



Young Star Surrounded by Mysterious Carbon Treasure Trove Uncovered by Webb Telescope

Description

An international team of astronomers, using NASA's James Webb Space Telescope, has made a groundbreaking discovery in exoplanetary chemistry. They studied the protoplanetary disk around a young, very low-mass star known as ISO-Chal 147 and found a rich variety of carbon molecules, suggesting a unique planet-forming environment. This discovery could lead to the creation of carbon-poor planets orbiting such stars.

Rocky planets are more likely to form around low-mass stars, making them the most common planets in our galaxy. By studying these disks, scientists hope to better understand the planet formation process and the potential compositions of resulting planets. The team used Webb's unique capabilities to observe the largest number of carbon-containing molecules in such a disk to date.

The study revealed 13 different carbon-bearing molecules in the protoplanetary disk, including ethane, ethylene, propyne, and the methyl radical CH₃. These molecules, commonly found in our solar system, were detected outside our solar system for the first time. The findings suggest a different planet-forming environment than previously thought, with implications for the composition of planets that might form around such stars.

Future research aims to expand the study to more disks around low-mass stars to understand the prevalence of carbon-rich terrestrial planet-forming regions. Collaboration across disciplines is crucial to interpreting these results and investigating new features in exoplanetary chemistry. This discovery opens up new possibilities for understanding planet formation and the compositions of exoplanets in our galaxy.

This groundbreaking research, published in Science, showcases the power of the James Webb Space Telescope in unraveling the mysteries of planet formation around low-mass stars.

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Vocabulary List:

1. **Exoplanetary** // (adjective): Relating to planets outside our solar system.
2. **Protoplanetary** // (adjective): Relating to the early stage of planet formation.
3. **Variety** // (noun): A diverse assortment or collection.
4. **Composition** // (noun): The makeup or structure of something.
5. **Terrestrial** // (adjective): Relating to Earth or resembling Earth.
6. **Prevalence** // (noun): The condition of being widespread or common.

Vocabulary quizzes

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

1. What is the main goal of expanding a business?

Option: Increasing market share

Option: Reducing costs

Option: Maintaining status quo

Option: Avoiding competition

2. Which term best describes having a wide range of options to choose from?

Option: Uniformity

Option: Consistency

Option: Diversity

Option: Monotony

3. What trait enables individuals to bounce back from adversity?



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- Option: Apathy
Option: Stubbornness
Option: Resilience
Option: Complacency
4. What does the term "prevalence" refer to?
Option: Uniqueness
Option: Commonality
Option: Irregularity
Option: Scarce nature
5. What does the composition of a substance refer to?
Option: Texture
Option: Temperature
Option: Color
Option: Ingredients
6. What does an aperture control in a camera?
Option: Focusing
Option: Exposure
Option: Color
Option: Shutter speed
7. Which word best describes a disorganized and messy space?
Option: Neat
Option: Tidy
Option: Cluttered
Option: Minimalist
8. What design concept combines elements from the past in a modern context?
Option: Minimalist
Option: Contemporary
Option: Retro-style
Option: Futuristic
9. What is a business undertaking that involves risk and uncertainty called?
Option: Safe bet
Option: Guaranteed venture
Option: High reward
Option: Venture
10. What type of fashion or design is so appealing that it catches everyone's attention?
Option: Unnoticed



- Option: Ordinary
- Option: Head-turning
- Option: Inconspicuous

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

11. _____ disks are formed around young stars during planetary system formation.
12. Her outfit was so _____ and stylish that she caught everyone's attention.
13. The vastness of the universe is truly _____ leaving us in awe of its size.
14. Time is the most _____ resource we have; use it wisely.
15. Their _____ friendship stood the test of time lasting over several decades.
16. Listening to that old song brought back _____ memories of my childhood.
17. The new sports car had a _____ design that made it aerodynamic and visually appealing.
18. The scientist used a special _____ to measure the radiation levels in the environment.
19. Through their research they hoped to _____ the hidden truths of ancient civilizations.
20. She always manages to look _____ no matter the occasion.

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

21. A student may use a _____ to assist in exam preparation and review.
22. A list of frequently asked questions and their answers is commonly known as a(n) _____.
23. _____ research focuses on planets outside our solar system.
24. To completely involve oneself in a subject or activity is to _____ in it.
25. A range of different types or forms of something is referred to as _____.



26. The kitchen floor was covered in due to lack of cleaning.
27. She has a and elegant sense of fashion that is admired by many.
28. Her stunning dress was so glamorous and eye-catching truly .
29. The messy and room needed a thorough cleaning and organizing session.
30. The future of the company looked as layoffs were announced.

Answer

Multiple Choice: 1. Increasing market share 2. Diversity 3. Resilience 4. Commonality 5. Ingredients 6. Exposure 7. Cluttered 8. Retro-style 9. Venture 10. Head-turning

Gap-Fill: 11. Protoplanetary 12. chic 13. immense 14. valuable 15. enduring 16. nostalgic 17. sleek 18. detector 19. uncover 20. stylish

Matching sentence: 1. study guide 2. FAQ 3. exoplanetary 4. immerse 5. variety 6. grime 7. chic 8. head-turning 9. cluttered 10. grim

CATEGORY

1. Sci/Tech - LEVEL5

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