

Nuclear fusion test could start an energy revolution

22nd August, 2021



There has been a relentless quest to find sustainable energy sources in the past decades. One source of energy that has thus far eluded scientists is nuclear fusion. This is the Holy Grail of clean energy. Generations of physicists have

tried to replicate this reaction. Scientists in the USA say they recreated the power of the Sun for a minuscule fraction of a second. Powerful lasers blasted a tiny target to create a reaction. The burst lasted just 100 trillionths of a second, but it created 10 quadrillion watts of power. Ten quadrillion is equal to 1 followed by 16 zeros. The power the scientists created is the equivalent of 6 per cent of all the energy from the Sun hitting Earth's surface at any given moment.

Nuclear fusion powers the Sun and other stars. The website cnet.com said it is "a long-sought-after panacea for many energy and environmental challenges". Nuclear fusion power plants could solve our clean energy conundrum and provide infinite, safe, clean and green power. It could also reverse the damage we do to the environment. Physicist Dr Debbie Callahan, who worked on the experiment, spoke about the breakthrough. She said it is a "huge advance for fusion" and a big step toward generating "a net-positive amount of energy". Futurism.com said: "The promise is as lucrative as it has ever been - an infinite supply of carbon-neutral energy without ever running the risk of a nuclear meltdown."

Sources: cnet.com / yahoo.com / futurism.com

Writing

Scientists will save the environment. Discuss.

Chat

Talk about these words from the article.

quest / sustainable / the past decades / Holy Grail / physicists / lasers / energy / Sun / panacea / challenges / conundrum / green / environment / experiment / risk

True / False

- 1) The article calls nuclear fusion the Holy Grail of clean energy. T / F
- 2) Scientists recreated the power of the Sun for a split second. T / F
- 3) Scientists created a reaction that lasted a billionth of a second. T / F
- 4) One quadrillion is a zero followed by 15 zeros. T / F
- 5) A website said nuclear fusion would address many challenges. T / F
- 6) The article says nuclear fusion wouldn't reverse damage done to Earth. T / F
- 7) A scientist called the test a huge advance for nuclear fusion. T / F
- 8) Nuclear fusion would end the risk of nuclear meltdowns. T / F

Synonym Match

(The words in **bold** are from the news article.)

- | | |
|------------------------|----------------|
| 1. relentless | a. cure-all |
| 2. eluded | b. tiny |
| 3. replicate | c. advance |
| 4. minuscule | d. evaded |
| 5. equivalent | e. problem |
| 6. panacea | f. possibility |
| 7. conundrum | g. non-stop |
| 8. breakthrough | h. profitable |
| 9. lucrative | i. copy |
| 10. risk | j. parallel |

Discussion – Student A

- a) What do you know about nuclear fusion?
- b) Have you ever been in a relentless quest?
- c) Why is clean energy a Holy Grail?
- d) How might nuclear fusion change the world?
- e) Would you like to be a physicist?
- f) How can we harness the power of the Sun?
- g) What do you think of the numbers in the experiment?
- h) What three adjectives best describe this story?

Phrase Match

- | | |
|-------------------------------------------------------------|--------------------------------|
| 1. a relentless quest | a. panacea |
| 2. One source of energy that has thus far eluded scientists | b. fraction of a second |
| 3. This is the Holy Grail | c. amount of energy |
| 4. for a minuscule | d. far eluded scientists |
| 5. the equivalent of 6 per cent of | e. clean energy conundrum |
| 6. a long-sought-after | f. all the energy from the Sun |
| 7. solve our | g. nuclear meltdown |
| 8. reverse the damage we do | h. to find sustainable energy |
| 9. a net-positive | i. to the environment |
| 10. without ever running the risk of a | j. of clean energy |

Discussion – Student B

- What do you think about what you read?
- What energy challenges does our planet face?
- What environmental challenges does Earth face?
- What conundrums do you face in life?
- What's the difference between nuclear fusion and nuclear fission?
- What energy sources will we be using in 50 years' time?
- What damage does a nuclear meltdown cause?
- What questions would you like to ask the physicists?

Spelling

- There has been a teslernse quest
- energy that has thus far dludee scientists
- tried to tpecariel this reaction
- 100 ihirstolltn of a second
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- the teniluqaev of 6 per cent
- a long-sought-after aeapacn
- solve our clean energy nrdrumcou
- provide tninieif, safe, clean and green power
- ciyphists Dr Debbie Callahan
- as aicetlury as it has ever been
- carbon-alrnuet energy

Answers – Synonym Match

1. g	2. d	3. i	4. b	5. j
6. a	7. e	8. c	9. h	10. f

Role Play

Role A – Nuclear Fusion

You think nuclear fusion is the best form of energy. Tell the others three reasons why. Tell them what is wrong with their forms. Also, tell the others which is the worst of these (and why): oil, biofuel or solar.

Role B – Oil

You think oil is the best form of energy. Tell the others three reasons why. Tell them what is wrong with their forms. Also, tell the others which is the worst of these (and why): nuclear fusion, biofuel or solar.

Role C – Biofuel

You think biofuel is the best form of energy. Tell the others three reasons why. Tell them what is wrong with their forms. Also, tell the others which is the worst of these (and why): oil, nuclear fusion or solar.

Role D – Solar

You think solar is the best form of energy. Tell the others three reasons why. Tell them what is wrong with their forms. Also, tell the others which is the worst of these (and why): oil, biofuel or nuclear fusion.

Speaking – Energy

Rank these with your partner. Put the best kind of energy at the top. Change partners often and share your rankings.

- | | |
|------------------------|---------------|
| • Nuclear fusion | • Wind |
| • Conventional nuclear | • Biofuel |
| • Oil | • Tidal power |
| • Coal | • Geothermal |

Answers – True False

1 T	2 T	3 F	4 T	5 T	6 F	7 T	8 T
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Answers to Phrase Match and Spelling are in the text.