

18-km wide diamond layer on Mercury, says study

5th August 2024



Iconic American movie star Marilyn Monroe once famously sang, "Diamonds are a girl's best friend". Scientists from the University of Liege in Belgium believe they have unearthed a gargantuan amount of these precious stones. There could be an 18-km wide layer of

the gems beneath the crust of the planet Mercury. Our nearest planetary neighbour could quite literally be a celestial jewel. Researchers tested how Mercury formed, approximately 4.5 billion years ago. The planet evolved from a gyrating cloud of cosmic dust and gas. Over millions of years, the dust was compressed into graphite, which is chemically identical to diamond. Both are solid forms of the element carbon. It is unlikely Mercury's diamonds could ever be mined as they are about 500 km below the surface.

Researchers used a machine called an anvil press to simulate the conditions under which Mercury was formed. The press is used to make synthetic diamonds. Researchers mixed elements inside a graphite capsule. These included silicon, magnesium and aluminium. The capsule was subjected to pressure 70,000 times greater than that on Earth. It was heated to temperatures of 2,000 degrees Celsius. The lead researcher speculated about the diamonds on Mercury. He said: "Diamonds are made of carbon only, so they should be similar to what we know on Earth...They would [resemble] pure diamonds." Scientists believe there are a quadrillion tons of diamonds beneath the Earth's surface. Experts say the value of these hidden gems is pretty much incalculable.

Sources: boingboing.net / cnn.com / sky.com

Writing

We should go to Mercury to mine for diamonds. Discuss.

Chat

Talk about these words from the article.

iconic / movie star / diamond / precious stone / Mercury / cosmic / dust / gas / carbon / machine / synthetic / capsule / silicon / pressure / temperature / Earth / a quadrillion

True / False

- 1) A movie star sang a song about diamonds being a girl's best friend. T / F
- 2) Scientists believe there are diamonds 18 km below Mercury's crust. T / F
- 3) Mercury was formed 450 million years ago. T / F
- 4) Both diamonds and graphite are made of carbon. T / F
- 5) Researchers used a machine that also made synthetic diamonds. T / F
- 6) The scientists put graphite inside a silicon capsule. T / F
- 7) The scientists say the Mercury diamonds are probably pure diamonds. T / F
- 8) Scientists say the diamonds under the Earth are worth \$100 quadrillion. T / F

Synonym Match

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

- | | |
|--------------------------|----------------------|
| 1. unearthed | a. artificial |
| 2. gargantuan | b. gem |
| 3. precious stone | c. hypothesized |
| 4. crust | d. indistinguishable |
| 5. identical | e. discovered |
| 6. simulate | f. genuine |
| 7. synthetic | g. outer layer |
| 8. speculated | h. replicate |
| 9. pure | i. indeterminable |
| 10. incalculable | j. enormous |

Discussion – Student A

- a) What do you think about what you read?
- b) What do you know about diamonds?
- c) What do you know about Mercury?
- d) Are synthetic diamonds as good as real ones?
- e) What do you think is below the Earth's surface?
- f) What do you think of the number 'one quadrillion'?
- g) Would you rather have a diamond from Earth or from Mercury?
- h) What questions would you like to ask the researchers?

Phrase Match

- | | |
|--|-----------------------------|
| 1. Diamonds are a girl's | a. tons of diamonds |
| 2. they have unearthed a gargantuan amount | b. of cosmic dust and gas |
| 3. gems beneath the crust | c. pretty much incalculable |
| 4. The planet evolved from a gyrating cloud | d. synthetic diamonds |
| 5. compressed into graphite, which is chemically | e. of these precious stones |
| 6. The press is used to make | f. that on Earth |
| 7. Researchers mixed elements inside | g. of the planet |
| 8. pressure 70,000 times greater than | h. a graphite capsule |
| 9. there are a quadrillion | i. best friend |
| 10. the value of these hidden gems is | j. identical to diamond |

Discussion – Student B

- What do you know about Marilyn Monroe?
- Are diamonds a girl's best friend?
- Why are diamonds so popular?
- What uses are there for diamonds?
- How did planets form?
- Should we try to mine Mercury's diamonds?
- What are your favourite precious stones?
- What jewels do you have?

Spelling

- they have unearthed a rgnagtaun amount
- cepiuos stone
- a elsciteal jewel
- a rgtaying cloud of cosmic dust
- the dust was mpercsoesd into graphite
- 500 km below the rsfucae
- lumaitse the conditions
- make tshicyent diamonds
- mixed elements inside a graphite scleuap
- The lead researcher dctepulesa about the diamonds
- a liqInrouiad tons of diamonds
- pretty much ibcelnlaualc

Answers – Synonym Match

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

Role Play

Role A – Diamonds

You think diamonds are the best jewels. Tell the others three reasons why. Tell them what is wrong with their jewels. Also, tell the others which is the least attractive of these (and why): pearls, crystals or jade.

Role B – Pearls

You think pearls are the best jewels. Tell the others three reasons why. Tell them what is wrong with their jewels. Also, tell the others which is the least attractive of these (and why): pearls, crystals or jade.

Role C – Crystals

You think crystals are the best jewels. Tell the others three reasons why. Tell them what is wrong with their jewels. Also, tell the others which is the least attractive of these (and why): pearls, crystals or jade.

Role D – Jade

You think jade is the best jewel. Tell the others three reasons why. Tell them what is wrong with their jewels. Also, tell the others which is the least attractive of these (and why): pearls, crystals or pearls.

Speaking – Jewels

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

- | | |
|-------------|------------|
| • Diamonds | • Emeralds |
| • Rubies | • Crystals |
| • Sapphires | • Jade |
| • Pearls | • Amethyst |

Answers – True False

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