

The moon has a life expectancy of about 4.51 billion years - bigger than we think and so does life

Earth's companion - The Moon may have been formed within 60 million years after the solar system was born, and established a new phase for previous evolution of human life. .

Scientists say they have identified the Moon's most accurate life span than ever before, thanks to the rock samples collected by astronauts during NASA's Apollo 14 Program. The analysis of rock samples determined the moon's formation to **4.51 billion years** ago, only 60 million years after the solar system formed.

This proposed age makes the Moon "much *older* " than some recent estimates, indicating that our Moon neighbor has 4.3 or 4.4 billion years of age. If those results are correct, it means that the giant impact that forms the Moon occurs quite early in the history of the solar system. The moon is thought to form from the remnants of a high-speed collision between Earth and a smaller planet-like object called **Theia** - and the time this event takes place is necessary to indicate when life forms on Earth. Our planet will be completely destroyed by the giant impact, so life may not start forming on Earth until after the planet fully formed again in the wake of the affair. collision. So knowing the life of the Moon reveals us a good idea of how Earth started to become a suitable place to survive.



Photo source: Mélanie Barboni

" With the discovery just published in the journal *Science*, the Moon 's age calculation technology , including participating in breaking down the chemical composition of a mineral inside moon samples is called **zircon** " , according to the main research author - Mélanie Barboni. Mineral research among scientists indicates an important event in the formation of the Moon: when it hardens. The great impact created a giant ocean of **ghostly liquid** (*molten rock, usually inside the ghost cavities near the Earth's surface*) eventually merged into the Earth and the Moon. The chemical signs of zircon help scientists estimate when the Moon is " *solid* " - an

important process that is often considered to be the beginning of the Moon's life.

" *However, the results may not be enough to resolve all arguments about the life of the Moon,* " said **Richard Carlson** , director of the *department of terrestrial magnetism (DTM)* at the Carnegie Science Institute. said. Meanwhile, Carlson said Barboni, along with her research team, worked closely together, he had some technical concerns used to analyze zircon, as well as some assumptions made. currently in research. These concerns cannot be left out of the calculation, but they may cause some experts to doubt the results. " *It's just a complex issue they solve here, which is why we still don't have a clear answer to an obvious question about the life of the Moon,* " Carlson said. *The Verge* newspaper page.



The surface image of the Moon was taken in the Apollo 14. Program Image source: NASA

Zircon is said to be a valuable tool for " *dating rock* " - the Moon's age calculation method here on Earth. Zircon is a stone that is crystallized from ghosts and remains relatively unchanged over millions, billions of years. Zircon also crystallizes together when the Moon is still active, the magma from inside the Moon erupts onto the surface, which gradually cools and crystallizes into zircon. " *This mineral is only a king when you learn about any process, because it is surprisingly powerful and is not much affected by change or shock,* " said Barboni, research assistant in his department. Earth, planet and space science at the University of California in Los

Angeles said .

Zircon completely soluble in acid

The technology used to analyze these Moon samples, however, is thought to be less dangerous because it is completely related to dissolving zircon in acid. " *This is the first time zircon has completely failed to appear* ," Barboni said. " *Of course, zircon is very precious, so no one really wants to do it* ." But Barboni's colleagues at the University of California in Los Angeles finally decided to trust her and provide them with the necessary acid solutions.

Through this process, Barboni can extract four main elements from zircon. The first pair of elements is **uranium** and **lead** . Uranium or Uurai is a radioactive element that can be converted into lead for a long time. It is a transition that occurs at a specific rate, so scientists can use the ratio of these elements to zircon to determine the lifespan of those stones. However, " *dating* " when formed does not help to see the panorama, because the Moon is much older when zircon crystallizes on the moon's surface.



Barboni scientist with zircon Moon. Photo source: Carolyn Crow

That's why Barboni measures other key pairs: lutetium (lutetium) and hafnium (hafnium). When the Moon shows, its material is separated into a thin inner shell surrounded by an outer shell and that process changes the proportions of lutetium and hafnium in different areas of the Moon. . The ratio of these factors provides clues when different processes take place, returning after zircon is still a ghost.

However, Carlson said the study is based on the assumption that the proportions of lutetium and hafnium should be similar during the early solar system formation, which may slightly change dating estimates. In addition, Carlson is concerned that the acid dissolution process may not capture an accurate way of luteti / hafni ratios in zircon. It will not be enough to cause doubts about the findings, but it may lead to some questions about the research results. " *New data is a huge step forward in previous studies,* " Carlson said. " *My concern is that people are familiar with topics and approaches .* "

Barboni said: " *The timing of the actual impact is very early, and this allows the Earth to be eligible for much earlier development .* " This finding coincides with related studies showing that the early Earth was better suited to life than previously thought, and it is possible that potential life has been around for a long time compared to thinking. before - at least 4.1 billion years ago. If that is the case, then the huge impact then occurs earlier than the first appearance of life. In that way, the Earth has more time to form than the planet, as well as creating favorable conditions for life to thrive. " *The evolution of the Earth may only begin after an impact. That's why it is important to make this impact when you want to know when the Earth begins to develop beautiful planets - but we know now,* " Barboni said.

Refer to some more articles:

1. The interesting fact about the universe is not quite the same as what we thought
2. Top 10 interesting facts about the Moon you may not know
3. Full Moon facts - Full moon you may not know yet

Having fun!

You finished reading the article "**The moon has a life expectancy of about 4.51 billion years - bigger than we think and so does life**" edited by the [TipsMake](#) team. We hope this article has provided you with many useful tech tips and tricks. You can search for similar articles on tips and guides. Thank you for reading and for following us regularly.