



Turning Farm Waste Into Carbon-Neutral Hydrogen

Description

ESL-NEWS.COM





A new way to make hydrogen from farm waste is better for the environment. It uses less energy and doesn't create greenhouse gases. This process changes bioethanol into clean hydrogen and acetic acid. Most hydrogen is made from natural gas, which is not great for the planet. But this new method is different.

A team at the University of Cardiff has found a way to make hydrogen from bioethanol and water. They use a platinum and iridium catalyst. This process is good because it doesn't make carbon dioxide. The team thinks this method can be used on a large scale and be profitable. They now need investors to start a demonstration plant.

Hydrogen is important for industries like steel and transportation to become greener. Even though the process also creates acetic acid, the amount of hydrogen made is not enough to meet the world's needs for clean energy. Still, this new method can help make the chemicals industry more eco-friendly.

Vocabulary List:

1. **Hydrogen** /'haɪ.drə.dʒən/ (noun): A chemical element (symbol H) that is a colorless odorless gas and is the lightest of all gases.
2. **Bioethanol** /baɪ.əʊ'εθ.ə.nɒl/ (noun): A type of biofuel that is produced from plant materials.
3. **Catalyst** /'kæt.əl.ɪst/ (noun): A substance that increases the rate of a chemical reaction without undergoing any permanent chemical change.
4. **Greenhouse gases** /'ɡriːn.haʊs 'ɡæs.ɪz/ (noun): Gases that trap heat in the atmosphere contributing to the greenhouse effect and global warming.
5. **Acetic acid** /ə'siː.tɪk 'æs.ɪd/ (noun): A colorless organic compound with a pungent smell commonly used in cooking and as a chemical reagent.
6. **Eco-friendly** /,iː.koʊ'frɛnd.li/ (adjective): Not harmful to the environment; promoting a sustainable or environmentally friendly practice.

Comprehension Questions

Multiple Choice

1. What is the main advantage of the new method to make hydrogen from farm waste?

Option: Uses less energy and doesn't create greenhouse gases

Option: Produces more hydrogen than natural gas

Option: Requires expensive catalysts

Option: Causes harm to the environment



-
2. Which university developed the method to make hydrogen from bioethanol and water?
- Option: University of Oxford
 - Option: University of Cambridge
 - Option: University of Cardiff
 - Option: University of London
3. What are the products of the process that changes bioethanol into hydrogen and acetic acid?
- Option: Carbon dioxide and methane
 - Option: Hydrogen and nitrogen
 - Option: Clean hydrogen and acetic acid
 - Option: Sulfur dioxide and oxygen
4. Why is hydrogen important for industries like steel and transportation?
- Option: To increase greenhouse gas emissions
 - Option: To reduce costs
 - Option: To become greener
 - Option: To worsen environmental impact
5. What does the new method to make hydrogen from farm waste use as catalysts?
- Option: Gold and silver
 - Option: Platinum and iridium
 - Option: Copper and zinc
 - Option: Nickel and chromium
6. What is the limitation of the new method in terms of meeting the world's clean energy needs?
- Option: It cannot produce hydrogen
 - Option: It requires too much water
 - Option: It creates too much acetic acid
 - Option: It doesn't produce enough hydrogen

True-False

7. The new method to make hydrogen from farm waste doesn't create greenhouse gases.
8. The new method to make hydrogen from bioethanol and water uses a platinum and iridium catalyst.
9. The team at the University of Cardiff believes their method cannot be profitable on a large scale.



10. Hydrogen is only important for the pharmaceutical industry.
11. The amount of hydrogen produced by the new method is sufficient to meet the world's clean energy needs.
12. The new method helps make the chemicals industry more eco-friendly by reducing waste products.

Gap-Fill

13. The team at the University of Cardiff needs investors to start a _____ plant.
14. Most hydrogen is currently made from _____ gas.
15. The new method changes bioethanol into clean hydrogen and _____ acid.
16. Hydrogen is important for industries like steel and _____ to become greener.
17. The new method to make hydrogen from farm waste uses a platinum and _____ catalyst.
18. The amount of hydrogen made by the new method is not enough to meet the world's needs for clean _____.

Answer

Multiple Choice: 1. Uses less energy and doesn't create greenhouse gases 2. University of Cardiff 3. Clean hydrogen and acetic acid 4. To become greener 5. Platinum and iridium 6. It doesn't produce enough hydrogen

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

Gap-Fill: 13. demonstration 14. natural 15. acetic 16. transportation 17. iridium 18. energy

Vocabulary quizzes

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

1. Which type of products are considered environmentally sustainable and safe for ecosystems?



-
- Option: Biodegradable
Option: Hazardous
Option: Toxic
Option: Synthetic
2. What provides legal protection for a new invention or process?
Option: Intellectual Property
Option: Copyright
Option: Trademark
Option: Open Source
3. What are distinctive qualities or characteristics of a product or service?
Option: Bug
Option: Flaw
Option: Disadvantage
Option: Attribute
4. Which type of cancer primarily affects children?
Option: Breast Cancer
Option: Prostate Cancer
Option: Lung Cancer
Option: Neuroblastoma
5. What describes something made by humans and not occurring naturally?
Option: Organic
Option: Authentic
Option: Natural
Option: Artificial
6. Which term refers to improvements or progress in a particular area?
Option: Decline
Option: Regress
Option: Stagnation
Option: Advancements
7. Which element has the chemical symbol "H" and atomic number 1?
Option: Helium
Option: Carbon
Option: Oxygen
Option: Hydrogen
8. What is the right to keep personal information protected from misuse?
Option: Transparency



- Option: Confidentiality
- Option: Disclosure
- Option: Privacy

9. What substance increases the rate of a chemical reaction without undergoing permanent changes itself?

- Option: Inhibitor
- Option: Modifier
- Option: Reactant
- Option: Catalyst

10. What is a renewable fuel produced by fermentation of sugars from crops like corn or sugarcane?

- Option: Petrol
- Option: Diesel
- Option: Natural Gas
- Option: Bioethanol

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

11. The company reported a significant increase in _____ this quarter.
12. The candidate's _____ and problem-solving skills were impressive.
13. The new software provides secure _____ to the database.
14. There is growing _____ about the impact of climate change on wildlife.
15. Please submit your _____ for vacation days in writing.
16. It is essential to _____ sensitive data to protect it from unauthorized access.
17. She is a strong _____ for animal rights and environmental conservation.
18. The new marketing campaign aims to _____ a younger audience.
19. The thrilling announcement is sure to _____ fans worldwide.
20. Their performance at the concert was truly _____ receiving a standing ovation.

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

21. Lignin is a complex organic polymer that hardens and strengthens the cell walls of plants.



22. This lotion deeply the skin keeping it hydrated and soft.
23. Sustainable practices aim to meet current needs without compromising the ability of future generations to meet their needs.
24. The company's new ad campaign targets a broader audience to increase sales.
25. The genetically crops showed increased resistance to pests.
26. The team praised her quick to the emergency situation.
27. Reducing emissions of is crucial in combating climate change.
28. Vinegar is primarily composed of water and .
29. The company's new AI system demonstrates advanced artificial .
30. Using as a fuel source can help reduce reliance on fossil fuels.

Answer

Multiple Choice: 1. Biodegradable 2. Intellectual Property 3. Attribute 4. Neuroblastoma 5. Artificial 6. Advancements 7. Hydrogen 8. Privacy 9. Catalyst 10. Bioethanol

Gap-Fill: 11. revenue 12. intelligence 13. access 14. concern 15. request 16. encrypt 17. advocate 18. attract 19. excite 20. exceptional

Matching sentence: 1. Lignin 2. Moisturizes 3. Sustainable 4. Commercial 5. Modified 6. Response 7. Greenhouse gases 8. Acetic acid 9. Intelligence 10. Bioethanol

CATEGORY

1. Sci/Tech - LEVEL2

Date Created

2025/02/14

Author

aimeeyoung99