Asteroids: The new 'It mission' for space exploration

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The Japanese are heading back into space on a second attempt to collect samples from a nearby asteroid.

The asteroid selected, 1999 JU3 is a perfect specimen, said Humberto Campins, a University of Central Florida professor and international expert on asteroids and comets.

“Based on our analysis, it should be rich in primitive materials, specifically organic molecules and hydrated minerals from the early days

of our solar system," Campins said. "If successful it could give us clues about the birth of water and life in our world."

Campins has been studying the 1999 JU3 for years. He published an article in 1999 in *Astronomy & Astrophysics* on this asteroid and its potential to hold raw materials and perhaps even evidence of water. It is believed to have come from the asteroid belt located between Mars and Jupiter.

Finding water in asteroids and comets is a major focus of research. NASA and the European Space Agency are both planning trips to recover samples from two asteroids in the next five to seven years through the OSIRIS-REx (NASA) and Marco Polo-R (European Space Agency) missions. Campins is part of both teams.

Since the end of Space Shuttle flights in 2011, robotic missions to collect asteroid samples have become popular. NASA, the European Space Agency and the Japan Aerospace Exploration Agency (JAXA) have all announced missions that could launch as early as 2014.

The samples recovered by these missions could help explain how planets formed, provide information about the origin of organic molecules and life on Earth, and probe the physical structure of an asteroid. Knowing more about the structure of asteroids is important in developing strategies for preventing potentially threatening asteroids from striking earth.

JAXA got into the asteroid lassoing business early. In 2003 it sent off a probe to scoop up a sample from another asteroid near Earth. Although the collection mechanism did not work properly, when the probe returned to earth in 2010 and scientists cracked open the package, they were pleased to find a small amount of asteroidal dust.

Provided by University of Central Florida