

2022-2023 "Catch them young for Materials"-Highschool Students and Community College Outreach activity

Submitted by University of Texas at El Paso

Proposal Categories:

Funding Type: Total Project Support

1. THE MRS FOUNDATION SHOULD SUPPORT

"Catch them young for Materials" and Material seminar series by the MRS chapter of the University of Texas at El Paso (UTEP)

2. WHAT IS THE PURPOSE OF THE PROJECT

The proposed outreach programs aim for early engagement with young minds in the region (high school students) and excite them towards material-focused topics in STEM. Through this outreach program, we will introduce the exciting chemistry and material science education opportunities at UTEP and present the activities of MRS to the local community. Early engagement and exposure can help them understand the opportunities materials research and education can provide and potentially drive the students to pursue STEM careers. The MRS student chapter at the University of Texas at El Paso (UTEP), which is a Hispanic-serving institute (>85% Hispanic students), would like to organize outreach events, which include small workshops and seminars that focus on undergraduate and high school students in collaboration with the Chemistry and MASE Departments. In our proposed plan, we will coordinate a day workshop and invite 70 students composed of high school (from Horizon High School, Eastwood High School, and Franklin High School) and UG (from EPCC) students to UTEP to experience hands-on science activities, participate in laboratory tours, and interact with current graduate students in chemistry, physics, and materials-related fields, and attend organized seminars from eminent researchers in the field. Further, we will provide students with information about possible research opportunities at UTEP, other universities (New Mexico State University, New Mexico Highland University), and national laboratories (such as Los Alamos National Laboratory and Sandia National Laboratory) in the area. External experts will be invited to give seminars, engage with the students and further excite them towards materials research. The MRS retains a great relationship with the above schools and those leading STEM courses and programs, who are enthusiastic about the programs and the benefit it brings to the students.

3. THE PROJECT LEAD(S) IS (ARE)

Names removed for sample

4. THE TARGET AUDIENCE FOR THIS PROJECT IS:

The event would focus on the underrepresented Hispanic student population from high schools and community colleges with limited financial resources in the El Paso region that are given limited exposure to STEM fields and would introduce these students to research opportunities, higher education, and potential careers in chemistry, physics, and materials science.

5. WHAT IS THE INTENDED OUTCOME OF THE PROJECT?

To expose students from underrepresented high schools and community colleges to chemistry and materials-based research at a tier-1 research institution and get them interested in the chemistry, physics, and materials research through hands-on activities (such as 3D printing, energy harvesting, and storage, fuel cells, materials synthesis, exposure to advanced characterization facilities, etc.) in our laboratories as well as core facility tours. The interaction with scientists will help them better understand the opportunities and get inspired to pursue a career in STEM-related areas. We will also provide information about opportunities at UTEP and other universities in the area, specifically for high school and community college students, as discussed above.

6. HOW WILL THIS PROJECT/PROGRAM BENEFIT THE MATERIALS COMMUNITY?

By introducing underrepresented Hispanic students to chemistry, physics, and materials research at an early stage, we hope to increase diversity in the future materials community. We believe that involving students in a research environment and interacting with potential role models is ideal for inspiring students to get them excited about materials research.

7. DOES MRS OR ANYONE ELSE OFFER A SIMILAR PROGRAM?

To our knowledge, similar programs are not offered in the region. A high proportion of the Hispanic students in this region are first-generation, and many come from low-income families. El Paso is the fifth poorest city in the area. As UTEP is geometrically isolated, students receive minimal exposure to the STEM activities and research developments happening in the rest of the country. Therefore, we firmly believe our program can yield maximum benefit through the research infrastructure available in UTEP to provide a truly hands-on experience to engage the students.

It is imperative to provide an in-depth and personal experience of the work and facilities in material research, particularly at UTEP. Many students from area high schools apply and are accepted to UTEP. Moreover, UTEP is a commuter campus, meaning students from all over the county and bordering city of Ciudad Juarez (Mexico) commute to the university to receive their education. This is why it is critical and beneficial to reach out to future students exposing them to the vast options and opportunities our university and the Material Research Society provide for material science education. At the same time, we would get students in different departments (i.e., chemistry and engineering) involved with the outreach. By having UTEP students from both departments participate together, we hope to build a bridge of communication among the students performing research in materials. Most importantly, this will increase the prominence of the MRS University Chapter here at UTEP by getting students involved. This outreach program will not only be beneficial in creating interest for the high school students to pursue an education in materials but will also spearhead collaborative thinking amongst students who are studying and performing research in materials and for those involved in this university chapter.

8. WHAT IS NEEDED FOR THIS EFFORT?

Funds are requested to cover travel and housing expenses for the seminar speakers, lunch for the participants, and supplies for the event.

9. WHAT IS THE BUDGET FOR THE PROJECT (ITEMIZE IF POSSIBLE)?

\$1000: to cover the travel expenses of the invited speaker
\$650: lunch for participants and volunteers
\$250: supplies for science activities and advertising supplies

10. HOW MUCH ARE YOU REQUESTING FROM THE MRS FOUNDATION?

A total amount of \$1900 *Note - funded at \$1,000 per guidelines

11. IS THIS TOTAL FUNDING, SEED MONEY OR MATCHING FUNDS?

Total Funding

12. IF SEED MONEY OR MATCHING FUNDS, PLEASE PROVIDE ADDITIONAL DETAILS.

N/A

13. DO YOU REQUIRE ASSISTANCE FROM A MRS OPERATING COMMITTEE?

No

14. DO YOU REQUIRE ASSISTANCE FROM MRS HEADQUARTERS STAFF?

No

15. PROVIDE A BRIEF EXECUTIVE SUMMARY OF THE PROPOSED PROJECT/PROGRAM

Deliverables:

"At UTEP, students will learn 3D printing, energy harvesting and storage, fuel cells, materials synthesis, exposure to advanced characterization facilities, etc., and the importance of creativity in scientific problem-solving.

"Students will learn the importance of nanomaterials, additive manufacturing, sustainable energy technologies, etc.

"Researchers and staff at UTEP will have the opportunity to share their facility resources and personal expertise with a new, younger, demographic

"High school and community college student participants will be exposed to cutting-edge research in Chemistry and materials science research during the campus lab tours

"Learn from potential role models the opportunities that the materials community provides, potential pathways for future college studies and STEM careers, and also receive resources on research opportunities for high school students

"The event will promote diversity and inclusion in the STEM field by targeting participation from underrepresented groups, which is particularly true in the El Paso region, comprised of 85% Hispanic population

"Graduate student volunteers will gain experience in mentoring a younger generation of scientists and describing their research to a general audience through peer coaching.