



Year in Review (YiR)



We are excited to share with you the “Year in Review (YiR)” (2021); from the Office of Graduate Studies. With this YiR, we are celebrating the third year since the founding of the Poly Office of Graduate Studies (“OGS”), and our third 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. While COVID-19 prompted a pause for many activities, we shifted to connect with students, industry partners, alum, and the academic community remotely. Most notably, we welcomed back six graduate CNSE alumnae for “Women in STEM” a virtual event where the alumnae shared some insight with current Poly students as well as local high school science classes. We were welcomed back for the second year by Black in Nano, co-founded by a University at Buffalo PhD student to join “Black in Nanotechnology Week”. In addition, we continued to offer Diversity Scholarships, partnered with TEL to include students to provide weekly research presentations and hosted GLOBALFOUNDRIES to meet with Society of Women Engineers (SWE) and American Society of Mechanical Engineers (ASME). We all 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.

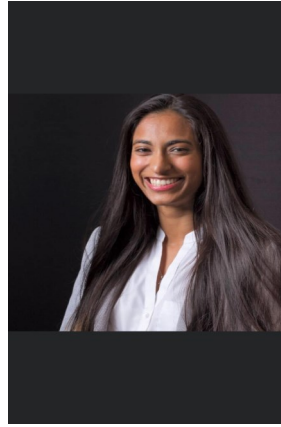
- ◆ New Grad Students
- ◆ Student Accomplishments
- ◆ Student Awards
- ◆ Professional Development Events
- ◆ Educational Outreach
- ◆ Faculty/Student Research Talks
- ◆ CATN2/CENN Updates
- ◆ Faculty Seed Grant Wrap-Up



Spring 2021—College of Nanoscale Science & Engineering



Ali Al Dahhan



Miranda Dewan



Ariel Hernaez



Yamini Kumaran



Jeelka Natwarbhai Solanki



Ezra Mel Pasikstan



Rajas Ravindra Mathkari



Shadmani Shamin



Christopher Torcedo



Jaya Verma

Not pictured: Ryan Goodwin and
Kyle Thomas



Fall 2021—College of Nanoscale Science & Engineering



Dare Victor Abere



Ruiwen Ai



Blair Beltzer



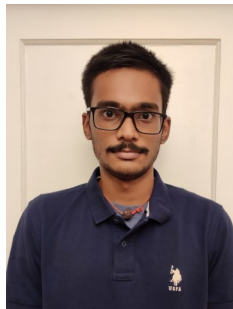
Bharti



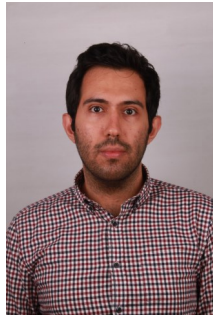
Tim Burkhart



Hailey Jenkins



Sri Saravana KN Bharathis



Alireza Lanjani



Naga Sree Vidya Mannaru



Moira Carmalita Dharsika
Nilukshum



Ivo Otto



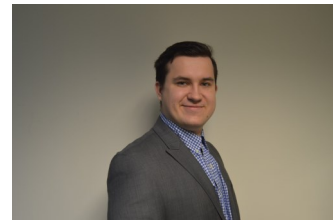
Maria Belen Paredes Espinosa



Fernando Pesantez



Rosanna Robert



Yevhen Samotyuk



Daniel Santos



Utkarrsh Shukla



Vijay

Not Pictured: Gyana Biswal, Michael Capobani, Adam Smith



SUNY POLYTECHNIC INSTITUTE
OFFICE OF RESEARCH
AND GRADUATE STUDIES

NEW GRADUATE
STUDENTS

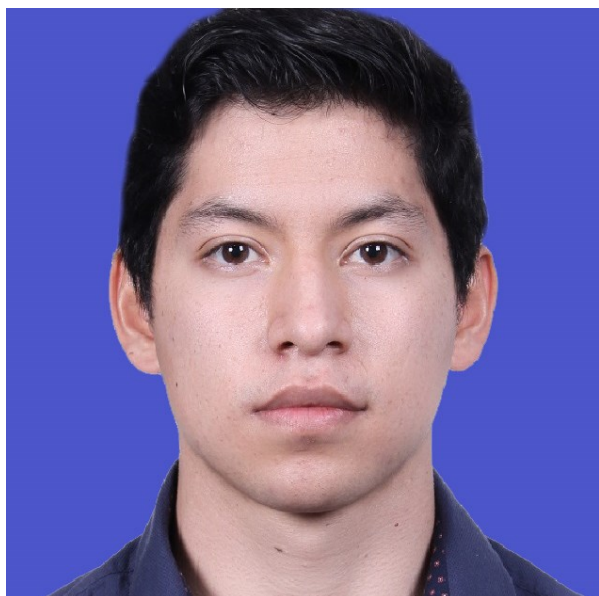
Spring 2022—College of Nanoscale Science and Engineering



Zachary Adamson



Souryaya Dutta



Paul Nicholas Maldonado Pinos



Eric Wales



Inaugural Chancellor's Distinguished PhD Dissertation Award Finalist

Zachary Tyler Olmsted, SUNY Polytechnic Institute, Department of Nanobiosciences: "Human Trunk Development and Innervation in a Dish to Facilitate Neurotherapeutics"

Advisor: Janet Paluh, Ph.D.



Fall 2021 PhD student **Rosanna Robert** selected to work with TEL's Innovation Scientist Dr. Christophe Vallee. Rosanna was previously a SUNY Schenectady Community College Student and CNSE undergrad.

Within the Vallee group, the research goals include developing a long-term, well-funded research program in plasma surface interactions, working with 300 mm cleanroom faculty and staff to establish a process flow for plasma etch deposition, establishing partnerships with collaborative research, increasing the 200 nm laboratory capabilities in the area of plasma and vacuum technology, and expanding workforce training and plasma science curriculum development.



Justin Nhan B.S. candidate, Nanoscale Engineering received best poster and presentation from his 1st Author Publication on SPIE poster & paper "Modeling the Acid-Catalyzed Cleavage of Carbon-Oxygen Bonds."



TEL SUNY POLY Plasma-induced roughness and chemical modification of TiN bottom electrodes and the impact on HfO₂-MIM properties
S. Rogalski^{1,2}, H. Frost^{1,2}, L. Malcom¹, A. Palka¹, N. Joy¹, D. Tiliyoso¹, R. Clark¹, C. Wajda¹, G. Lusakki¹, A. Riley¹, K. Dunn¹
¹College of Nanoscale Science and Engineering, SUNY Polytechnic Institute, Albany, NY
²TEL Technology Center, America, LLC, Albany, NY

Introduction and Motivation

- Metal-insulator-metal stacks (MIMs) are the basis for ReRAM, a memory technology aimed at replacing and/or complementing conventional DRAM and SRAM memories [1]
- Improvement of MIM fabrication steps can improve performance of final ReRAM device
- Increasing the bottom electrode (BE) roughness by plasma-etch has been shown to decrease forming voltage of ReRAM devices by increasing local electric fields on the BE
- Reportedly, there is no impact of BE etch-chemistry on ReRAM performance [2]

Process Detail

- 50 nm PVD Ti/TiN was deposited on 300 mm Si wafers
- Three high-density plasma etch processes were used (see parameters below) to modify the surface roughness of the TiN BE
- 8 nm ALD HfO₂ was deposited atop the plasma-modified TiN BE
- 50 nm PVD TiN was deposited as the top electrode (TE)

| Chemistry | Pressure (mTorr) | Source Power (W) | Bias Power (W) | Etch Rate (nm/min) |
|-----------------------------------|------------------|------------------|----------------|--------------------|
| Incoming | | | N/A | |
| Ar | 15 | 800 | 780 | 5.2 |
| Ar/N ₂ | 15 | 800 | 96 | 0.2 |
| BCl ₃ /Cl ₂ | 15 | 700 | 100 | 200 |

Electrical Impacts

- Leakage current was measured as current density at Applied Voltage = 1V
- Leakage current is increased when BE was processed with Ar or Ar-N₂ etch

Morphological Impacts

- Desired morphology for each etched BE is not impacted by DHF process
- No change in roughness between 1 hr and 24 hrs post-DHF

Compositional Impacts

- Example of peak fitting for Ti2p spectrum, from incoming film
- Ti-binding on TiN film surface is consistent between as-deposited wafers
- Consistent fitting applied to each wafer post-etch to quantify impact on Ti-binding
- Analysis repeated after DHF treatment as well (described in more detail below, in Fig 8)

Effect of DHF on Etched TiN Surface

- Lowered Ti-O component on non-etched, Ar-N₂ etched, and BCl₃-Cl₂-etched BEs
- Increased Ti-O-N and Ti-N contributions for non-etched, Ar-N₂ etched, and BCl₃-Cl₂-etched BEs
- Ti-binding behavior returns to post-etch state within 24 hours of DHF treatment

Conclusions and Summary

- TiN film morphology and surface composition can be tuned using different plasma chemistries
- DHF process may be used to lower Ti-O component on surface immediately prior to HfO₂ deposition without significantly changing the etch-induced morphology
- Though initial results show that etched-TiN surface composition may impact leakage current, further experiments and measurements are needed to determine whether or not other device performance metrics (i.e. forming voltage) are impacted (these experiments are ongoing)

Alternative BE Metals

- Study is being expanded to consider other BE metals
- Ability to modify surface morphology of Ru and Mo already demonstrated

REFERENCES

[1] H. Aikawa and H. Shimizu, "Resistive random access memory (ReRAM) based on metal oxides," *Proc. IEEE*, vol. 98, no. 12, pp. 2237-2251, 2010.
[2] C. Chargin-Nicolle et al., "Impact of roughness of TiN bottom electrode on the forming voltage of HfO₂ based resistive memories," *Microelectron. Eng.*, vol. 221, no. October 2019, p. 111194, 2019.

ACKNOWLEDGEMENTS

This work highlights collaborative efforts of interns at TTCA. Thanks are extended to Eleve Consiglio, Pinghan Luan, and other members of TTCA's Etch and Thin-Film groups for their support and guidance.

Contact

Please send questions to sophia.rogalski@tsi.us.com

WWW.SUNYPOLY.EDU



PhD student **Sophia Rogalski** presented a poster at Tokyo Electron US Internal Technical Conference titled Plasma-induced roughness and chemical modifications of TiN bottom electrode and their impact on HfO₂-MIM properties.

In addition, Sophia received Best Poster at the 2020 Virtual International Interconnect Technology Conference (IITC) titled Plasma-induced roughness and chemical modifications of TiN bottom electrode and their impact on HfO₂-MIM properties. Sophia's advisor is Kathy Dunn.



PhD student **William Mudd** was selected as RNA Fellow beginning August, 2021. The **RNA Fellowship** funded by NIH and the RNA Institute at UAlbany.

Will's advisor is Ben Boivin.



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:

Minhaz Abedin—CMOS Analog Integrated Circuit Design

Tushar Mahajan—Fermi National Accelerator Laboratory

Rubab Ume—OGS Competition—CNSE Research Presentation, 1st Prize

Sudheer Sagabala —The Protein Phosphatase Conference, ASBMB (American Society for Biochemistry and Molecular Biology)

Nicholas Pieniazek— Offset cost award

Avinash Londhe— Society for Redox Biology and Medicine (SfRBM)

Minhaz Abedin—MicroMasters® program in Artificial Intelligence (through Edx)

Harika Dasari— Battery Seminar

Jacob Sitterly— SPIE Lithography Conference



"[...] Inclusion means more than being "allowed to be here," it means being valued for all the things that make you.

"[...] immersing ourselves in understanding and acceptance - not just tolerance, is when we truly grow as individuals and as enterprises."

- Yasmeen Mohammad



2021- 2022 Graduate Diversity Fellowship Recipients

SUNY Graduate Diversity Fellowships are awarded annually to qualified graduate students. Awards may include a tuition waiver and/or cash stipend.

Eligibility

Applicants must be offered admission or enrolled students in a SUNY Poly graduate degree program. Students must be a citizen or Permanent Resident Current students in good academic standing with a minimum GPA of 3.0.



Armond Minor



Cassandra Companion



Maritess Seng



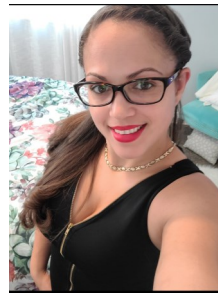
Yasmeen Mohammad



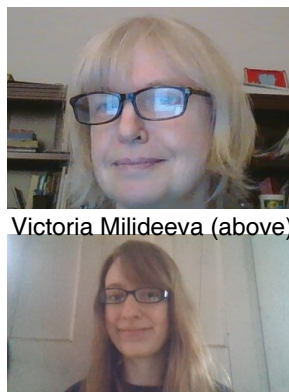
Sean Iacopelli



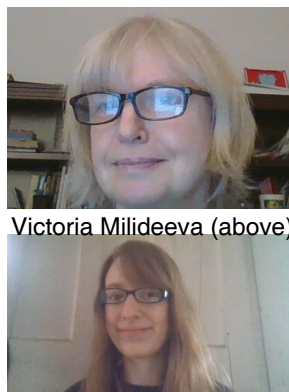
Sam Qaderi



Kolleen Collins



Stephanie Petros (Right)



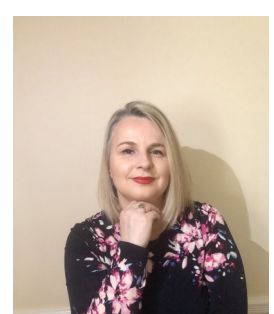
Victoria Milideeva (above)



Amer Ayez



Justin Bates



Nevila Burrja



GLOBALFOUNDRIES (GF) visits virtually for "A Day in the Life" event with SWE.. ASME. During the event, students engaged directly with GF engineering professionals about what it's like to work for GLOBALFOUNDRIES. Students received guidance on applying for internships, professional opportunities, and advice for young engineers. Additional professional development events with GF are forthcoming.



The Office of Graduate Studies' Krista Thompson and Graduate Admissions Director, Alicia Foster, were invited for the second year to participate in Black in Nanotechnology Week hosted by University of Buffalo's Black In Nano graduate organization. Krista provided an overview of research, funding, and typical career paths of CNSE graduates. Alicia mapped out the application requirements and details.



Women in STEM, November 19, 2021

Featuring the Alumnae below from the College of Nanoscale Science & Engineering (CNSE) to share some insight on becoming and working as a scientist and engineer.

Bushra Alam '16

PhD in Nanoscale Science College of Nanoscale Science + Engineering

Current Title/Company: Technical Sales Manager (Ontario and the Maritimes) at Soquelec, Canada

Bushra started her career in the semiconductor industry designing and fabricating light control devices for an aerospace company in Florida when she was in her last but dissertation stage. She then moved on to process/applications engineering for a plasma processing equipment manufacturer. She found her calling in her current position in technical sales, a high client interaction and business development role, where she manages instrumentation sales and associated research and development requirements for material and life sciences labs in the public sector, industry and academia.



Himani Kamineni '12

PhD in Nanoscale Science College of Nanoscale Science + Engineering

Current Title/Company: Director of Advanced Packaging at PsiQuantum

Himani earned a dual-Bachelor of Science degree in Electrical, Computer and Systems Engineering from Rensselaer Polytechnic Institute (RPI). She went on to acquire her Master's and Doctorate degrees in Nanoscale Science from SUNY. She then joined GLOBALFOUNDRIES first as a semiconductor packaging engineer and eventually took on the role of being technical assistant (chief of staff) for the CTO and SVP of worldwide R&D. Himani then joined a silicon photonics-based quantum computing start-up in the Bay Area where she now holds the role of Director of Advanced Packaging.



Shravanthi L. Manikonda '11

PhD in Nanoscale Science College of Nanoscale Science + Engineering

Current Title/Company: Member of Technical Staff at GlobalFoundries

Shravanthi has fulfilled various roles and experiences in the semiconductor industry spanning across different companies such as GlobalFoundries, Texas Instruments, & IBM. Shravanthi has a Green Belt in Lean & Six Sigma and is the Recipient of Various Technical Awards (Internal & External). She is also a Mom, passionate about photography and maintains a photography page with ~600 subscribers. Shravanthi serves as an Outreach Ambassador for GlobalFoundries, her current employer.



Shanti Pancharatnam '13

MS in Nanoscale Engineering

Current Position: Advisory Engineer at IBM

Shanti has a background in mechanical engineering and has worked for hydraulics and filtration companies before this career path. She became interested in nano-technology after reading about it in a "coffee table" book while in training at Daimler-Chrysler India. Next, she enrolled in an online course on Introduction to Nanotechnology at the University of Oxford and then in the Master of Science in Nanoscale Engineering at SUNY-CNSE with a plan/hope to get a job at the same site. To her delight, Shanti has been at IBM on-site since then conducting semiconductor research in the areas of metal deposition, dry etch tools, and process development.



Gayathri Rao '11

PhD in Nanoscale Science + Engineering

Current Title/Company: Director of Business Operations at Micron Technology Inc.

Gayathri has over 10+ years of semiconductor industry experience and is currently Director of Business Operations at Micron Technology Inc. As part of the senior leadership team Gayathri manages and drives Strategic Planning, overseeing OpEx and resource planning to establish roadmap alignment and achieve efficiency. She started her career as a Device Engineer at Intel Corp working on Next-gen Memory technology. Since then she has held several Technical, Program management and Business operations roles managing various SoC Design Engineering and Memory Engineering teams. Gayathri received both her M.S. and PhD in Nanoscience and Engineering from State University of New York at Albany, has authored several publications and holds 2 patents.



Padmaja Nagaiah '12

PhD in Nanoscale Science + Engineering

Current Title/Company: Sr. Principal Integration Engineer at Enoxix

Padmaja is responsible for process development and yield ramp of novel 3D Li-ion battery manufacturing. She had also worked with the advanced technologies group at Nextflex, a flexible hybrid electronics (FHE) manufacturing innovation institute. Where she was responsible for developing tools and test protocols to evaluate performance of FHE devices. Prior to that, Padmaja was responsible for looking at performance and yield improvement of silicon based flexible NFC (Near Field Communication) tags at ThinFilm electronics. She started her career at GlobalFoundries within the Technology Development division with duties including device engineering, improving reliability, and developing SPICE models for leading silicon technology nodes. Padmaja has a PhD in Nanoscale Science and Engineering from the College of Nanoscale Science and Engineering from the University of Madras, India. She is a mother of 2 and enjoys the outdoors including hiking and biking. She also enjoys trying out new food and spending time with family and friends.



Join the event here:
<https://bit.ly/3ol72AF>

Alumnae from the College of Nanoscale Science & Engineering returned to speak with current graduate, undergraduates and high school science students from East Greenbush High School and Questar III BO-CES.

In case you missed it, find the recording [here](#).

Global Health Engineering Careers

Thursday, October 7, 12:00 pm

You're invited to join members of PATH's Product Development Engineering Lab to learn more about STEM careers in global health. PATH is a global team of innovators working to eliminate health inequities so people, communities, and economies can thrive. In this talk, you'll hear about exciting technologies that PATH is helping to advance around the world, as well as learn more about careers in global health for people with science and engineering backgrounds. There will be time for Q&A to ask team members about their projects and career paths. This is open to students of all ages and backgrounds. You can learn more about PATH at path.org.



All photos: PATH

PATH presented to students about the impact of science & engineering careers worldwide. Staff shared portions of their academic and professional journey that led them to a career in global health.

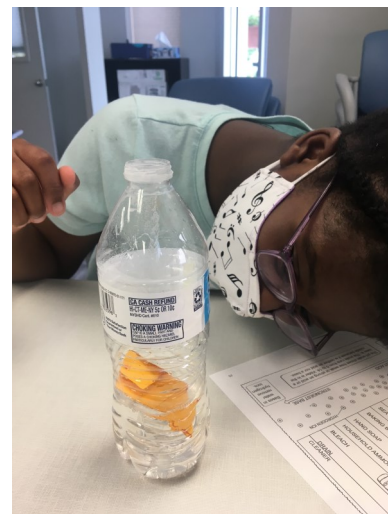
In case you missed it...

You can view the presentation [here](#).



The second pandemic year of 2021 saw more opportunities to expand virtual and flexible format educational outreach opportunities. The Office of Workforce Communication, underwritten by the Center of Excellence, provided both live virtual STEM outreach to afterschool science clubs, packaged materials and lesson plans for in person classes, and offered a number of programs in community settings. Highlights of the year included:

Afterschool STEM Clubs—With in person visiting not possible in public schools, we were able to utilize connections with area PTA and afterschool faculty to host live STEM hours over Google meet. As the students would be limited to easily obtainable “household STEM” items, we were able to come up with creative and easily reproducible activities that conveyed basic chemistry and physics concepts. Supply lists sent ahead of time meant that families were prepared to engage for the live meet, and we could exchange ideas and inquiry as the lesson was taught.



Summer Undergraduate Research Program—We were grateful after a year’s postponement to again offer a summer undergraduate research experience, funded in part by the Office of Research. 22 students working with both Utica and Albany faculty presented their research at culminating poster sessions attended by family, SUNY Poly, faculty and industry representatives.



Pi Day—In non-pandemic times a day to host multiple groups on campus, we instead packed up a “Pi on the go” box of activities and instructions for an area elementary school. They were to conduct self-paced math activities, click through a presentation, and watch videos celebrating Pi. The activities connected math across a variety of disciplines, including art and music, to underscore the importance of math in all facets of academics and culture.

15 Love—A long standing partnership with SUNY Poly, the Summer STEM program was able to meet in person with Covid protocols at the 15 Love community center for one day per week each summer to run 3 distinct classes of STEM activities organized by theme. This year we learned about the golden ratio, density, bioplastics, and more.



Halloween Science—With in person events now possible, this fall the Office of Workforce Communication was able to offer Halloween Science events for both the undergraduate students and a local elementary school. Activities included Lego challenges, optical illusions, hydrophilic “ghost eggs”, Bat Crafts with Facts, and more.



On Campus Group visits—At year’s end we were able to host our first half day on campus group program for a New Visions Engineering class from Cooperstown. The students visited the demo cleanroom, had a facility tour that included a walk through the sub fab, and listened to an in- depth overview of the vacuum and plasma trainer in the NEATEC lab.





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AND GRADUATE STUDIES

**FACULTY/STUDENT RESEARCH
TALK VIRTUAL EVENTS**

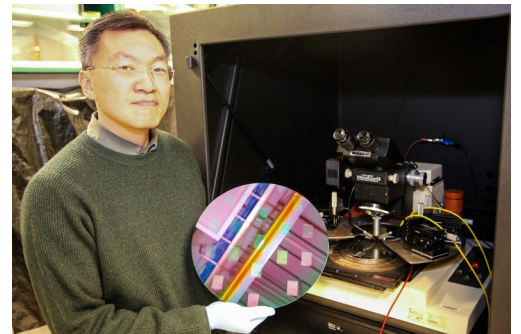


Dr. Serge Oktyabrsky presents to physics department at Siena College.

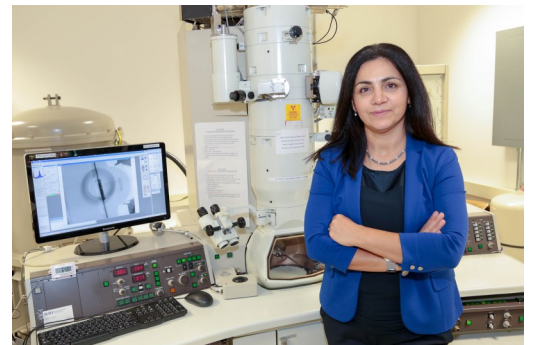
Dr. Kathy Dunn presents to students in STEM departments at SUNY Oneonta.



Dr. Greg Denbeaux and Dr. Ji Ung Lee present to the physics department at SUNY Geneseo.



Dr. Shadi Sandvik and PhD students Emma Rocco and Vincent Meyers present to students at Smith College and Texas Tech, respectively.

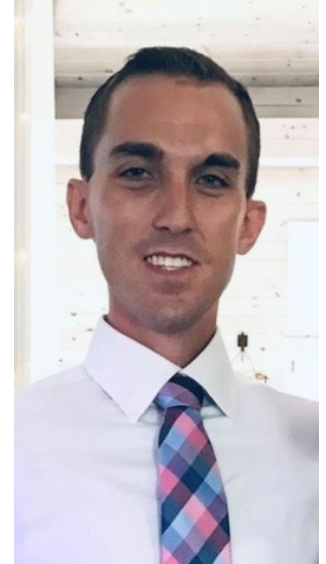


Dr. Vince LaBella presents to SUNY Brockport's Physics Department.





NEW TEAM MEMBER! This year we welcomed new team member to CATN2 and CENN, **Brian Gambacorta**, as a Grants and Contracts Administrator. Brian will supplement these programs by providing sponsored programs support to the centers and associated programs (AMP, MIP etc).



Start-up spun out of Sung lab: NoMIS

Post-doc Adam Morgan launches start up company. The near-term goal of NoMIS—to design, manufacture, and sell SiC power semiconductor devices, modules, and associated services that are presently unavailable on the market in order to provide enabling 21st century technology that supports power management product developers (i.e. power electronics engineers who are operating in the electric vehicle (EV) fast charger, heavy-duty EV, traction locomotive, marine electrification, and industrial motor drive markets) as they work on next generation, efficient and reliable clean tech products/solutions.



SUNY POLYTECHNIC INSTITUTE
OFFICE OF RESEARCH
AND GRADUATE STUDIES

INAUGURAL CENN FELLOWSHIP

The SUNY Polytechnic Institute Office of Research and Graduate Studies is pleased to announce the Inaugural New York State Center of Excellence in Nanoelectronics and Nanotechnology (CENN) Fellowship recipient as PhD candidate **Rubab Ume**. The CENN is funded by the NYSTAR Division of Empire State Development and is hosted at SUNY Poly's College of Nanoscale Science and Engineering. Part of the mission of the CENN is to have universities engage with and support private companies in emerging high-technology fields in NYS, and to expand technology-related businesses and employment.

The CENN Fellowship was initiated to support a PhD student to establish or further a collaboration with a New York based company for one year. Rubab Ume is a strong PhD candidate in Professor Serge Oktyabrsky's laboratory and will work on a project with IBM. This specific IBM project encompasses Group III-Sb Alloys for Multilevel Phase Change Memory within the SUNY-IBM AI Collaborative Research Alliance to develop hardware for novel brain-inspired processors which is important to IBM because IBM is currently one of the leaders in Artificial Intelligence applications and is looking for novel hardware to critically improve power, timing, data retention and endurance of the AI components. The project is in fact a joint IBM/SUNY Poly activity with strong involvement of IBM experts (currently Dr. G.Cohen and Dr. K.Brew) and management. The result of this project will directly support IBM's efforts to produce multiple novel materials and technologies for analog and multilevel phase-change memory cell, multiple joint (with IBM) publications and presentations, PhD thesis of Ms. Rubab Ume and likely joint patents. The work with IBM has already leveraged funding from the Semiconductor Research Corporation (SRC) (project just completed), and another proposal to the National Science Foundation (NSF) on novel principle of PCM analog operation is under development. These activities occur on campus and will catalyze IBM's continued growth within the state.



In addition to supporting companies in New York to achieve their development and commercialization goals the CENN Fellowship was launched to create a pipeline of well educated and trained employees that will grow into the future leaders within these and other high tech companies in New York. It is the hope of the CENN leadership that there will be an ability to grow the program to support as many as four or more fellows per year which would further strengthen the PhD program at SUNY Poly and contribute towards obtaining Carnegie Classification. For more information about the CENN Fellowship program and how to participate in the future, please contact Ross Goodman Deputy Director of CENN (rgoodman@sunypoly.edu) or Krista Thompson Assistant Dean of Graduate Studies (kthompson@sunypoly.edu).



**The following projects were awarded
MIP funding in 2021:**

| PI | Industrial Partner | Project Title |
|---------------------------|-------------------------|--|
| Robert Brainard | TEL and AMAT | Gel-Permeation Chromatography (GPC) Upgrade |
| Nate Cady | Xallent | Small Pitch Probing of VLSI |
| James Lloyd | Menlo Micro | MEMS Switch Reliability |
| Janet Paluh | sxRNA | Development of sxRNA Lineage Tracer Enabling (LiTE) Technology |
| Shadi Shahedipour-Sandvik | AMAT | Acquisition of a Photoluminescence Mapping Confocal Microscope with Sub-micron Resolution: from Scientific Discovery to Wafer Inspection |
| Susan Sharfstein | Glauconix, sxRNA, Midux | Improvement of high content analysis system for biopharmaceutical and tissue engineering product development |
| Shadi Shahedipour-Sandvik | Applied Materials | Upgrading an existing (dormant) electromagnet system to enable enhanced functionality for temperature dependent, AC Hall capability |
| Carl Ventrice | Menlo Microsystems | Determination of Failure Modes of MEMS Contacts and Development of Techniques to Mitigate these Failures |





In 2019, the Office of Research launched the Framework for Sustainable Future Seed Grant program, funding 28 projects across both the Utica and Albany campuses. These projects faced a series of challenges as they overlapped with the COVID-19 related complications of the past 2 years. These projects were extended through the fall of 2021, while balancing spending restrictions throughout the final year of the awards. However, the program objectives of revitalizing the research community, bringing in additional extramural funding, and increasing scholarly publication were reached. Please see highlighted outcomes below.

Outcomes and Impact:

- Total research expenditure at SUNY Poly has increased by 40% since 2019 seed grants were awarded. A 39% increase at the Albany campus, and a 69% increase at the Utica campus.
- 22 faculty have submitted proposals for extramural funding for the first time since the inception of the seed grant program.
- Seed Grant recipients have published upwards of 35 scholarly articles on their seed funded research.
- Recipients of the seed grants have, to date, submitted 26 extramural grants to directly continue their seed research. 5 have been awarded totaling \$677,400. (Original program investment approximately \$195,000)



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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