Publicly Releasable Abstract
Dr. Kimberly Jacoby Morris
Science, Technology, Engineering and Mathematics (STEM) Program

Advanced Materials Training for Augmenting Air Force Infrastructure Resilience

The United States Air Force (USAF) must remain flexible, continually adapting itself to current and future threats. With hundreds of billions of dollars of human, air, ground, and space assets under its charge, USAF needs to maintain the effectiveness and lethality of all structures, equipment, and personnel in any threat environment. Irregular weather events attributed to climate change have proven costly. All USAF assets must maintain their combat readiness and capabilities, even during extreme weather events. In 2018, Hurricane Michael devastated Tyndall Air Force Base in Florida, destroying the entire installation. A complete rebuild and refit has been underway since 2018, costing billions of dollars and reducing the base's combat readiness to zero. It is through deliberate and strategic investments in USAF STEM education, outreach and workforce initiatives, that the USAF will have the workforce to meet challenges, while advancing and maintaining our technological superiority. Improving resilience requires the challenges be addressed using interdisciplinary and collaborative efforts to co-produce the science and engineering knowledge to develop targeted and tailored solutions to individual installations. The proposed program narrows its focus to key USAF subjects related to Engineering (AFOSR/RTA1) and Chemistry and Biological Systems (AFOSR/RTB2). The participants will include high school students and undergraduate university students, primarily from underserved minority groups in south Florida. The proposed activities will include lectures, laboratory hands-on activities, and fun competitions related to the above Air Force relevant technical areas. Participants will engage in science rich activities, and develop critical thinking, teamwork, and career development skills, necessary for a well-rounded Air Force STEM workforce.