



# Moon May Be 40 Million Years Older Than Previously Thought

[Source: IE](#)

## Why in News?

A new study appears to show that the moon is about **40 million years older than previously thought**. This finding, based on lunar dust collected in 1972 as part of the Apollo 17 mission, has implications for our understanding of the solar system's history.

- Apollo 17, for now, is the **last human expedition to the moon** making astronauts **Eugene Cernan and Harrison Schmitt** the last men to walk on the moon.

## What are the Key Highlights of the Study?

- **Lunar Age Reevaluation:**
  - The study reveals that the Moon is around 40 million years older than the **previous estimate of 4.425 billion years**.
    - Its formation is now believed to date back around **4.46 billion years**, aligning it closely with the early history of our solar system.
- **Atom Probe Tomography (APT):**
  - The researchers employed a cutting-edge technique called APT to analyze lunar samples at a nanoscale level.
    - APT allowed for a more precise examination of lead clustering in **zircon crystals**, which in turn aided in dating the Moon's age.
- **Role of Zircon Crystals:**
  - The scientists reanalyzed crystals from lunar sample 72255, which was known to contain 4.2 billion-year-old zircon.
    - **Zircon is the oldest mineral known to exist on Earth** and, as such, geologists say, it holds vital information about planetary formation, including the Moon's creation.
- **Giant Impact Hypothesis:**
  - The findings support the giant impact hypothesis, suggesting that a huge object called Theia, possibly the size of Mars, collided with Earth during its formation, leading to the Moon's creation.
    - The study aligns with the theory of a Lunar Magma Ocean, explaining the Moon's internal composition.
- **Earth-Moon Age Comparison:**
  - The Earth is estimated to be between **4.5 and 4.6 billion years old**. That makes the moon only a **fraction younger, at 4.46 billion years old**.
  - This comparison contributes to a deeper understanding of the early history of our solar system and the Earth-moon relationship.

## Zircon Dating:

- Zircon incorporates **uranium at the time it crystallizes**, which over time decays to **lead**. By

using a very sensitive measuring device the amounts of **uranium and lead in zircon can be determined.**

- It is then a simple calculation to determine how much time has passed as the lead formed from the uranium decay.

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