Newly opened Applied Research Building marks a 'substantial leap forward' in scientific research

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The University of Arizona celebrated the grand opening of the Applied Research Building on Wednesday, April 5. The new facility will support the work of faculty, staff and students from several colleges, departments, institutes and centers in developing innovations in space exploration and advanced manufacturing. The Arizona Space Institute will also be headquartered in the building.

The Applied Research Building is an integral part of the University’s effort to stay at the cutting edge of the Fourth Industrial Revolution, President Robert C. Robbins said at the grand opening of the new facility.

Robbins delivered remarks alongside Elizabeth "Betsy" Cantwell, senior vice president for research and innovation, Tim Swindle, director of the Arizona Space Institute, and Peter Dourlein, University architect and associate vice president for planning, design and construction.

"You can't translate research into applied science without an investment in fundamental discovery," Robbins said. "I thank Dr. Cantwell and everyone that works with her for providing the framework to support our faculty, staff and students in that fundamental discovery and translate those discoveries into commercial products that make the world a better place."

The Applied Research Building represents "a substantial leap forward" in the University's ability to conduct and advance scientific research with an interdisciplinary approach, Cantwell said.

"Every square inch of the Applied Research Building is designed to enable real-world, applied innovations," she said. "This building and the people housed here will provide regionally unique capabilities for the University, allow for expansion of industry and advanced manufacturing partnerships, and turn research and discovery into practical, real-world solutions that produce societal impact."

Construction on the three-story, 89,000-square-foot building, located at 1420 E. Helen St., began in 2021. ARB was designed by SmithGroup, built by McCarthy Building Cos. and powered by renewable energy as part of an agreement between the University and Tucson Electric Power. TEP supplies power to the University from solar facilities in southeast Tucson and wind power facilities in New Mexico.

The Applied Research Building will serve as a world-class test and integration center for satellites, spacecraft and other scientific equipment, including a 40-ton thermal vacuum chamber used to replicate conditions in outer space that is the largest of its kind at any university in the world. The 81,000-pound chamber allows researchers to simulate both the pressure and temperature conditions of space and is large enough to fit a pickup truck.

Some of the other features of the building are:

A high bay payload assembly area. With cranes named Wilbur and Wilma Wildcat, this 40-foot-high space will be used for assembling, testing and storing high-altitude stratospheric balloons and nanosatellites known as CubeSats. Next door to the area is the Dynamic Testing Lab, where a wide range of objects, from airplane wings to sensors, will be studied.

The CubeSat Laboratory. By providing a clean environment for assembly, the lab will help to maximize reliability of space hardware. A CubeSat is about the size of a toaster, though some are only 4 inches across and weigh less than 3 pounds.

An anechoic chamber. This non-reflective, echo-free room is designed to test antennae for command, control and data relay purposes. The chamber is designed to keep radio waves from bouncing, and the conditions of the chamber allow researchers to test the performance of experimental antennae.

The Missions Operations Center. Here, scientists and engineers will monitor and command spacecraft and balloons after launch. Equipped with all the computers, networks and software needed to manage a mission from the ground, the control center will be able to conduct certain mission operations for NASA.

The Space Materials Curation Facility. This is an archive of materials used to study the spectral signatures of artificial and natural objects orbiting the Earth and moon to monitor and enhance space traffic management, national security and planetary defense.

The Imaging Technology Laboratory. This space positions the University as a world-leading supplier of advanced
scientific imaging sensors for visible, ultraviolet and X-ray light detection – and supports industry partnerships with Lockheed Martin, Ball Aerospace and the Smithsonian Astrophysical Observatory. The lab’s federal partners include NASA, the National Science Foundation, the Department of Energy and the Department of Defense.

There is also a laboratory for advanced and additive manufacturing which will allow researchers to design and fabricate complex materials for national security, space exploration, biomedicine and communications applications.

"Infrastructure such as the Applied Research Building is an investment in the future of not only the University of Arizona as one of the nation’s top research institutions, but also an investment in the future of science and technology and of society at large," Cantwell said.

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