

Why did NASA choose Bennu as a model asteroid?

The destination of OSIRIS-REx is the asteroid Bennu whose mission is to find the origin of life as well as the origin of the solar system. But why did NASA choose Bennu as a model asteroid?

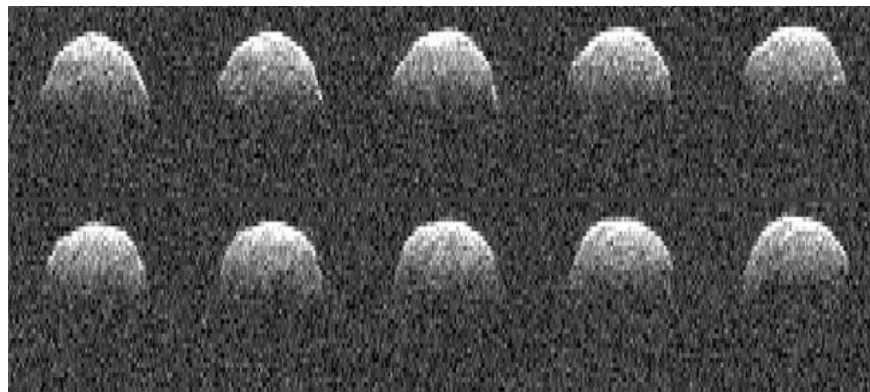
The mission of **OSIRI-Rex** is to bring the specimens taken from **the small planet Bennu** to researchers worldwide, in order to find the origin of life, water and even the origin of the planets. There are thousands of asteroids like Bennu that can meet the mission requirements of OSIRI-Rex, so why did **NASA** choose Bennu as a model asteroid?

What are the special points of the asteroid Bennu?

NASA already has thousands of potential asteroid targets **for the OSIRIS-Rex mission** - expected to be released today (*Thursday, September 8*) from Mui Canaveral Air Station (*Cape Canaveral Air Force Station - CCAFS*). But the agency decided to choose a " *stone universe* " named **Bennu** because in that small planet contained three important " *boxes* ".

" *The size, primitive, carbon-rich composition and orbit of the small planet Bennu make it one of the most attractive and accessible asteroids. That explains why Bennu was chosen as an asteroid. The target for OSIRIS-Rex mission* , " **Christina Richey** - a scientist participating in the OSIRIS-Rex program at NASA headquarters in Washington, DC, said in a press conference on Monday (*September 6*).

The main objective of the **OSIRIS-Rex** mission **worth \$ 800 million** (*abbreviated from Origins - Spectral Interpretation - Resource Identification - Security - Regolith Explorer*) studies the role of asteroids in " *nucleation* " of Fruit. Earth, the origin of life, of water and even the origin of the planets.



NASA's *Deep Space Network* (*Deep Space Network*) in Goldstone, California captured the asteroid Bennu radar images in 1999, when the rock universe was known as " *1999 RQ36* ".Photo: NASA / JPL-Caltech

If everything goes according to plan, **OSIRIS-Rex** will arrive at the asteroid Bennu in August 2018 and two years later will take at least about 60 grams of material of planet Bennu, then bring this specimen to the Left land in September 2023.

" *In all cases, taking the specimen from a planet deep in outer space is complicated, especially when the size of rock in outer space is usually less than 200m or too big. That's because the "A small asteroid has a very fast rotation speed - sometimes spinning so fast that it can knock all materials out of the surface, leaving only a few things left for a probe to pick up,* " said Richey.

" *Moreover, a spacecraft is unlikely to have a rotation speed suitable for a fast-moving object like asteroids. However, the small planet Bennu has a diameter of about 500 meters and a rotation time of only 4 , 3 hours - slow enough for OSIRIS-Rex to be able to retrieve the required samples via a "safe, slow and gentle" touch on the surface* "- **Richey** added.

" *Thanks to the relatively similar orbit of the Earth, adjacent spherical asteroids are quite easily accessible. The small planet Benny completes a rotation around the Sun that takes only 1.2 years and reaches" row Earth's "hamlet" takes only 6 years, and the asteroid's trajectory is tilted about 6 degrees above the Earth, so it's really an optimal choice to approach, spacecraft. go and then come back "in a relatively short time "*, Richey said.

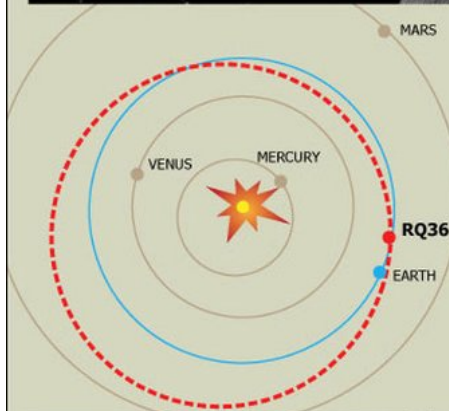
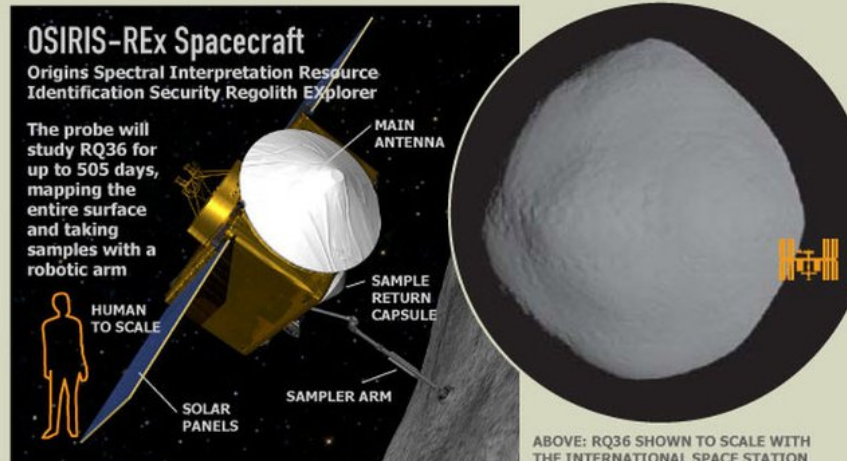
Next is the components in the asteroid Bennu

" *The surface of the small planet Bennu is black and very dark, showing us the concentration of high carbon and organic matter form*" - **Dante Lauretta** - the main researcher of OSIRIS-Rex mission at the University of Arizona has Reply to Space.com last month.

Dante Lauretta also added: " *We are really interested in pristine sampling of the solar system. Planetary models (like Bennu) provide organic and water materials, in the form of mineral hydration. like clay, on the surface of our planet creates a viable place and can those environments lead to the origin of life? "*

Visit to a (Potentially) Dangerous Asteroid

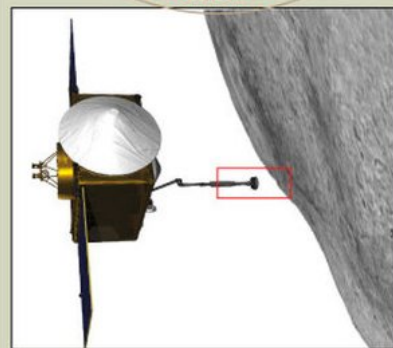
Scheduled for launch in 2016, The OSIRIS-REx probe should intercept asteroid RQ36 in 2020. This asteroid is believed to contain pristine samples of the earliest materials that formed our solar system 4.5 billion years ago. RQ36 also poses a threat to humanity: it has a possibility of colliding with Earth roughly 170 years from now.



Asteroid 1999 RQ36

About 1,837 feet (560 meters) in diameter, RQ36 could cause widespread devastation if it hit the Earth. Astronomers estimate that the asteroid has a possibility of colliding with our planet in the latter half of the 22nd century. The greatest risk – about 1 chance in 1,000 – occurs in the year 2182.

RQ36's orbit (left) takes 436.6 Earth days.



Reaching Out to Grab Space Dust

A robotic arm on the OSIRIS-REx probe will touch the asteroid's surface, gathering about 2 ounces (60 grams) of fine particles. The sample, safe inside a heatproof capsule, will plummet back to Earth in 2023, landing in an empty area of Utah.



SOURCES: NASA, LOCKHEED MARTIN, UNIVERSITY OF ARIZONA

KARL TATE / SPACE.com

NASA is sending a probe to the asteroid Bennu to collect samples from the rock universe and bring them back to Earth. Photo: Karl Tate / SPACE.com

" However, Bennu is not the only asteroid that can meet all the necessary criteria. In fact, the OSIRIS-Rex team has very carefully identified five rounds of choice " - Laurretta said.

" We chose Benu asteroid as the ultimate goal of OSIRIS-Rex because it has all the good features along with radar data and telescope data. We feel really reduced. risk of danger to this mission file "- Laretta spoke at a press conference on Tuesday (September 6).

" The fact that small planet Benu was discovered in 1999, is known to be located near planet Earth but can never be visited by spacecraft, " Richey said.

" The small planet Benu is equipped with some very good external properties. It is classified as an asteroid that is potentially dangerous and has a very small chance that it may fall into the Earth at the end of the century. 22 "- scientists said.

" OSIRIS-Rex's observations allow researchers to refine their understanding of the asteroid Benu's trajectory and threats to the Earth. This task should also identify possibilities. can move to a small planet this way and follow its trajectory "- Laretta added.

A strong force from solar energy that asteroids emit heat, this phenomenon is called **the Yarkovsky effect** .

" When that happens, it will act as a propulsion, altering the asteroid's trajectory. If you want to predict where an object like a small planet Benu will go in the future, you have to study it. save this phenomenon and we will provide the best scientific investigation of this fascinating concept "- Laretta answered **Space.com** in August.

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