GENESIS

SEARCH FOR ORIGINS

Pieces of the Sun

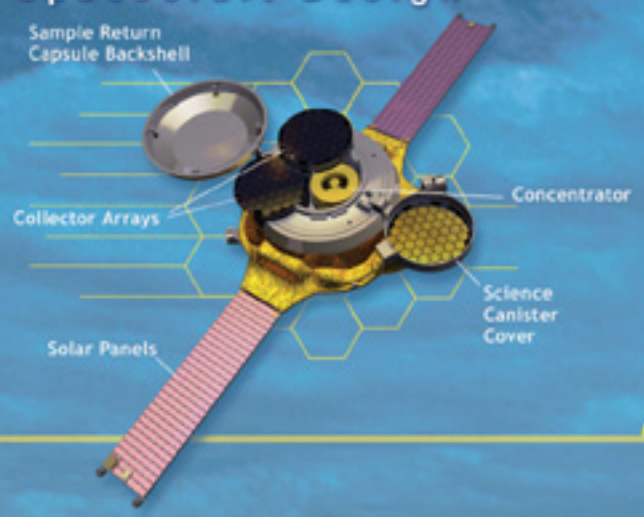
How was the solar system formed? How does life exist on Earth, but not on planets like Venus? These are some of the questions that scientists will try to answer with help from the Genesis mission, launched by the National Aeronautics and Space Administration (NASA) on August 8, 2001.

The Sun contains over 99 percent of the matter that makes up our solar system. With that in mind, scientists believe that pieces of the solar wind resemble the dust, gas, and ice from which the various bodies of our solar system evolved. To better understand the connection between the solar wind and the evolution of our solar system, NASA's Genesis mission set out to capture particles of the solar wind and bring them back for study on Earth.

What is Solar Wind?

While the Sun is mostly made up of hydrogen and helium, studies suggest that there are small amounts of over 60 other elements as well. The exact composition of the Sun is yet to be determined, as is an understanding of how that chemical makeup resulted in the diverse solar system we now know. The scientific theory behind the Genesis mission is that retrieving solar wind particles — pieces of the Sun's outer layer that are the mass of a few grains of sand — and analyzing those samples will give us greater insight into planetary formation and diversity.

Spacecraft Design



The Recovery Process in Slow Motion

Stage 1: Separation

On the morning of September 8, 2004, the Genesis sample return capsule separates from the spacecraft, which will be rerouted to a long-term orbit around the Sun. The sample return capsule, with solar wind particles intact, will continue toward Earth.

Stage 2: Earth Entry

Traveling at a speed of nearly 7 miles (11.3 kilometers) per second, the sample return capsule enters Earth's atmosphere over central Oregon en route to the mid-air retrieval site above the Utah Test and Training Range.