

GABRIEL R. BURKS, PH.D.

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Dpt. of Chemical & Biomolecular Engr.
205B McCourtney, Notre Dame, IN 46556

EDUCATION

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|------------|--|-----------|
| PhD | Drexel University, Materials Science & Engineering
Dissertation: “Poly (Vinylidene Fluoride): Crystalline Structure, Morphology and Conversion to Exotic Carbon Nanomaterials”
Committee: Christopher Y. Li (advisor), Caroline Schauer (chair), Giuseppe Palmese, Michele Marcolongo, Antonios Zavaliangos, Wei He Shih | June 2018 |
| BS | Grambling State University, Physics
Minor in Chemistry | May 2011 |

RESEARCH EXPERIENCE

Dpt. of Chemical & Biomolecular Engineering, University of Notre Dame 2024 to Onward
Tenure Track Assistant Professor, The Burks Lab

In the Burks Lab we use multimodal approaches to address the following research questions.

1) How may soft matter nuclei and nuclei clusters be visualized, confined, and manipulated to dictate its macroscale morphological and property outcomes? 2) How may liquid phase electron microscopy (LPEM) be leveraged to precisely manipulate, characterize, and study dynamic and nucleation-scale phenomena? 3) How may engineering principles be applied towards understanding mechanisms of biological material assembly for synthetic hierarchical structure development and combatting neurodegenerative disorders?

Dpt. of Chemical & Biomolecular Engineering, University of Notre Dame 2023 to 2024
Assistant Research Professor

Department of Materials Science & Engineering, University of Illinois 2020 to 2023
Postdoctoral Research Associate, Charles Schroeder Lab ([Link](#))

- NSF-MURI Grant at UIUC working with Professor Charles Schroeder on investigating the hierarchical assembly of leafhopper brochosomes and the development of new in-situ characterization methods for Transmission Electron Microscopy in collaboration with Qian Chen (UIUC-MatSE) and Joseph Patterson (UC-Irvine)

FrostDefense Envirotech Inc., Champaign, IL 2018 to 2024
Vice-President and Head of Research & Development ([Link](#))

- Consult and lead on formulation for polymer encapsulation technology. Built laboratory for biomaterials processing and characterization.
- Writing and quality control of grant proposals, determination of research directions, and leading start-up team to accomplish broader company goals

- Led efforts that took company from \$0 to >\$1.3 million in operating funds
- Creative problem solving and excellent people/negotiating skills have saved critical company projects and led to continued funding and support from company stakeholders

Department of Bioengineering, University of Illinois 2018 to 2020
NSF-RED Postdoctoral Research Associate, Jenny Amos Lab ([Link](#))

- Postdoc for the NSF-RED Grant at UIUC responsible for maintaining progress in research directions pertaining to the assessment of STEM undergraduate learning
- Obtained significant experience and training in formal engineering education research and research methods
- Led several research directions, obtained significant grant writing experience, served on university committees, developed new university collaborations, mentored doctoral students, and published STEM Education manuscripts.

“Poly (Vinylidene Fluoride): Crystalline Structure, Morphology and Conversion to Exotic Carbon Nanomaterials”

Doctoral Student, Drexel University, Philadelphia, PA 2011-2018
 Advisor: Christopher Y. Li ([Link](#))

- Trained under the advisement of Chris Li in polymer crystallization and soft matter characterization
- Investigated morphological manifestations of polyvinylidene fluoride (PVDF) polymorphism which led to the first free standing PVDF scroll single crystal
- Investigated carbonization of PVDF single crystalline structures

Department of Materials Science & Engineering, Drexel University 2013 to 2016
Laboratory Safety Manager, Chris Li Soft Matter Group

- Responsible for ensuring that all chemicals were stored and disposed of properly and with EHS safety compliance, managing laboratory audits, regulating laboratory personal protection equipment (PPE), safety training, and establishing safety standard operating procedures (SOP) for the research group.

Department of Physics, Grambling State University 2007 to 2011
Undergraduate Research Assistant, Seetala Naidu Group

- Vibrating sample magnetometry and positron annihilation spectroscopy of polymer nanocomposites for protection from blast induced trauma

Department of Materials Science & Engineering, Rice University 2010
Summer Undergraduate Research Intern, Enrique Barrera Group

- Polymer Crystallization in Single-Walled Carbon Nanotube/Medium-Density Polyethylene Composites

Department of Chemistry, University of Delaware 2009
Summer Undergraduate Research Intern, Carl Booksh Group

- Carbon sequestration from underwater hydrothermal vents

- Department of Physics, Fisk University** 2008
Summer Undergraduate Research Intern, Zhenga Pan & Steven Morgan Groups
- Optical properties of manganate oxyfluoride glasses and glass-ceramics
- Department of Chemical & Biomolecular Engineering, Tulane University** 2007
Summer Undergraduate Research Intern, Kyriakos Papadopoulos Group
- Effect of water in oil emulsions on commercial lubricating oils

HONORS AND AWARDS

- Edwin Moore Agricultural Innovation Award** 2022
 This prize rewards University of Illinois entrepreneurs focusing on agricultural innovations. This award was presented to FrostDefense Envirotech, my startup company who develops environmentally friendly and low-cost solutions to prevent frost damage in vineyards. ([Link](#))
- The Committee on Small Business Subcommittee on Economic Growth, Tax, and Capital Access Hearing Witness: “Innovation as a Catalyst for New Jobs: SBA’s Innovation Initiatives.” – Congressional Testimony** 2022
 Innovation is key to the success of America’s small businesses and the country’s long-term economic prospects. Subcommittee Members will have the opportunity to learn more about programs that stimulate innovation and the importance of federal investment in innovation to foster entrepreneurship, particularly in the post-pandemic economy. ([Link](#))
- Top 1000 Inspiring Black scientists by Cell Press** ([Link](#)) 2021
- AWARE Proof of Concept Award** 2020
 Award given to women and underrepresented entrepreneurs to enable them to build a prototype that will aid in the path toward commercialization. ([Link](#))
- Drexel University Young Alumni Distinguished Service Award** 2020
 Presented to an individual who graduated within the last 10 years, regardless of age or degree, who has demonstrated tremendous loyalty and extraordinary service since graduation (i.e. service to community, profession, or university). ([Link](#))
- Drexel University College of Engineering Commencement Speaker** 2018
 Shared the stage and platform with Paul Richards, space shuttle astronaut, to deliver the graduate student representative commencement for the College of Engineering. ([Link](#))
- Drexel Materials Science & Engineering Outstanding Graduate Student Award** 2018
 Presented to a Drexel University Materials Science & Engineering Student who exemplifies characteristics and achievements at the highest levels of scholarships and service.
- Drexel Common Good Award** 2018
 Presented to a graduate student who demonstrates academic excellence and who is committed to improving the world around them by making contributions to local, national, or global communities through either scholarship or civic engagement. ([Link](#))

Alpha Sigma Mu (ΑΣΜ) International Professional Honor Society 2017
Students, alumni, and other professionals who have demonstrated exceptional academic and professional accomplishments. Student members are selected based on scholastic standing, character and leadership.

Drexel University Graduate Student Association Best Event 2016
“The Fry” a southern-style cookout dedicated to advancing graduate degree attainment for undergraduates, to showcasing minority serving organizations and artistic talent in Philadelphia. ([Link](#))

1st Place Thermal Analysis Forum of Delaware Valley Poster Competition 2016

Drexel University Graduate Student Association Graduate Spirit Award 2015

Society of Plastic Engineers - Philadelphia Chapter Sponsorship 2014-2018

2nd Place Graduate Student Oral Presentation Competition 2013
16th Annual Philadelphia Alliance for Minority Participation (AMP) Research Symposium and Mentoring Conference

Sigma Pi Sigma (ΣΠΣ) National Physics Honor Society 2008
Sigma Pi Sigma exists to honor outstanding scholarship in physics, to encourage interest in physics among students at all levels, to promote an attitude of service, and to provide a fellowship of persons who have excelled in physics.

Center for Achievement in Mathematics, Science, and Technology (CMAST) Scholar & Group Leader 2007-2010
CMAST promotes activities that focus on curriculum reform, undergraduate research, placement of students, K-12 outreach, and faculty professional development.

LS-LAMP Level II Cadet Scholar 2007-2008
This program aims to assist these STEM students in successful pursuit of STEM graduate degrees with emphasis on Ph.D.

FELLOWSHIPS

Carl Storm Underrepresented Minority Fellowship 2019
Award program provides an opportunity for URM graduate students, postdocs, faculty, and scientists to receive funding assistance to attend their first Gordon Research Conference.

NSF Revolutionizing Engineering and Computer Science Departments (NSF-RED) Postdoctoral Fellow 2018-2020
STEM Education Postdoctoral award to investigate topics related to the remodeling of the University of Illinois Department of Bioengineering.

Chappell-Culpeper Foundation Graduate STEM Education Fellow 2017
STEM Education fellowship in partnership with Drexel University to develop STEM curriculum for K-12 students in Philadelphia and surrounding regions.

Koerner Family Fellowship 2017-2018
Koerner Family Fellowship program supports PhD candidates who are particularly interested in continuing their career in academia.

Drexel University Engineering Teaching Fellowship 2016-2017
Co-instructed engineering design lab with a full-time professor. Handled lecture, grading, and grade input into banner system.

NSF - Drexel University GK-12 Fellowship (NSF-GK12) 2013-2016
This program provides funding for graduate students in NSF-supported science, technology, engineering, and mathematics (STEM) disciplines to bring their leading research practice and findings into K-12 learning settings. Through collaborations with other graduate fellows and faculty from STEM disciplines, teachers and students in K-12 environments, and community partners, graduate students can gain a deeper understanding of their own research and place it within a societal and global context.

Department of Education Graduate Assistance in Areas of National Need Drexel Research and Education in Advanced Materials Fellowship (GAANN-DREAM) 2012-2013

2012 Fattah Conference on Higher Education Fellow 2012

Educational Advancement Alliance HBCU STEM Fellowship 2011-2012
Provides fellowships and stipends to graduates of Historically Black Colleges and Universities (HBCU), as determined by the White House Initiative on HBCUs, to pursue master's level programs in STEM areas of study at colleges and universities in Pennsylvania, New Jersey, Delaware or Washington, DC.

PROPOSALS AND EXTERNAL FUNDING

NSF 19-554 SBIR Phase II: Budbreak Delay Gel Technology for Frost Management and Mechanization of Vineyards 2021-2023
This project was funded \$1,000,000 to optimize a minimal viable product that was developed during Phase I of this grant project in preparation for bringing said product to market.

NSF 19-554 SBIR Phase I: Budbreak Delay Gel Technology for Frost Management and Mechanization of Vineyards 2019-2020
This project was funded \$250,000 to create value for grape farmers by reducing crop damage from frost by delaying the time when the buds break in spring. The innovation proposed will reduce the costs of frost management, decrease yield loss, and improve quality. This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

Philadelphia Public School Giving Circle (PPSGC) Grant 2017
“STEM Enhancement Grant for Alain Locke School in West Philadelphia” was funded \$500 to enhance Alain Locke Elementary School, a nationally designated Promise Zone school, STEM activities through the development of a cardboard robotics curriculum and respective teacher training.

TEACHING EXPERIENCE

Campbell University, Buies Creek, NC Nov 2020
Guest Lecturer, Department of Materials Science & Engineering

- Delivered lecture to class of about 35 students on polymer characterization and processing

University of Illinois Urbana-Champaign, Urbana, IL May 2018 to Aug 2020
Guest Lecturer – BIOE 210 Conservation Principles of Bioengineering, Department of Bioengineering

- Material, energy, charge, and momentum balances in biological problems. Steady-state and transient conservation equations for mass, energy, charge, and momentum will be derived and applied to mathematically to analyze physiological systems using basic mathematical principles, physical laws, stoichiometry, and thermodynamic properties.

University of Illinois Urbana-Champaign, Urbana, IL May 2018 to Aug 2020
Course Advisor – ENGR 198 Engineering Ambassadors, College of Engineering

- Occasional lecturer and constant advisor to students. Illinois Engineering Ambassadors is a professional outreach program sponsored by the Office of Undergraduate Programs in the College of Engineering. Our ambassadors serve as role models of engineering to those who are classically underrepresented and underserved in engineering fields. ([Link](#))

Drexel University, Philadelphia, PA Jan 2017 to June 2017
Co-Developer & Instructor - – ENGR 103 Design a STEM Lab...An Engineering Education Approach, College of Engineering

- Co-developed syllabus and overall course structure, including weekly labs, and input all grades. This course was the first of its kind, where we formally introduced engineering design students to K-12 STEM education through the design of age and level appropriate education tools to complement a specific STEM topical area lesson.

Drexel University, Philadelphia, PA Aug 2016 to June 2017
Co-Instructor – ENGR 101, ENGR 102, & ENGR 103 Engineering Design Lab I, II, & III, College of Engineering

- Co-instructed engineering design lab with a full-time professor. Handled lecture, grading, and grade input into banner system.

Philadelphia High School for Girls, Philadelphia, PA Aug 2014 to May 2016

Co-Instructor (Head Instructor Susan Mburu)– Chemistry

Central Magnet High School, Philadelphia, PA

Aug 2013 to May 2014

Co-Instructor (Head Instructor Schuyler Patton) – Materials Science Elective Course

Grambling State University, Grambling, LA

Jan 2010 to May 2010

Teaching Assistant, Department of Physics

- Delivered some lectures, graded exams, and led study session with students following exams

PUBLICATIONS

Books

Burks, G. R. (2018). *Poly (Vinylidene Fluoride): Crystalline structure, morphology, and conversion to exotic carbon nanomaterials*. Drexel University (Dissertation).

Journal Publications

Banerjee, P., Burks, G. R., Bialik, S. B., Nassr, M., Bello, E., Alleyne, M., ... & Milliron, D. J. (2023). Nanostructure-Derived Antireflectivity in Leafhopper Brochosomes. *Advanced Photonics Research*, 2200343.

Bello, E., Rajagopalan, S., Chen, Y., Burks, G., Schroeder, C., Bialik, S., ... & Alleyne, M. (2023). Exploring the Role of Brochosome Variation on the Wettability of LeafhopperWings (Hemiptera: Cicadellidae). *Integrative and Comparative Biology*, 62.

Castleberry, C., Hanner, A., Burks, G., & Amos, J. (2023). Instructor perspectives on the use of tag-organised assessment to facilitate formative assessment strategies in STEM courses. *European Journal of Engineering Education*, 1-24.

Burks, G. R., Yao, L., Kalutantirige, F. C., Gray, K. J., Bello, E., Rajagopalan, S., ... & Schroeder, C. M. (2022). Electron Tomography and Machine Learning for Understanding the Highly Ordered Structure of Leafhopper Brochosomes. *Biomacromolecules*.

Burks, G. R., Hebert, L. C., & Amos, J. R. (2021). Creating a virtual biomechanics camp that emphasizes socially derived learning communities. *Biomedical Engineering Education*, 1(1), 49-53.

Burks, G.R.; Amos, J.R. (2019). Impact of Ethics and Social Awareness Curriculum on the Engineering Identity Formation of High School Girls. *Education Sciences*, 9, 250-268.

Burks, G. R., Qi, H., Gleeson, S. E., Mei, S., & Li, C. Y. (2018). Structure and morphology of poly(vinylidene fluoride) nanoscrolls. *ACS Macro Letters*, 7(1), 75-79.

Conference Papers (Peer-Reviewed)

- Banerjee, P., Burks, G., Bialik, S., Bello, E., Alleyne, M., Barrick, J., & Milliron, D. (2021). Electrodynamic modeling of leafhopper brochosomes for synthetic antireflective coatings. In *APS March Meeting Abstracts* (Vol. 2021, pp. X03-009).
- Burks, G. R., Amos, J. R., & Castleberry, C. W. (2019). Embedded Tagging and Radar Map Shape Analysis for Assessing Student Outcomes. In *2019 ASEE Annual Conference & Exposition*.
- Amos, J. R., Herman, G. L., Pool, M., Cross, K. J., Insana, M. F., & Burks, G. R. (2019). Leveraging Undergraduate Curriculum Reform to Impact Graduate Education: A Case Study. In *2019 ASEE Annual Conference & Exposition*.
- Marino, R. J., Burks, G. R., VanKouwenberg, M. N., & Terranova, B. B. (2018). Great Ideas for Teaching Students (GIFTS): Developing Students Through a “Design a Lab” Exercise. In *2018 FYEE Conference*.
- Burks, G., Qi, H., Gleeson, S., Mei, S., Connor, A., & Li, C. (2016). Mapping PVDF crystalline morphology. In *Abstracts of Papers of the American Chemical Society* (Vol. 252).
- Ward, J. S., Fontecchio, A. K., Shultz, R., & Burks, G. (2015). Reinforcing Learning Concepts via Engineering Lesson Planning. In *2015 ASEE Workshop on K-12 Engineering Education* (pp. 18-26).
- Seetala, N. V., Burks, G., Hubbard, D., Trochez, A., & Khabashesku, V. N. (2012). Positron Lifetime Analysis of Polyurea-Nanoclay Composites. *Supplemental Proceedings: Materials Processing and Interfaces, 1*, 361-365.
- Seetala, N. V., Hubbard, D., Burks, G., Trochez, A., & Khabashesku, V. N. (2012). Positron Lifetime Analysis of Polyurea-Nanoclay Composites. *AIP Conference Proceedings*.
- Seetala, N. V., Burks, G., Hubbard, D., Trochez, A., & Khabashesku, V. N. (2011). Physical properties of aliphatic and aromatic polyurea-nanoclay composites. In *Abstracts of Papers of the American Chemical Society* (Vol. 241).

Papers Under Review

PATENTS

Seufferheld, M. & Burks, G. (2022). “Plant Surface Protective Composition for Delaying Bud-Break, Methods of Use and Manufacture” *U.S. Patent Application No. 63230311*. Washington, DC: U.S. Patent and Trademark Office.

PRESENTATIONS AND INVITED LECTURES

Invited Talks

Invited Lecture, “Hierarchical Control and Characterization of Synthetic and Biopolymer Materials,” Howard University Chemical Engineering Seminar, January 30, 2023.

Invited Lecture, “Hierarchical Control and Characterization of Synthetic and Biopolymer Materials,” Notre Dame University Edison Lecture Series, April 28, 2022.

Invited Lecture, “Hierarchical Control and Characterization of Synthetic and Biopolymer Materials,” University of Georgia at Athens Graduate Seminar, April 11, 2022.

Keynote Address, “My Life Lessons to Succeed in STEM,” UIUC-EMBARK Program, Aug 16, 2021.

Podcast Interview, “Is Flubber Real? Dr. Burks explains it all!” Black Hypothesis Podcast, May 15, 2021. ([Link](#))

Keynote Address, “Using Student-Centered Design in Online Teaching and Engineering Instruction,” SEFI Teaching Engineering Ethics Online: Between Adaptation and Transformation, Sep 9, 2020.

Keynote Address, “My Journey through STEM,” UIUC-SPHERES High School Program, July 19, 2019.

Keynote Address, “Choosing a career in STEM,” UIUC-WYSE Summer Research Program, July 19, 2019.

Commencement Address, Drexel University College of Engineering, June 2018.

Keynote Address, “My Life Lessons to Succeed in STEM,” Philadelphia Alliance for Minority Participation (AMP) Research Symposium and Mentoring Conference, Nov 18, 2018.

Panelist, Kappa Alpha Psi Fraternity Inc. North Central Province Undergraduate Leadership Summit Graduate School Panelist, 2018.

Keynote Address, “Conversations on Grit and Mental Toughness,” Motivational talk for the Drexel University College of Business, Nov 2017.

Keynote Address, Breakthrough of Greater Philadelphia at Friends School, Dec 2016.

Panelist, Men of Honor – Women of Distinction Panelist for the 18th Annual Philadelphia AMP Research Symposium and Mentoring Conference, Philadelphia, PA Oct 2016.

Other Presentations

Conference Presentation, Gabriel R. Burks, “Crystal Engineering, New Modes of In-Situ Electron Microscope Imaging, and Combating Neurodegenerative Disease”, American Institute of Chemical Engineers Annual Meeting, November 2022.

Paper Presentation, Banerjee, P. (Speaker), Burks, G., Alleyne, M., Nassr, M., Bialik, S., Bello, E., ... & Milliron, D. (2021, November). Synthetic Brochosomes As Ultra-Antireflective, Super-Hydrophobic Biomimetic Materials in Multifunctional Films. In *2021 AIChE Annual Meeting*. AIChE.

Conference Presentation, Gabriel R. Burks, P. Banerjee, M. Alleyne, M. Nassr, S. B. Bialik, E. Bello, B. D. Freeman, J. E. Barrick, C. M. Schroeder, and D. J. Milliron, “Opto-chemical characterization and determination of nanostructural organization in complex leafhopper brochosome protein assemblies”, American Institute of Chemical Engineers Annual Meeting, November 2021.

Conference Presentation, “Structure and Morphology of PVDF Nanoscrolls,” Gordon Research Symposium & Conference Polymer Chemistry, June 2019.

Conference Presentation, “Mapping PVDF Crystalline Morphology,” American Chemical Society (ACS) Conference, Philadelphia, PA Aug 2016.

Conference Presentation, “On the structure and morphology of poly (vinylidene fluoride) nanoscrolls,” American Physical Society (APS) Conference, Mar 2016.

Conference Poster Presentation, Thermal Analysis Forum of Delaware Valley, Dec 2015.

Conference Presentation, NOBCCHE Conference, Mar 2015.

Conference Presentation, 16th Annual Philadelphia AMP Research Symposium and Mentoring Conference, Nov 18, 2013.

Conference Presentation, University of Louisiana System Research Day Competition, 2011.

Conference Presentation, Emerging Researchers National Conference in STEM, 2011.

Conference Poster Presentation, “Polymer Crystallization in Single-Walled Carbon Nanotube/Medium-Density Polyethylene Composites” Rice University/University of Houston AGEF Closing Banquet, 2010.

Conference Presentation, “Positron and magnetization studies of polyurea-nanoclay composites” 18th Annual Phillip L. Young Research Symposium, 2010.

Conference Presentation, “Characterization of Polyurea-Nonoclay Composites; B₄C and Al₂O₃ Body Armor Materials” Minority Leaders Spring Review Conference, 2010.

Conference Presentation, “Positron lifetime studies of sintered B₄C pellets” Louisiana Academy of Sciences Conference, 2010.

Conference Presentation, “Positron Lifetime Studies of Polyurea-Nanoclay Components” HBCU-UP 2009 Research Symposium, 2009.

Conference Presentation, “Positron source calibration and positron lifetime spectra for Si and B₄C” 17th Annual Phillip L. Young Research Symposium, 2009.

Conference Presentation, “SEM and Magnetic Studies of Polyurea-CNT Composites” 16th Annual Phillip L. Young Research Symposium, 2008.

Conference Presentation, “SEM and Magnetic Studies of Polyurea-CNT Composites” HBCU-UP 2008 Research Symposium, 2008.

Conference Attendee (1st Conference & 1st plane ride), LS-AMP MGE@MSA/WAESO Conference at Arizona State University, Tempe, AZ 2007.

PROFESSIONAL TRAINING

International Congress of Microscopy – Pre-Congress Workshop

The Fundamentals of Quantitative In-Situ Electron Microscopy

Busan, South Korea September 2023

Description: In this workshop we bring together leaders in in-situ microscopy to delve into the precise controls needed to understand how to set up a microscope and perform quantitative experimental observations using 3 of the most common types of in-situ stages – biasing, gases and liquids. The workshop will cover all practical considerations and common mistakes for each type of experiment and provide participants with a guideline to performing their own state-of-the-art experiments.

[Topics of Interest]

- Dose Control and Signal/Noise Issues for In-situ EM
- The Fundamental Control Parameters for In-situ heating/Biasing
- Measuring and Controlling Gas Reactions in the SEM/TEM/STEM
- From Assembling Liquid cells to Quantitative Electrochemistry Experiments

Organizer : Marc Willinger (TU-Munich, Germany)

Organizer : Nigel Browning (University of Liverpool, United Kingdom)

NSF-ACADEME Supplemental Workshop

Alexandria, VA May 2022

Description: Workshop organized by STEM faculty and departments at Akron University, University of Houston, and Mississippi State University to develop and train future faculty in the ways of scholarship and teaching.

Notre Dame University Future Faculty Workshop

Notre Dame University, May 2022

Description: Workshop organized by STEM faculty and departments at Princeton University, to develop and train future faculty in polymer science and engineering in the ways of scholarship and teaching.

National Chemical Engineering Future Faculty Seminar

UC Santa Barbara, Virtual, Dec 11, 2020

Description: National Chemical Engineering seminar series highlighting future faculty and the diversity of our discipline. Organized by chemical engineering departments at the Massachusetts Institute of Technology, University of California, Berkely, University of California, Santa Barbara, and the University of Florida

Princeton University Future Faculty Workshop

Princeton University, August 2018

Description: Workshop organized by STEM faculty and departments at Princeton University, to develop and train future faculty in polymer science and engineering in the ways of scholarship and teaching.

NSF-ACADEME Summer Workshop

University of Houston, June 2018

Description: Workshop organized by STEM faculty and departments at Akron University, University of Houston, and Mississippi State University to develop and train future faculty in the ways of scholarship and teaching.

TA Instruments – Thermal Analysis Short Course

TA-Instruments, March 2013

Description: Short course organized by TA Instruments at their headquarters for training on special topics in thermal analysis of soft materials.

University of Florida Campus Visitation Program

University of Florida, Gainesville, FL, 2008

Description: Spring Visit provides the opportunity for prospective students to spend an extended amount of time in an engineering department of interest, visit with faculty, meet current students, tour the facilities and campus.

LEADERSHIP & PROFESSIONAL AFFILIATIONS**Drexel University Graduate Student Association (GSA), 2014-2015**

Vice-President of Student Life, managed operation of personal development and social events, including welcome-back cruise, masquerade ball, ski trip, midterm munchies, finals feasts and happy hour events.

Drexel Black Graduate Student Union (DBGSU), 2013-2016

Collaborations Chair & Vice-President, the mission of DBGSU is to foster an environment of intellectual, political, cultural, and social growth for those who want to connect with Black graduate and professional degree-seeking students.

Society of Plastics Engineers (SPE), 2014-2018**National Society of Black Physicists (NSBP), 2012-2013****National Society of Black Engineers (NSBE)-Drexel University Chapter, 2013-2016****Grambling State University Student Government Association, 2009-2010**

Assistant Director of Student Academic Affairs, managed operation of academic events and opportunities for GSU students

Grambling State University National Pan-Hellenic Council (GSU-NPHC), 2009-2010

President, the National Pan-Hellenic Council (NPHC) is a collaborative organization of nine historically African American, international fraternities and sororities. The nine NPHC organizations are sometimes collectively referred to as the "Divine Nine."

Grambling State University National Pan-Hellenic Council (GSU-NPHC), 2010-2011

Membership Activities Chairman

Grambling State University Society of Physics Students, 2009-2010

Chapter President

Gamma Psi Chapter of Kappa Alpha Psi Fraternity Incorporated, 2010-2011

Vice-Polemarch (Vice-President)

Gamma Psi Chapter of Kappa Alpha Psi Fraternity Incorporated, 2009-2010

Assistant Keeper of Records & Executive Board Member

Grambling State University, 2007-2008

Quality Enhancement Plan (QEP) Ambassador

PROFESSIONAL SERVICE

Student Research Mentor

- Drexel University Undergraduate Senior Design Team Projects
 - PLLA/Nanocrystalline Cellulose Nanocomposites
 - Yunus Gorur (*KTH Royal Institute of Technology PhD)
 - David Diambri (*US Department of Homeland Security)
 - HDPE Composites
 - Daniel Quinn (*NewAge Industries Inc.)
- Angelica Connor-(MS) PVDF Crystallization, Electrospinning, and Carbonization (*Georgia Tech PhD)
- Colin Castleberry (PhD) Systems Biology and Computer-based Engineering

- Education Assessment (UIUC)
- Elizabeth Bello – (MS-PhD) Materials Characterization and processing of leafhopper brochosomes (UIUC)
- Kyle Gray – (Undergraduate - UIUC) Materials Characterization and processing of leafhopper brochosomes (*Northwestern University PhD)

Conference Workshop Organizer

ASEE, “Multi-Level Curriculum Assessment using Gradescope”, 2020

NSF-RIEF Proposal Review Panelist

National Science Foundation, Alexandria, VA, 2019

Session Moderator & Presenter

ASEE, “Technical Session 12: Teaching and Learning”, 2019

Seminar Workshop Co-Facilitator

Southern New Hampshire University (SNHU) Teaching Practice Inventory & STEM Programming Collaboration, Jan 2019

Description: Upon initiation of our collaborative relationship with SNHU, they were in the process of opening a brand-new College of Engineering, Technology and Aeronautics (CETA) facility and were seeking guidance in adopting learner-centered competency-based assessments and structuring their general assessment protocols and practices in alignment with those of high-ranking engineering institutions. This resulted in an initial visit whereby associated leadership from SNHU visited our campus at University of Illinois Urbana-Champaign to have in-depth conversations and demonstrations of our recently developed assessment protocols through the NSF-RED project.

5th Annual Black Doctoral Network Conference

Program Scout, Atlanta, GA, July 2017

Conference Workshop Organizer

ASEE, “Reinforcing Learning Concepts via Engineering Lesson Planning”, 2015

Peer-Reviewed Articles for:

- American Chemical Society (ACS)
- American Society for Engineering Education (ASEE)
- Journal of Engineering Education (JEE)
- Computer Application in Engineering Education (CAE)

COMMUNITY SERVICE

University of Illinois Urbana-Champaign Bioengineering Engineers Aiming for Gender Equity and Representation (BioE-EAGER) 9-11th Grade Summer Camp

Organizer & Facilitator, Urbana, IL, Jul 6-17, 2020

University of Illinois Urbana-Champaign Bioengineering Inclusion, Diversity, Equity, and Access (BioE-IDEA) 9-11th Grade Summer Camp

Organizer & Facilitator, Urbana, IL, Jun 21-Jul 3, 2020

STEM Undergraduates for Design Innovation & Outreach (STUDIO) K-5 After-Hours STEM Enrichment Program

Organizer & Co-Advisor, Urbana, IL, (monthly), 2019-2020

Description: A collaborative STEM space dedicated to enriching K-5 students' sense of belonging in STEM, facilitating undergraduates' engagement in STEM education, and training K-12 teachers in the operationalization of STEM education.

University of Illinois Urbana-Champaign Girls' Adventures in Math, Engineering, and Science (GAMES) Camp

Organizer & Facilitator, Urbana, IL, Jun 23-29, 2019

University of Illinois Urbana-Champaign Girls' Adventures in Math, Engineering, and Science (GAMES) Camp

Co-Organizer & Facilitator, Urbana, IL, Jun 18-22, 2018

Chicago ICANEXSEL Camp at University of Illinois Urbana-Champaign

Instructor, Urbana, IL, Jul 24, 2018

Alain Locke School STEM Enhancement Grant and Development of Cardboard Robotics Curriculum

Developer & Instructor, Philadelphia, PA, 2018

Southwest Philadelphia District Services, Community Register Community Organization (RCO)

Member, Philadelphia, PA, 2016-2018

Alain Locke School-School Advisory Council (SAC)

Parent Member, Philadelphia, PA, 2017-2018

Drexel University DELTA Summer Pre-Freshman Summer Program

Program Instructor, Philadelphia, PA, June-July 2017

TeenSHARP, Inc. (Greater Philadelphia Region)

Science Lecturer, Philadelphia, PA, 2017

Greater Exodus Baptist Church Black History Month Professional Panel

Panelist, Philadelphia, PA, 2017

STEM Diversity Day Professional at Community College of Philadelphia

Speaker, Philadelphia, PA, 2017

Millennial Talk Series: Conversations Around Millennial Financial Awareness at Barbers on Broad Barbershop

Founder & Instructor, Philadelphia, PA, 2017

Triskeles High School Art Showcase and Auction

Founder & Host, Philadelphia, PA, 2017

“The Fry” Founder and Organizer: Higher Education Advocacy, Community Engagement, and Social Cookout

Founder & Organizer, Philadelphia, PA, 2013-2018

Love and Enterprise in the Black Community – Community Seminar through Drexel University Dornsife Community Center

Organizer, Philadelphia, PA, 2016

Drexel University Materials Science & Engineering Department Materials Camp

Science Demo Leader, Philadelphia, PA, June 2016

Drexel University Materials Science & Engineering Department Two-Day Course

Science Demo Leader, Philadelphia, PA, Sept 2016

TeenSHARP, Inc. (Greater Philadelphia Region)

Science Lecturer, Philadelphia, PA, 2016

Drexel University Breakthrough Program

Guest Instructor, Philadelphia, PA, April 2016

17th Annual Philadelphia AMP Research Symposium and Mentoring Conference

Workshop Guest Speaker, Philadelphia, PA, Nov 2016

Drexel University Materials Science & Engineering Department Two-Day Course

Science Demo Leader, Philadelphia, PA, June 2015

Annual Philly Materials Day 2015

Science Demo Leader, Philadelphia, PA, Feb 2015

TeenSHARP, Inc. (Greater Philadelphia Region)

Guest Lecturer of Science & Engineering, Philadelphia, PA, July 2014

Johns Hopkins University Science and Technology Day

Invited Keynote Lecturer, Philadelphia, PA, Jun 2014

Annual Philly Materials Day 2014

Science Demo Leader, Philadelphia, PA, Feb 2014

Harambee Institute

Science Demo instructor, Philadelphia, PA, Oct 2014

Annual Philly Materials Day 2013

Science Demo Leader, Philadelphia, PA, Feb 2013

16th Annual Philadelphia AMP Research Symposium and Mentoring Conference

Undergraduate Poster Competition Judge, Philadelphia, PA, Jun 2013

Rubye's Kids Holiday Christmas Party

Head Chaperone, Philadelphia, PA, Dec 2012

Description: Designed to make the holiday special for children living in shelters and others in need, a Red Rubye's Kids Bag includes a toy, hat, gloves, school supplies, art supplies, toothbrush, toothpaste, culturally appropriate book, holiday socks, positive affirmation pillowcase, candy cane, and other fun gifts.

Acres Home Science & Technology Academy Summer Experience

Science Mentor, Houston, TX, Jun 2010

Paul E. Slaton Head Start

Volunteer Instructor, Ruston, LA, Aug 2008-May 2011

Description: Mentor children at local head start schools to provide entertainment and learning opportunities once a week.

Grambling Community Achievement Foundation (G-CAF)

Events Coordinator, Grambling, LA, Feb 2008-May 2011

Description: Responsible for scheduling, coordinating, and managing all functions sponsored by or through the Grambling Community Achievement Foundation.

LANGUAGES

English: Native Language

Spanish: Novice Listener, Novice Speaker, Novice Reading and Writing

OTHER

Brazilian Jiu Jitsu Player

Founder of "Art of Science Foundation" Nonprofit whose mission is to support future leaders and change agents in science, technology, engineering, art, and math through scholarships, graduate fellowships, graduate school visits, & mentorship.

- Awarded inaugural scholarship of \$1015 in April of 2022 to a high school junior through our "Educate the SWAG "Dare to Dream" STEAM Scholarship on the Bold.org platform
- We had roughly 700 applicants and 44 finalists with a large proportion of ethnic and gender diversity. ([Link](#))
- Our current goal is to raise \$20,000 to award 20 scholarships to high school students

Founder of "Educate The SWAG" website, dedicated to increasing community awareness of issues and pathways to higher education. ([Link](#))

US Citizen

REFERENCES

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