



Early Origins of Water: Surprising Discovery Challenges Understanding

Description

New research suggests that water, essential for life, may have formed just 100 million years after the Big Bang. Scientists recreated explosions of early stars and found that the means to make water were already present. The first stars were made of hydrogen and helium, and their explosive deaths released oxygen into the Universe. These early stars were hard to detect, but new data may have revealed evidence of them. In the aftermath of the star explosions, gases cooled and oxygen collided with hydrogen, creating water. These denser regions of supernova leftovers could also be the birthplaces of future stars and planets. Scientists believe that these early galaxies may have produced almost as much water as our galaxy today, showing that this crucial ingredient for life was abundant in the past. The research was published in Nature Astronomy.

Vocabulary List:

1. **Essential** /ɪˈsɛnʃəl/ (adjective): Absolutely necessary; extremely important.
2. **Explosions** /ɪkˈsplɒʒənz/ (noun): Sudden and violent releases of energy and matter.
3. **Abundant** /əˈbʌndənt/ (adjective): Existing or available in large quantities; plentiful.
4. **Evidence** /ˈeɪdəns/ (noun): The available body of facts or information indicating whether a belief or proposition is true or valid.
5. **Supernova** /ˈsuːpər,nɒʊvə/ (noun): A star that explodes at the end of its life cycle resulting in a sudden increase in brightness.
6. **Aftermath** /ˈæftər,mæθ/ (noun): The period immediately following a significant event especially a destructive one.

Comprehension Questions

Multiple Choice

1. What is the estimated time frame for when water, essential for life, may have formed according to the new research?

- Option: 500 million years after the Big Bang
- Option: 100 million years after the Big Bang
- Option: 1 billion years after the Big Bang



Option: 200 million years after the Big Bang

2. What were the first stars made of according to the text?

Option: Oxygen and Carbon

Option: Nitrogen and Oxygen

Option: Hydrogen and Helium

Option: Iron and Nickel

3. Which scientific journal published the research on the formation of water after the Big Bang?

Option: Science

Option: Nature Astronomy

Option: Journal of Astrophysics

Option: Scientific American

4. What is believed to have happened in the aftermath of the explosions of early stars?

Option: Formation of new galaxies

Option: Collision of oxygen with hydrogen to create water

Option: Decrease in overall temperature of the Universe

Option: Formation of new planets

5. What is proposed to be the potential birthplaces of future stars and planets in the text?

Option: Supernova explosions

Option: Denser regions of supernova leftovers

Option: Black holes

Option: Interstellar dust clouds

6. How abundant is the research suggesting water was in early galaxies compared to our galaxy today?

Option: More abundant in early galaxies

Option: Less abundant in early galaxies

Option: Equally abundant in early galaxies

Option: Abundance was not compared

True-False

7. Water may have formed just 100 million years after the Big Bang according to the text.

8. The first stars were primarily composed of oxygen and nitrogen according to the text.



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9. New data has not yet revealed evidence of the early stars mentioned in the text.
10. The explosive deaths of the first stars released oxygen into the Universe.
11. Supernova leftovers could serve as potential birthplaces for future stars and planets according to the text.
12. The research suggests that early galaxies may have produced significantly less water than our galaxy today.

Gap-Fill

13. According to the text, the first stars were made of hydrogen and helium, and their explosive deaths released _____ into the Universe.
14. Scientists believe that the denser regions of supernova leftovers could be the potential birthplaces of future stars and _____.
15. Water, essential for life, may have formed just _____ years after the Big Bang according to new research.
16. The early galaxies may have produced almost as much water as our galaxy today, showing that this crucial ingredient for life was abundant in the _____.
17. In the aftermath of the star explosions, oxygen collided with hydrogen, creating _____.
18. The research on the formation of water after the Big Bang was published in _____
- Astronomy.

Answer

Multiple Choice: 1. 100 million years after the Big Bang 2. Hydrogen and Helium 3. Nature Astronomy 4. Collision of oxygen with hydrogen to create water 5. Denser regions of supernova leftovers 6. Equally abundant in early galaxies



True-False: 7. True 8. False 9. False 10. True 11. True 12. False

Gap-Fill: 13. oxygen 14. planets 15. 100 million 16. past 17. water 18. Nature

Vocabulary quizzes

Multiple Choice (Select the Correct answer for each question.)

1. What is a compulsive need for and use of a habit-forming substance called?
Option: Dependency
Option: Leisure
Option: Excitement
Option: Responsibility
2. Which term describes the act of unfairly branding someone as disgraceful or unworthy?
Option: Celebratory
Option: Supportive
Option: Discriminatory
Option: Genuine
3. What word best describes something that is plentiful or in large quantities?
Option: Thirsty
Option: Sparse
Option: Rare
Option: Plentiful
4. Which term describes something that is clearly seen or understood?
Option: Hidden
Option: Suspected
Option: Concealed
Option: Clear
5. What is the chemical process that involves the loss of electrons?
Option: Reduction
Option: Distillation
Option: Filtration
Option: Oxidation
6. What is the explosive death of a massive star called?
Option: Black Hole
Option: Nova



Option: Supernova

Option: Pulsar

7. What scientific technique is used to view objects that are too small to be seen by the naked eye?

Option: X-ray

Option: Sonar

Option: Microscopy

Option: Spectroscopy

8. Which term describes substances that contain carbon and are found in living organisms?

Option: Artificial

Option: Inorganic

Option: Chemical

Option: Organic

9. What refers to a relationship in which a person thing or idea is linked or associated with something else?

Option: Division

Option: Isolation

Option: Connection

Option: Fragmentation

10. Which term refers to the ability to comprehend or have an awareness of something?

Option: Confusion

Option: Ignorance

Option: Understanding

Option: Indifference

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

11. In the study _____ were asked to provide feedback on the new program.

12. Regular exercise is important for maintaining good _____ .

13. She enjoys _____ with friends on the weekends.

14. The volcanic _____ was visible from miles away.

15. The _____ of the situation made it difficult to make a decision.

16. As the team leader she was _____ for the project's success.



17. The development of new technology has the power to _____ industries.
18. The community came together to help in the _____ of the natural disaster.
19. Always be _____ when handling chemicals in the laboratory.
20. The team spent hours _____ the data to draw meaningful conclusions.
21. The artist specializes in _____ glass to create unique sculptures.

Matching Sentences (Match each definition to the correct word from the vocabulary list.)

22. The fireworks display was accompanied by colorful bursts of light and loud bangs.
23. Water is for all forms of life to survive.
24. The fingerprints found at the crime scene provided crucial for the investigation.
25. is a mineral that can trap contaminants in water.
26. Turning 18 years old is often seen as the beginning of .
27. The study included various from different age groups.
28. Meaningful can enhance relationships and foster understanding.
29. DNA analysis provided compelling linking the suspect to the crime.
30. The volcanic caused disruptions to air travel in the region.
31. The sunset painted the sky in a beautiful hue.

Answer

Multiple Choice: 1. Dependency 2. Discriminatory 3. Plentiful 4. Clear 5. Oxidation 6. Supernova 7. Microscopy 8. Organic 9. Connection 10. Understanding

Gap-Fill: 11. participants 12. wellbeing 13. socializing 14. eruption 15. uncertainty 16. responsible 17. transform 18. aftermath 19. cautious 20. analyzing 21. vitrifying

Matching sentence: 1. explosions 2. essential 3. evidence 4. Ferrihydrite 5. adulthood 6. participants 7. conversations 8. evidence 9. eruption 10. reddish



CATEGORY

1. Health - LEVEL2

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