

Composite crew module encounters space vacuum

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The Composite Crew Module being rolled into the vacuum chamber at Marshall's Environmental Test Facility. The test will continue through the end of the summer. Credit: NASA/MSFC/Emmett Given

(Phys.org) -- This week, engineers at NASA's Marshall Space Flight Center in Huntsville, Ala., moved a Composite Crew Module (CCM) into the Environmental Test Facility vacuum chamber to gauge how well a space structure fabricated with composite materials will react in a simulated space environment. Data gained during this test series will aid

in the design and development of future in-space composite habitable structures.

During the vacuum test, the chamber is sealed and purged to a level a vehicle would encounter on orbit to evaluate the composite material's integrity. The [crew module](#) is filled with [helium gas](#) to allow engineers to detect any leaks that may occur as pressure increases. Vacuum testing will yield a leak rate for the entire structure, then the team works to repair small leaks that may arise to improve the hardware's performance.



The test team includes members from the Marshall Center; NASA's Langley Research Center in Hampton, Va.; Goddard Space Flight Center in Md.; [Kennedy Space Center](#) in Fla.; and the Boeing Company in

Huntsville. To date, the team has completed ten tests and will continue testing through the end of the summer.

The crew module was designed to test new materials and fabrication techniques that may be used in future [space](#) structures, which will be constructed of both metals and composites. The Composite Crew Module Project is led by NASA's Engineering and Science Center at Langley.



Fabricated at Alliant Techsystems in Iuka, Miss., the CCM was constructed in two parts using a hand layup technique, which combines carbon fiber epoxy and an aluminum honeycomb core. The two parts were joined together and then bonded in a unique process developed at

the Marshall Center for the crew module. The project team is a partnership between NASA and industry and includes design, manufacturing, testing, inspection, and tooling expertise.

Provided by NASA

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