

By leveraging strategic partnerships with the U.S. Department of Defense and Department of Energy, the University at Buffalo is leading the nation into a new era, creating sources of renewable energy to boost production, bolstering national security through AI and pioneering tech to expand the bounds of space exploration.

UB's Expertise in Defense and Energy



Partnering with the Department of Defense to bolster cybersecurity

SECURING AI MODELS

UB researchers will serve as members of an \$1.8 million initiative to secure the U.S. Department of

Defense's most critical artificial intelligence models while also accelerating the technology's commercialization in the private sector. This collaborative work is part of an effort by the Air Force Research Laboratory (AFRL) and AFWERX to use AI detection and response to manage critical issues in the Department of Defense.



U.S. Space Force solar power project taps UB engineers

INNOVATION TO WITHSTAND EXTREME CONDITIONS

UB engineers, in collaboration with the Rochester Institute of Technology

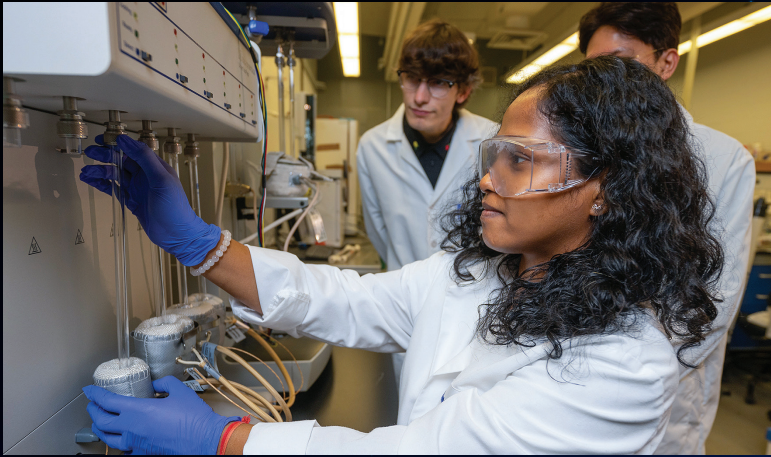
and private industry, helps the federal government develop new solar power technologies for satellites and other space-based vehicles. The work is being funded by a \$9.9 million grant from the U.S. Space Force, in partnership with the Air Force Research Laboratory. This work will improve communication coverage, national security, navigation, weather monitoring and many other space-based services, in addition to supporting basic research in the solar system.



Developing Earth's thinnest materials for space tech

U.S. AIR FORCE CHOOSES UB

The U.S. Air Force has chosen UB to lead an international effort to leverage the thinnest materials on Earth into space technology. Funded by a \$2.4 million grant from the Air Force Office of Scientific Research (AFOSR), the team aims to design and discover 2D materials that consist of just a single layer of atoms and are incredibly strong and highly conductive. With the support of Department of Defense research scientists, UB researchers will apply these materials to space applications, from satellite sensors to cosmic radiation shields.



Creating industrial membranes to reduce energy, production costs

REDUCING GREENHOUSE EMISSIONS IN THE SUPPLY CHAIN

UB researchers were awarded \$3 million to develop new membrane technology to reduce the amount of energy needed to produce pharmaceuticals, chemicals, food and other products. Funded by the U.S. Department of Energy, the membranes could reduce production costs and greenhouse gas emissions, which could make everyday goods more affordable and lessen their environmental impact.



Center for Embodied Autonomy and Robotics (CEAR)

BUILDING SAFE AUTONOMOUS VEHICLES

With the support of Moog Inc, a global design manufacturer and integrator of precision control components and systems, UB researchers will work to develop a method to give autonomous excavation vehicles 360-degree visibility. By developing guaranteed recognition, correct follow-through on certain tasks

and safety for these excavators, entire industries like construction and mining could be transformed.



Developing the world's highest-performing superconducting wire segment

REVOLUTIONIZING THE ELECTRIC GRID

UB researchers have developed the world's highest-performing HTS wire segment while making the price-performance metric significantly more favorable. The technology's ability to carry electricity without resistance

at higher temperatures than required by traditional superconductors could revolutionize the electric grid and even enable commercial nuclear fusion.