CfHEDS: Physical Sciences

Plasma Physics and Chemistry

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Project Period

October 01, 2018 -
September 30, 2021

Topics

Physics
High Energy Density Science

Colleges/Universities

Florida A&M University
UC Merced
Morehouse College

Labs/Plants

Lawrence Livermore
National Laboratory

National Nuclear Security Administration

Lawrence Livermore National Laboratory

Vision

CfHEDS (Consortium for High Energy Density Science) will be a pipeline to NNSA National Laboratories and the national STEM workforce, for significant numbers of well-trained students and scientists, from three minority-serving institutions (MSIs). The students and scientists will be a valuable asset to the NNSA Laboratories and the national STEM workforce in High Energy Density Science as a result of CfHEDS having improved scientific, educational and research capacity at the MSIs.

Mission

The mission of CfHEDS is to sustain and improve the workforce pipeline to NNSA National Laboratories by: (1) continuing to increase the number of students interested in science; (2) by developing new scientists; and (3) by building improved scientific educational and research capacity. This is being accomplished at three minority-serving institutions, enabling them to develop scientists who are well prepared to work in the NNSA-critical field of High Energy Density Science (HEDS), a key part of the target area of nuclear security and nuclear science. These technical efforts will create a strong, sustainable collaboration between the academic partners and LLNL, by providing opportunities for students and faculty from these institutions to participate in collaborative research, and have access to LLNL's world-class HED research facilities.

Primary Objectives

1. Enhance educational opportunities in HED science by developing and making available an enhanced HED science curriculum for all partner institutions. The curriculum is part of an overall international effort to develop a standardized set of courses and have those courses taught by subject matter experts from around the world. Students from FAMU, UC Merced and Morehouse College are benefiting from a variety of courses, taught by their own faculty, as well as faculty at other universities and national laboratories.

2. Expand research collaborations in HED science between LLNL scientists and faculty and students at partnering MSIs, providing hands-on research experiences in world-class research facilities. Students are participating in LLNL's HED science summer internship programs and participating in HED research projects that are relevant to the NNSA mission. Additionally, graduate students are also receiving guidance regarding how they can propose their PhD and M.S. thesis research at LLNL, and postdoctoral students and faculty are receiving guidance regarding how they can request access to NIF and JLF.

3. Increase awareness of research careers in HED science for our nation's future workforce. CfHEDS is conducting outreach to students at the campuses associated with the Consortium. For example, we are hosting colloquia that explore HED science, as well as career opportunities at National Labs. We have also developed initiatives aimed at preparing undergraduate students from Morehouse, FAMU, and UC Merced to pursue doctoral degrees with an HED science emphasis at FAMU or UC Merced.

LLNL-BR-813600

Portions of this work were performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract No.DE-AC52-07NA27344.