

Scientists discover why gold doesn't 'rust'

25th May 2026



Gold has held an enduring allure for thousands of years. This precious metal has remained a symbol of elegance and wealth. Scientists have discovered how it stays in such pristine condition and never

loses its shine. Researchers from Tulane University in New Orleans found that gold does not rust or change colour because of the structure of atoms on its surface. Dr Matthew Montemore wrote that the atoms naturally rearrange themselves into unique zigzag patterns that minimize chemical reactions with oxygen. He said: "This makes the gold much more resistant to oxidation." As a result, it does not become discoloured, even after centuries of exposure to the elements.

A low level of reactivity to oxygen is called chemical nobility. Gold is the most noble of all metals. Its resistance to bonding with oxygen means it maintains its shininess for thousands of years. It is also one of the most malleable metals, which means it can easily be hammered into thin sheets. Gold can be beaten to a thickness of less than 0.1 micrometres — a hundred times thinner than a human hair. Its pure form is why humans have used gold for jewellery and currency for more than 5,000 years. It also has important uses in electronics, dentistry, spacecraft technology, and medicine. The researchers believe it will continue to be integral in industrial applications.

Sources:

sciencealert.com / scientificamerican.com / sciencenews.com

Writing

An idiom says, "All that glitters is not gold." Do you agree or disagree with this?

Chat

Talk about these words from the article.

gold / allure / precious metal / elegance / wealth / shine / atoms / chemical reactions / reactivity / bonding / thousands of years / gold leaf / jewellery / dentistry / medicine

True / False

- 1) The article says gold has fascinated humans for millions of years. T / F
- 2) The researchers are from a university in New Orleans. T / F
- 3) A zigzag pattern that atoms make on gold help keep the metal shiny. T / F
- 4) Researchers say gold is very prone to oxidation. T / F
- 5) The article says gold is the most notable of all metals. T / F
- 6) The article says gold is one of the hardest metals. T / F
- 7) Gold can be beaten to be a hundred times thinner than a human hair. T / F
- 8) Gold is used in dentistry and medicine. T / F

Synonym Match

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

- | | |
|-------------------------|----------------|
| 1. enduring | a. distinctive |
| 2. elegance | b. unmixed |
| 3. pristine | c. stylishness |
| 4. unique | d. uses |
| 5. the elements | e. immunity |
| 6. maintains | f. lasting |
| 7. malleable | g. keeps |
| 8. pure | h. immaculate |
| 9. essential | i. soft |
| 10. applications | j. the weather |

Discussion – Student A

- a) What do you think of gold?
- b) Is gold the best metal?
- c) What other precious metals are very useful?
- d) What do you think of the colour of gold?
- e) What do you know about the carat system for gold?
- f) What uses of gold from thousands of years ago do you know of?
- g) How much gold do you have?
- h) Do you have a heart of gold?

Phrase Match

- | | |
|---|------------------------------|
| 1. Gold has held an enduring | a. and wealth |
| 2. a symbol of elegance | b. less than 0.1 micrometres |
| 3. discovered how it stays in | c. rust |
| 4. gold does not | d. in electronics |
| 5. even after centuries of exposure | e. such pristine condition |
| 6. It is also one of the most malleable | f. thin sheets |
| 7. it can easily be hammered into | g. industrial applications |
| 8. beaten to a thickness of | h. allure |
| 9. It also has important uses | i. metals |
| 10. it will continue to be integral in | j. to the elements |

Discussion – Student B

- What do you think about what you read?
- Which do you like better, gold or diamonds?
- How important is gold in your culture?
- What is gold leaf used for?
- What do you think of using gold in dentistry?
- What do you think of people who order gold toilets?
- Do you think silence is golden?
- What questions would you like to ask the scientists?

Spelling

- Gold has held an enduring lerlau
- this prsuieoc metal
- how it stays in such pniesirt condition
- cmclihea reactions
- much more ensttasir to oxidation
- centuries of exposure to the emeslnet
- A low level of vtrictaeiy to oxygen
- one of the most alelblaem metals
- less than 0.1 rtceimmreos
- used gold for jewellery and urneccc
- spacecraft technology and encdeiim
- tuasilrdin applications

Answers – Synonym Match

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

Comprehension Questions

Listen to / read the news article. Answer these questions. (Answers are on p. 27 of the 27-page PDF.)

1.	What has gold held for thousands of years?
2.	What kind of condition does the article say gold stays in?
3.	What does the article say does not happen to gold?
4.	What kind of patterns do atoms on the surface of gold make?
5.	What is gold exposed to for centuries?
6.	What is a low level of reactivity to oxygen called?
7.	What does gold's malleability mean it can be hammered into?
8.	What can gold that has been beaten be a hundred times thinner than?
9.	For how long have humans used gold as a currency?
10.	What will gold continue to be an integral part of?

Speaking – Made of Gold

Rank these with your partner. Put the best things made of gold at the top. Change partners often and share your rankings.

- | | |
|-----------------|----------------------|
| • A gold ring | • gold shoes |
| • A gold medal | • a gold ingot (bar) |
| • A smartphones | • gold teeth |
| • A gold toilet | • gold sunglasses |

Answers – True False

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