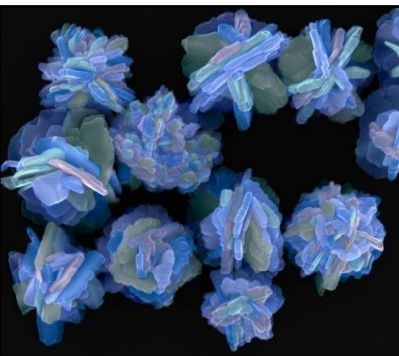
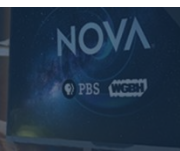
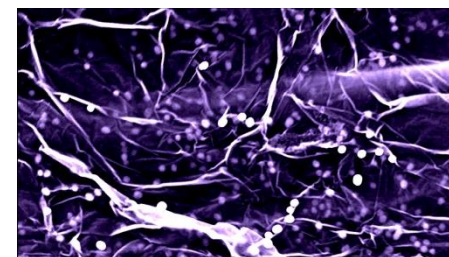
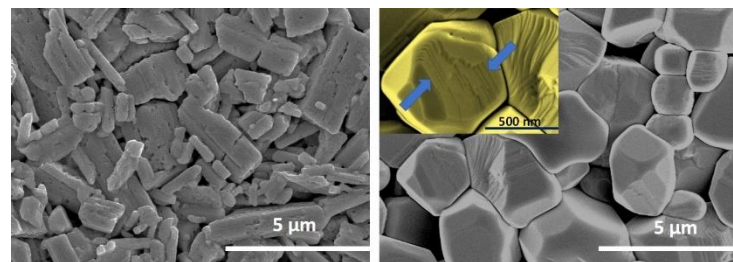


Partnerships for Research and Education in Materials (PREM)

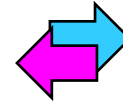


Division of Materials Research (DMR)
Directorate for Mathematical and
Physical Sciences (MPS)
National Science Foundation



Partnership between Minority Serving Colleges & Universities and DMR-supported Centers, Facilities and Platforms

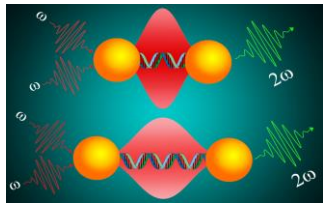
Minority Serving Colleges & Universities



DMR-Supported Centers & Facilities

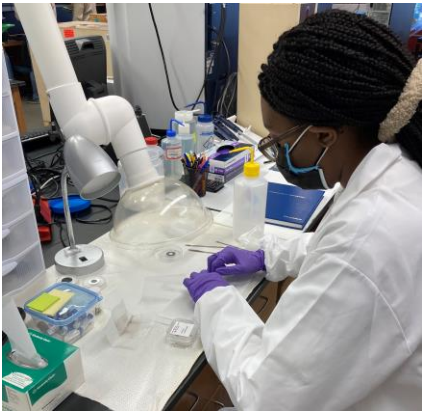
- Hispanic Serving/High Hispanic Enrollment Institutions (HSI/HHE)
- Historically Black Colleges and Universities (HBCUs)
- Minority Serving Institutions (MSI)
- Alaska Native Serving Institutions (ANSI)
- Native American-serving non-Tribal Institutions and Tribal Colleges and Universities (TCU)
- Native Hawaiian Serving Institutions (NHSI)

- Materials Research Science and Engineering Centers (MRSECs)
- DMR supported Science and Technology Centers (STCs)
- DMR supported Materials Innovation Platforms (MIP)
- National High Magnetic Field Laboratory (NHMFL)
- Cornell High Energy Synchrotron Source (CHESS)
- Center for High Resolution Neutron Scattering (CHRNS)



Topics

- PREM Objectives
- PREM Model
- Key Performance Indicators
- PREM in Numbers & Charts
- Exemplars



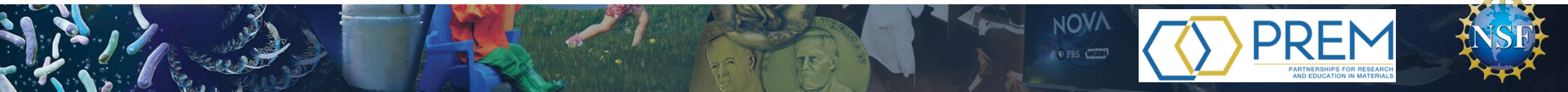
PREM Expectations & Strategic Objectives

- ❑ Create new opportunities for students at minority-serving institutions

- ❖ *Exposure to cutting-edge research and high-quality education, access to facilities and instrumentation, access to mentors*

- ❑ Enhance research productivity and infrastructure
- ❑ Impact both institutions' research and culture
- ❑ Develop integrated research and education programs

- ❑ Pursue close interactions with partner institution and NSF



PREM Model: Key Performance Parameters

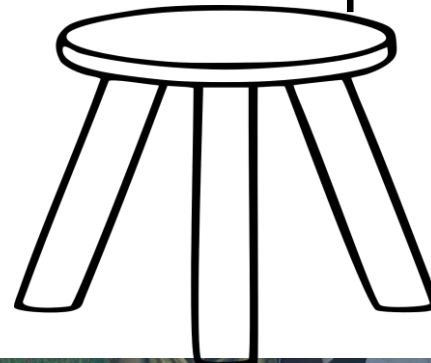
- Creating a pathway for those underrepresented and underserved in STEM to enter and enrich the materials research community (*Pathway*)



- Fostering cutting-edge research (*Science*)



- Building robust partnership between minority serving institutions and leading research centers/facilities/platforms (*Partnership*)



Key Performance Parameters, Objectives & Indicators

Key Performance Parameters

Key Performance Objectives

Key Performance Indicators

Pathway



Robust recruitment, retention, graduation



Stats of recruitment/retention/graduation; %URG; students' training, development and trajectory; student/postdoc co-authors

Science



Top notch research and educational excellence



Publications & presentations; patents; curriculum development; building research capacity (multidisciplinary research /other grants)

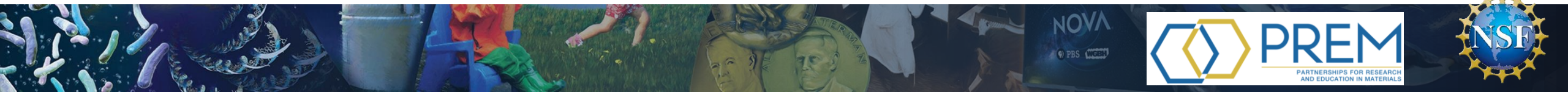
Partnership

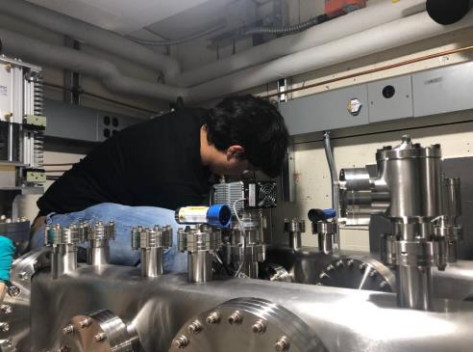


Reciprocity and engagement



Stats of REUs and faculty/students/postdocs exchange; participation in collaborative research and mentoring; joint publications; recruitment

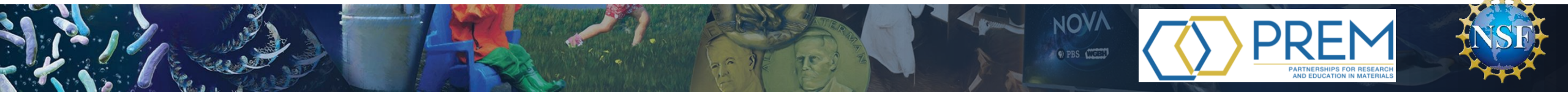




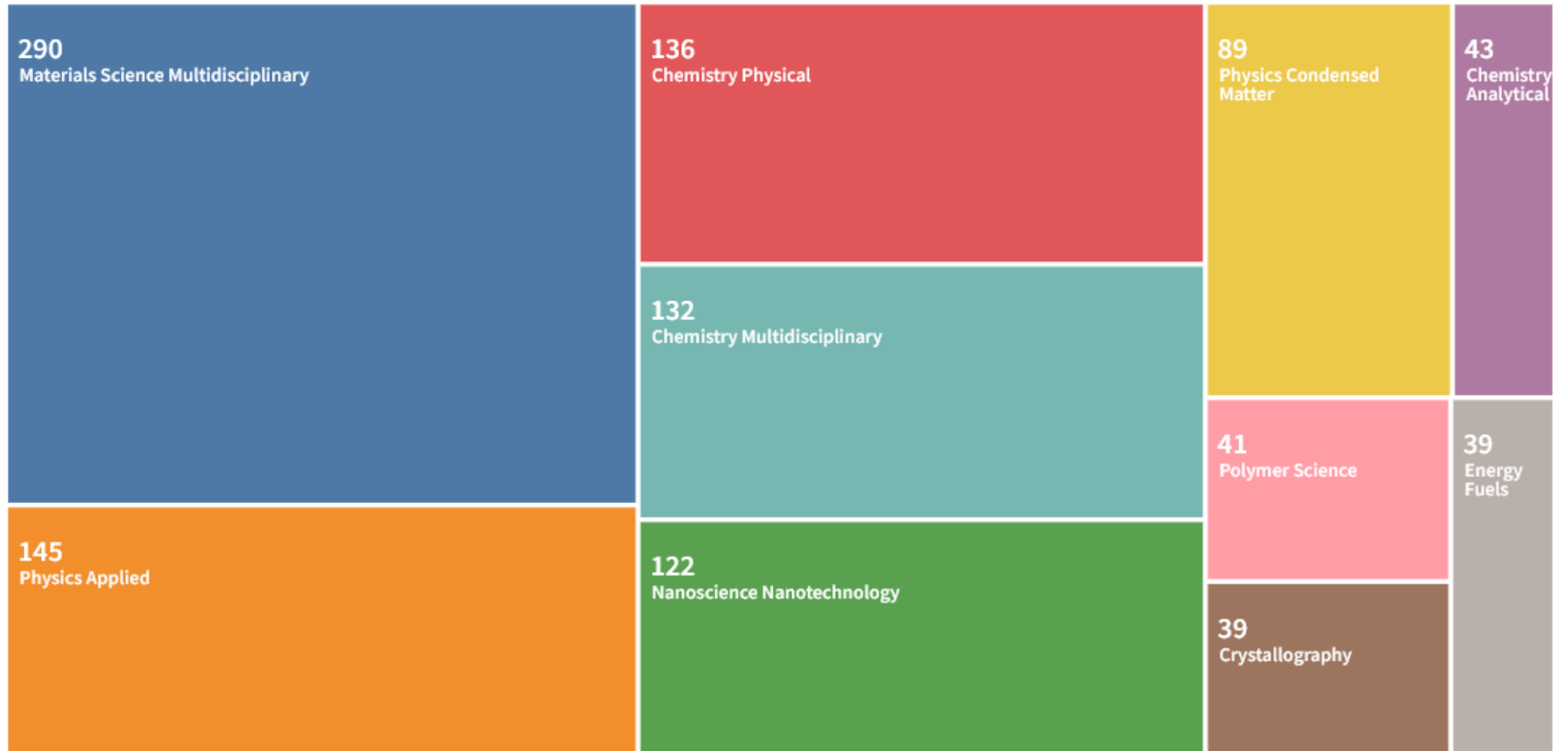
PREM in Numbers & Charts

❑ Since inception (2004), 7 competitions

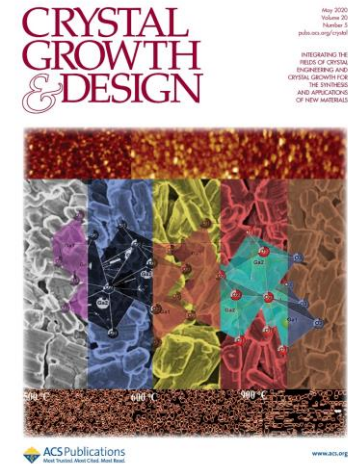
46 full awards + **12** seed funding awards have been made; current full award up to **\$4.2 Million** for **6** years; program trained **150** postdocs, and graduated **600** MS and PhD students, and **1214** BS students; **>70%** of these students are from population currently underrepresented in STEM; **>80%** of these students continued to pursue STEM upon graduation; program produced **>2500** publications and **~5800** presentations.



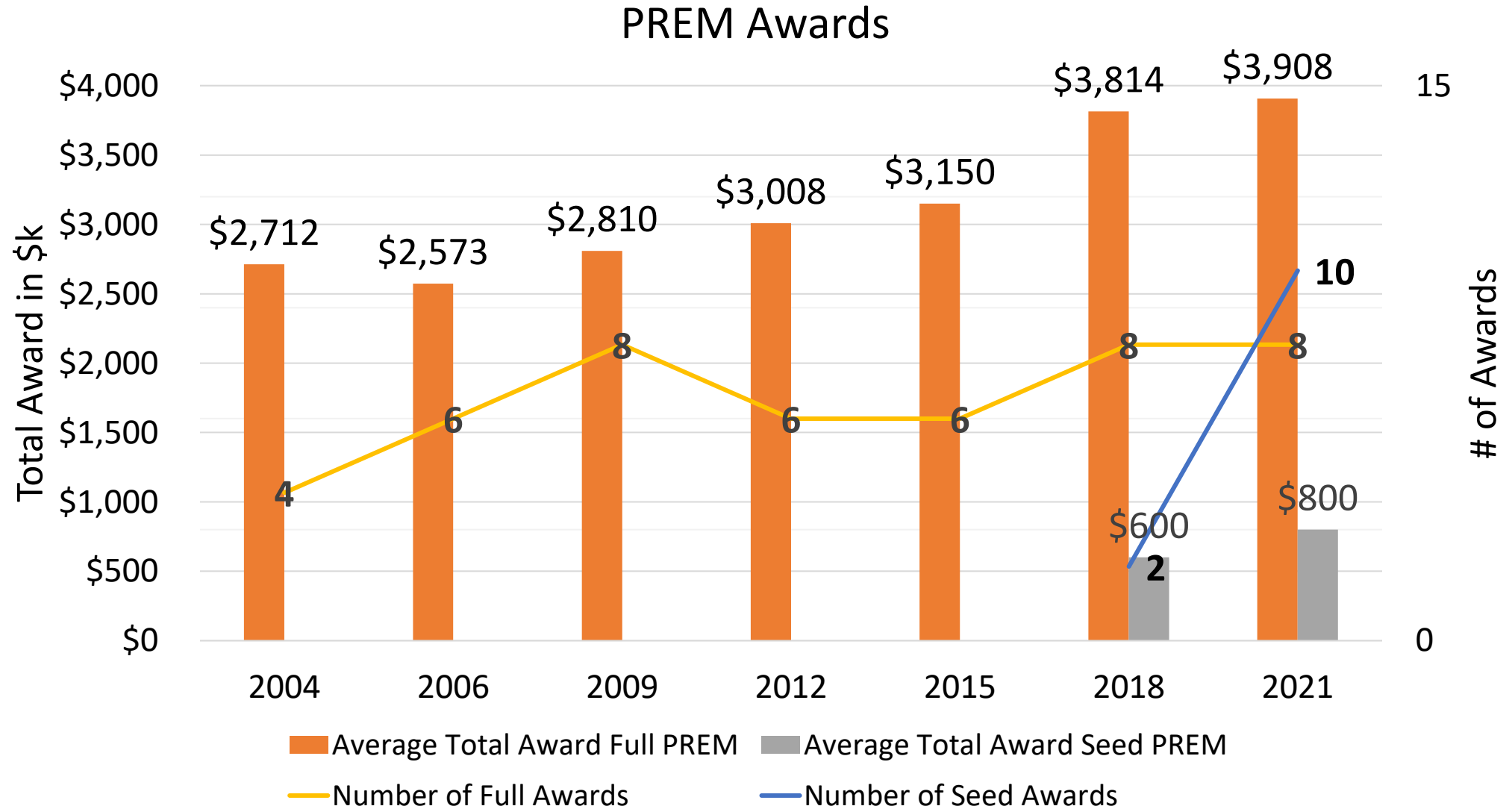
PREM in Numbers & Charts



Publications from 2022 Active PREMs



PREM in Numbers & Charts



UPR Humacao - UPenn

From “Experimenta con PREM” to Graduate School

35% of PREM BS graduates began their research careers in High School with PREM faculty, and 83% have continued graduate studies.

PREM Impact



Sabrina Rosa

Experimenta con PREM 2010
BS Physics, UPRH 2016
PhD Candidate, EE, USF



Gabriel Calderón

Experimenta con PREM 2010
BS Physics, UPRH 2016
PhD Candidate, MSE, OSU



Adriana Santiago

Experimenta con PREM 2011
BS Chemistry, UPRC 2018
Grad Student Bio Chem, PENN



Christian Ortiz

Experimenta con PREM 2012
BS Biology, UPRH 2018
Grad Student Bio Chem, UW-Madison

Navajo Technical U - Harvard

From PREM Seed award (2018) to Full award (2021)

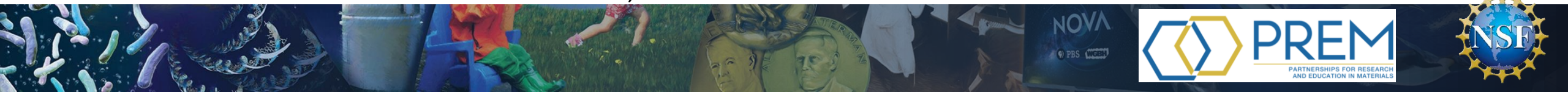
Robinson Tom, Navajo Tech’s first biology program graduate and PREM participant, is now a PhD student in Bioengineering at Harvard.

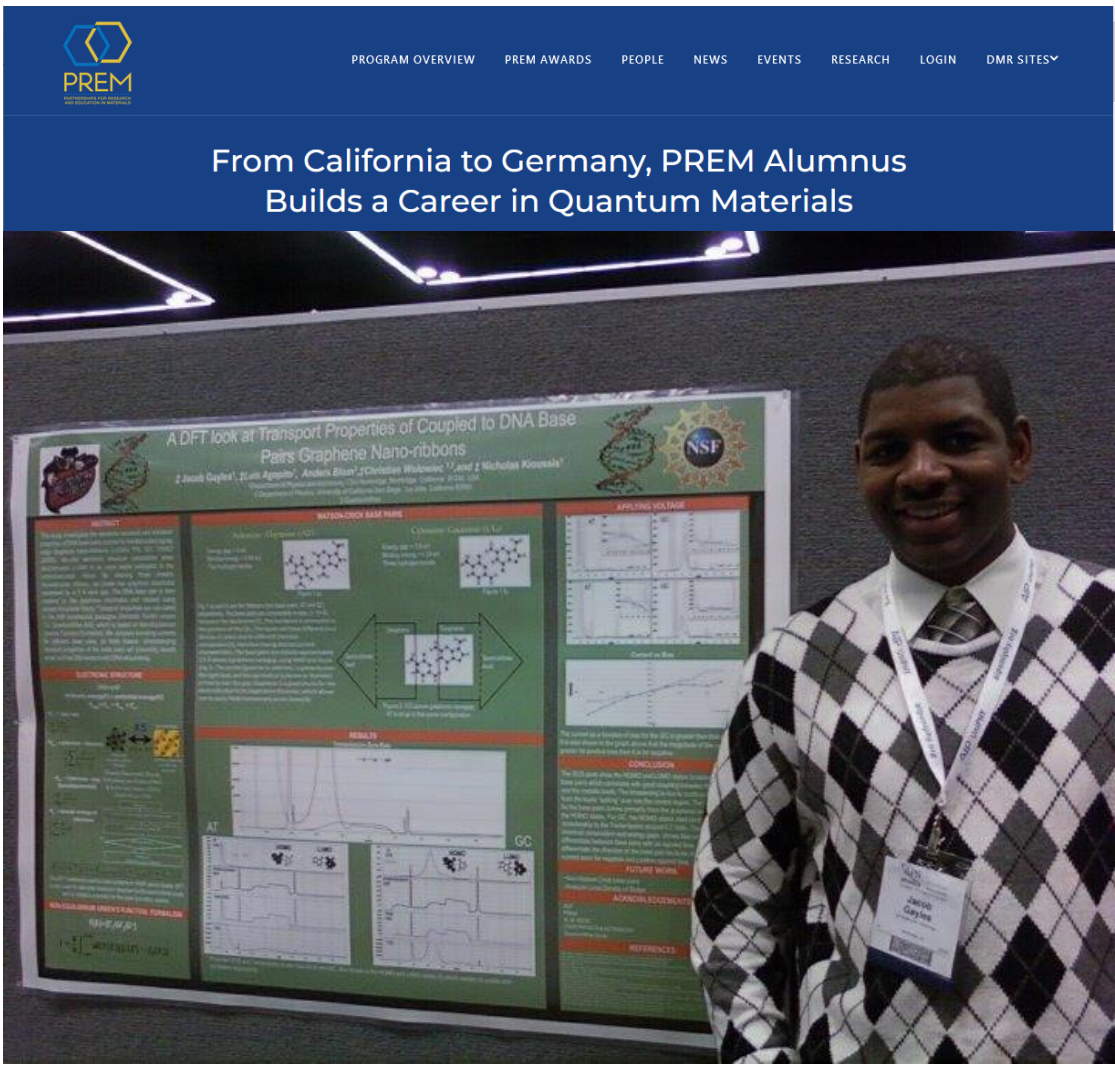
From Crownpoint to Harvard: Navajo Graduate Leads by Serving

By Associated Press | March 1, 2021, at 11:18 a.m.



His project, using microfluidic techniques to develop and screen targeted bio-insecticides, has important applications in the agricultural industry, a key part of the economic development of the Navajo Nation.





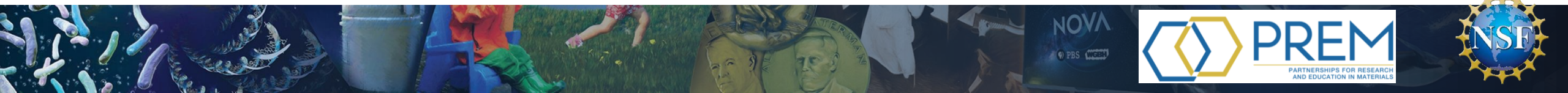
PREM Alumnus Dr. Jacob Gayles, Assistant Professor, Dept. of Physics, University of South Florida

PREM at University of Texas Rio Grande Valley (UTRGV)



The University of Texas Rio Grande Valley **Enhance recruitment, retention, graduation and graduate school matriculation through a strategic combination of cutting-edge nanofiber related research and professional development opportunities** UNIVERSITY OF MINNESOTA

UTRGV is poised to inaugurate its first PhD program in the College of Engineering and Computer Science in the field of Materials Science and Engineering



PREM Summary

- ❑ An established program with a proven track record
- ❑ Impact at a local and national level
- ❑ Increased funding allocation over time
- ❑ Model for emerging programs (e.g., PREP, PREC) addressing DEIA in STEM

