCH and GRADUATE STUDIES TEAM



(from left to right) Interim Founding Dean of the Office of Graduate Studies and Interim VP of Research, Shadi Sandvik; Assistant Dean, Krista Thompson; Assistant Vice President of Research, Jennifer Cole; Assistant to the Dean, Carmen Gero.

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