



Revolutionary Cloud Material Bends Light Around Corners

Description

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A new material can bend light

University of Glasgow

Scientists at the University of Glasgow have developed a groundbreaking method to bend light around corners, inspired by the way clouds scatter sunlight. This innovative technique may revolutionize domains such as medical imaging, electronics cooling, and even the design of nuclear reactors.

Lead researcher Daniele Faccio and his team expressed their surprise that this phenomenon had not been identified earlier. They discovered that, similar to clouds and other white materials, when light hits the surface, it scatters in numerous directions, limiting penetration and resulting in reflection.

To simulate this effect, the researchers 3D printed objects from opaque white materials while embedding transparent tunnels. Shining light into these objects causes it to enter the tunnels and scatter in a controlled manner, enhancing transmission significantly compared to solid blocks.

While this method does not match the efficiency of traditional fibre optics, which reflect light internally, it offers a simpler and more cost-effective alternative. Furthermore, it holds potential for various engineering applications, including the utilization of translucent materials in medical imaging and cooling systems.

"It wasn't obvious that this would work at all," Faccio remarked, highlighting the simplicity yet powerful application of this discovery.

Topics:

Vocabulary List:

1. **Groundbreaking** /'graʊnd,brɛɪ.kɪŋ/ (adjective): Innovative and pioneering; introducing new ideas or methods.
2. **Phenomenon** /fə'nom.ɪ.nən/ (noun): An observable fact or event that can be explained scientifically.
3. **Simulate** /'sɪm.ju.leɪt/ (verb): To imitate the appearance or character of something.
4. **Translucent** /trænz'lju:.sənt/ (adjective): Allowing light to pass through but not transparent.
5. **Revolutionize** /,revə'lju:ʃənʌɪz/ (verb): To completely change something especially in a way that makes it better.
6. **Enhancing** /ɪn'ha:n.sɪŋ/ (verb): Improving the quality value or extent of something.

Comprehension Questions

Multiple Choice

1. Which university developed the method to bend light around corners?

- Option: University of Cambridge
- Option: University of Oxford
- Option: University of Glasgow
- Option: Harvard University

2. What inspired the scientists to develop the groundbreaking method of bending light around corners?

- Option: Water droplets
- Option: Clouds
- Option: Mirrors
- Option: Prisms

3. Which researcher led the team that developed the innovative light-bending technique?

- Option: John Smith
- Option: Emily Brown
- Option: Daniele Faccio
- Option: Sarah Johnson

4. What is the primary advantage of the newly developed method of bending light around corners?

- Option: Internal reflection
- Option: Penetration limitation
- Option: Refraction
- Option: Absorption

5. How did the researchers enhance light transmission in their experiments?

- Option: Using mirrors
- Option: Embedding transparent tunnels
- Option: Adding lenses
- Option: Using prisms

6. What potential applications were mentioned for the new light-bending method?

- Option: Cooking techniques
- Option: Agricultural practices
- Option: Medical imaging and electronics cooling
- Option: Fashion design

True-False

7. The researchers were not surprised by the discovery of the light-bending method.
8. The new light-bending method is more cost-effective than traditional fiber optics.
9. The innovative technique may have applications in the design of nuclear reactors.
10. The embedded transparent tunnels help scatter light in a controlled manner.
11. The lead researcher of the team was Emily Brown.
12. Solid blocks are more effective in enhancing light transmission compared to the new method.

Gap-Fill

16. The new light-bending technique holds potential for various engineering applications, including the utilization of translucent materials in _____ systems.
17. The researchers developed a groundbreaking method to bend light around _____, inspired by the way clouds scatter sunlight.
18. The new material can bend light, and it was developed by scientists at the _____.

Answer

Multiple Choice: 1. University of Glasgow 2. Clouds 3. Daniele Faccio 4. Penetration limitation 5. Embedding transparent tunnels 6. Medical imaging and electronics cooling
True-False: 7. False 8. True 9. True 10. True 11. False 12. False
Gap-Fill: 16. cooling 17. corners 18. University of Glasgow

Vocabulary quizzes

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



1. Which term describes something innovative and pioneering?

- Option: Artificial
- Option: Groundbreaking
- Option: Enhancing
- Option: Artificial

2. What term describes a material that allows light to pass through but diffuses it?

- Option: Translucent
- Option: Renewable
- Option: Emissions
- Option: Infrastructure

3. Which term refers to introducing new ideas or methods?

- Option: Innovative
- Option: Mitigating
- Option: Associated
- Option: Verification

4. Which term means connected or related to something?

- Option: Phenomenal
- Option: Biological
- Option: Artificial
- Option: Associated

5. What term describes an energy source that is not depleted when used?

- Option: Simulate
- Option: Renewable
- Option: Genesis
- Option: Gleaned

6. Which term is related to living organisms and their functions?

- Option: Biological
- Option: Detection
- Option: Confluence
- Option: Compounds

7. What term refers to substances formed from two or more elements?

- Option: Transformation
- Option: Delineates
- Option: Compounds
- Option: Emissions

8. Which term describes the origin or mode of formation of something?

- Option: Infrastructure
- Option: Genesis
- Option: Confluence
- Option: Ancestry

9. What term refers to the basic physical and organizational structures needed for a society or enterprise to function?

- Option: Chronicles
- Option: Mitigating
- Option: Translucent
- Option: Infrastructure

10. What term is used to describe substances released into the air especially by cars and factories?

- Option: Associated
- Option: Groundbreaking
- Option: Emissions
- Option: Artificial

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

11. The invention of the smartphone truly _____ the way we communicate.

12. Regular exercise plays a key role in _____ your overall health.

13. The intelligence displayed by the chess-playing computer was completely _____.

14. Planting trees is one way of _____ the effects of climate change.

15. The team's performance in the championship was truly _____.

16. The book _____ the life of a young girl growing up in wartime.

17. The security system _____ unauthorized access to the building.

18. The report clearly _____ the key findings of the research.

19. From the data collected the researchers _____ valuable insights into consumer behavior.

20. The city is located at the _____ of two major rivers.

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

21. The new technology is the way we approach healthcare.

22. The sudden increase in sales was a that surprised everyone.

23. Economic growth and employment rates are important of a country's development.

24. The issue of climate change is highly with strong arguments on both sides.

25. Solar and wind energy are examples of energy sources.

26. Graduating from college was a significant in her life.

27. Planting trees is one way of the effects of climate change.

28. The symptoms are often with the onset of the disease.

29. The authenticity of the document requires careful .

30. Learning about her family's helped her understand her cultural background.

Answer

Multiple Choice: 1. Groundbreaking 2. Translucent 3. Innovative 4. Associated 5. Renewable 6. Biological 7. Compounds 8. Genesis 9. Infrastructure 10. Emissions

Gap-Fill: 11. revolutionized 12. enhancing 13. artificial 14. mitigating 15. phenomenal 16. chronicles 17. detected 18. delineates 19. gleaned 20. confluence

Matching sentence: 1. revolutionizing 2. phenomenon 3. indicators 4. contentious 5. renewable 6. milestone 7. mitigating 8. associated 9. verification 10. ancestry

CATEGORY

1. Sci/Tech - LEVEL4

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