



Earth's Inner Core May Contain Unique Extreme Hydrogen

Description

The Earth has many layers, similar to a nesting doll. The deepest part, called the core, is still mysterious. Very few people have explored the ocean's deepest points or the Moon, and no one can reach the Earth's core. The core is very hot and under immense pressure.

Recently, scientists studied a strange type of hydrogen called superionic hydrogen. This form flows like liquid and can conduct electricity. They believe this hydrogen might be found in large amounts in the core, but nowhere else on Earth.

To understand superionic hydrogen, the researchers looked at two forms: hexagonal close-packed and body-centered cubic. Each structure behaves differently under extreme conditions. The researchers think that as temperatures rise, the body-centered cubic form might become more common. However, extreme heat may melt it into a mix.

The scientists also found a gradient of hydrogen concentration in the core. This means that the amount of hydrogen changes as you move from the outer core to the inner core. This discovery helps explain how the Earth's core works and may be important for understanding other elements as well.

Vocabulary List:

1. **superionic** //ˌsu:pər'aiɒnɪk// (adjective): very hot form of hydrogen that flows
2. **conduct** //kən'dʌkt// (verb): to let electricity or heat move through
3. **hexagonal** //hek'sæɡənəl// (adjective): having six sides or six parts shape
4. **cubic** //'kju:bɪk// (adjective): a box with six flat faces
5. **gradient** //'ɡreɪdiənt// (noun): change in amount from one place to another
6. **concentration** //ˌkɒnsən'treɪʃən// (noun): how much of one substance is present

Comprehension Questions

Multiple Choice

1. What is the deepest part of the Earth called?

Option: Mantle



- Option: Crust
- Option: Core
- Option: Outer Core

2. What type of hydrogen have scientists recently studied?

- Option: Liquid hydrogen
- Option: Superionic hydrogen
- Option: Gaseous hydrogen
- Option: Solid hydrogen

3. What are the two forms of superionic hydrogen studied by researchers?

- Option: Hexagonal close-packed and body-centered cubic
- Option: Cubic and tetragonal
- Option: Hexagonal and octagonal
- Option: Body-centered and face-centered

4. What happens to body-centered cubic hydrogen as temperatures rise?

- Option: It becomes a solid
- Option: It becomes more common
- Option: It disappears
- Option: It becomes a gas

5. What is a result of the extreme heat in the Earth's core?

- Option: It cold down the core
- Option: It melts hydrogen into a mix
- Option: It solidifies hydrogen
- Option: It creates diamonds

6. What does the gradient of hydrogen concentration indicate?

- Option: Hydrogen is uniform throughout the core
- Option: Hydrogen concentration increases towards the inner core
- Option: Hydrogen concentration decreases towards the outer core
- Option: Hydrogen concentration changes from outer to inner core

True-False

7. The Earth's core is easily reachable by humans.



8. Superionic hydrogen can conduct electricity.
9. Only one form of superionic hydrogen exists.
10. Extreme pressure exists in the Earth's core.
11. Scientists believe superionic hydrogen can be found in multiple places on Earth.
12. The discovery of hydrogen concentration in the core is unimportant for understanding other elements.

Gap-Fill

13. The deepest part of the Earth is called the _____ core.
14. Superionic hydrogen flows like _____ and can conduct electricity.
15. The two forms of superionic hydrogen are hexagonal close-packed and _____ centered cubic.
16. As temperatures rise, the body-centered cubic form may become more _____.
17. The amount of hydrogen changes as you move from the _____ core to the inner core.
18. Extreme heat in the core may _____ hydrogen into a mix.

Answer

Multiple Choice: 1. Core 2. Superionic hydrogen 3. Hexagonal close-packed and body-centered cubic
4. It becomes more common 5. It melts hydrogen into a mix 6. Hydrogen concentration changes from outer to inner core

True-False: 7. False 8. True 9. False 10. True 11. False 12. False

Gap-Fill: 13. core 14. liquid 15. body 16. common 17. outer 18. melt

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