

Nanotechnology



Let's Think

1. Have you heard of nanotechnology?
2. Did you know how this technology is used in everyday life?

You are Miles. You are reading a research article in a science journal.

Technology in a Nanometre

Nanotechnology is a term that refers to the process of making and measuring things on a scale of less than 100 nanometres. To be exact, there are one billion nanometres in one metre (1m = 100 cm = 1,000,000,000 nanometres).

A brief history of Nanotechnology

- 5 This fabulous technology was introduced to the world by Richard Feynman in 1959 during a talk. More than a decade later, in 1974, Professor Norio Taniguchi coined the term 'nanotechnology'. It was not until 1981 that modern nanotechnology began.



Current and future uses

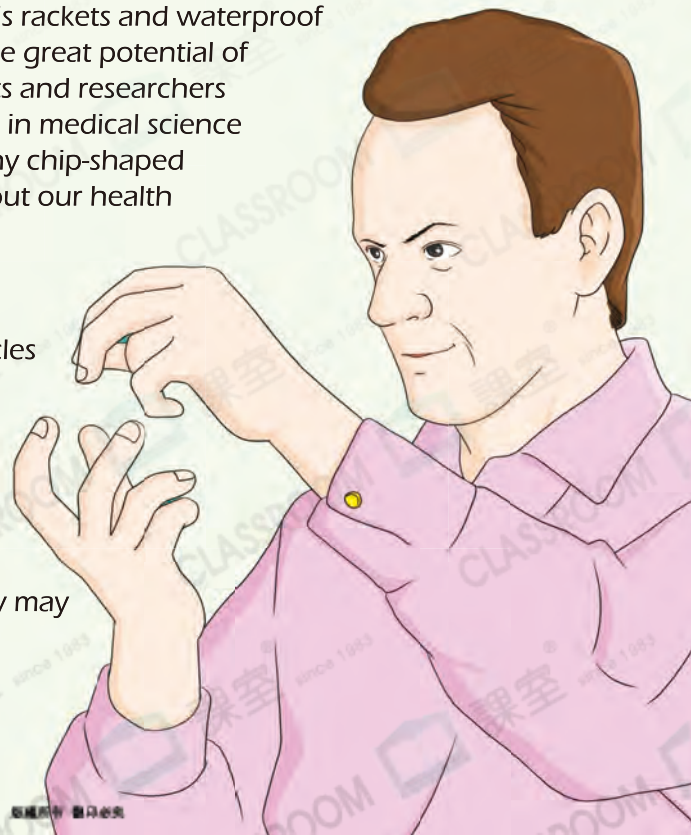
Through nanotechnology, materials can be modified to be stronger, lighter and more durable than most other materials. Moreover, they can be given special physical properties, like water repellency, better protection against UV rays and resistance to wrinkle formation.

Therefore, the technology is involved in the production of a variety of products nowadays, such as sunscreens, glasses, solar panels, tennis rackets and waterproof jackets. Having noticed the great potential of nanotechnology, scientists and researchers

are expecting it to bring about profound changes in medical science in the future. For example, there will possibly be extremely tiny chip-shaped devices that could navigate in our blood and collect data about our health condition.

Possible hazards

One obvious drawback of nanotechnology is that nanoparticles can float around in the air and therefore enter our bodies without us knowing. Though there is limited understanding of the negative effects of nanoparticles on human health, it is speculated that they may harm the lungs and even lead to cell damage. However, it seems that these possible health risks have little influence on scientists' and engineers' determination to conduct research into how nanotechnology may benefit our society.



(269 words)

Richard Feynman

Nature & Science

Part A

Answer the following questions using the information from the article. Choose the **BEST** answer and blacken **ONE** circle only.

- Which of the following is the correct scale?
 - A. 1 m = 1 nanometre
 - B. 100 m = 1,000,000,000 nanometres
 - C. 1 cm = 10,000,000 nanometres
 - D. 1 m = 10,000,000 nanometres
- In line 9, the verb 'modified' can best be replaced by '_____'.
 - A. added
 - B. discovered
 - C. exchanged
 - D. changed
- Which of the following is **NOT TRUE**?
 - A. There were people aware of the idea of nanotechnology in 1962.
 - B. Richard Feynman was the founder of modern nanotechnology.
 - C. Clothes that use nanotechnology can be water-repellent.
 - D. The use of nanotechnology in today's world can be described as common.
- The writer holds a _____ view on nanotechnology.
 - A. positive
 - B. negative
 - C. neutral
 - D. mixed
- Which of the following **CANNOT** be inferred from the last paragraph?
 - A. Nanoparticles may be breathed in.
 - B. Nanotechnology is not free of disadvantages.
 - C. Research into nanotechnology will be speeded up in the coming years.
 - D. There will probably be improvements in the application of nanotechnology.

You need to do a simple calculation for this question.

Grammar Corner

We can use the connective 'therefore' to show the result or effect of something.

e.g. *Therefore, the technology is involved in the production of a variety of products nowadays.*
(Lines 13-14)

We can use the connective 'however' to express a contrast between two ideas.

e.g. *However, it seems that these possible health risks have little influence on scientists' and engineers' determination to research into how nanotechnology may benefit our society.*
(Lines 28-31)

Part B

Answer the following questions using the information from the article. Write your answers in the spaces provided.

1. When did the term 'nanotechnology' start being used?

2. What is special about the materials that use nanotechnology?

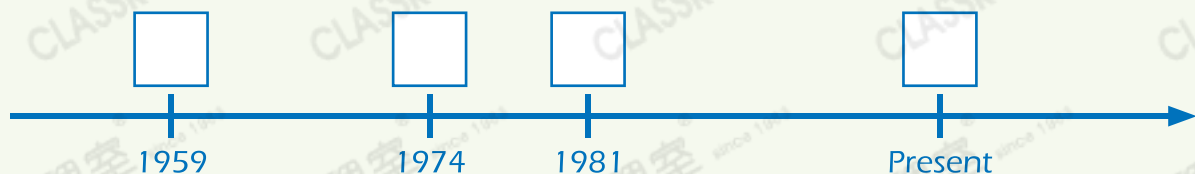
3. Find words in the research article that are closest in meaning to the following. Fill in each blank with only one word.

a number of different things	(a)	(n.)
very great; extensive	(b)	(adj.)
travel	(c)	(v.)
disadvantage	(d)	(n.)
not great in amount or extent	(e)	(adj.)



4. Below are the statements related to the development of nanotechnology over time. Put the letters (A-D) in the appropriate boxes above the timeline.

- A. Someone came up with a name for the idea of nanotechnology.
B. Products that use nanotechnology can be found on the market.
C. A talk about the idea of nanotechnology was given.
D. Modern nanotechnology began.



Vocabulary Bank

The following are some of the great technologies of the 20th century. Match them with the correct pictures. One of the words is not used.

biotechnology artificial intelligence nuclear power
 fibre optics the computer xerography wireless technology
 laser technology the Internet



1.



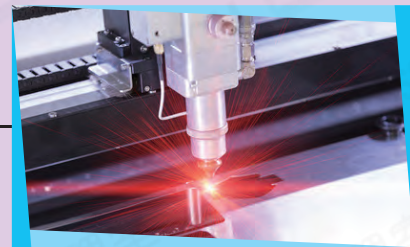
2.



3.



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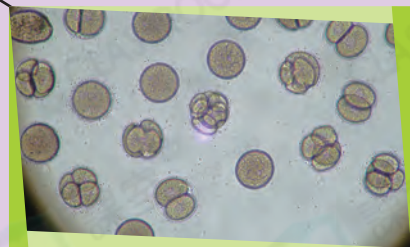
5.



6.



7.



8.



Let's Discuss

1. In your opinion, what is the greatest invention of the 20th century?
2. Is developing artificial intelligence a pleasant idea to you? Explain your thoughts.