



Revolutionary Method Achieves 99.9% Oil-Water Separation

Description

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Oil and water are difficult to separate without leaving some impurities

Abaca Press/Alamy

The separation of oil and water mixtures is crucial for developing more efficient and environmentally-friendly methods to manage industrial waste. Recent experimental prototypes have demonstrated the potential to recover both components with an impressive purity exceeding 99.9 percent.

Currently, various techniques exist for this separation, such as centrifugation, mechanical skimming, and the use of chemicals or electrical charges. While semipermeable membranes are indeed one of the simpler methods, they often leave behind undesirable remnants of oil or water.

Recently, [Hao-Cheng Yang](#) and his team from Zhejiang University in China introduced a novel approach that utilizes two distinct membranes—one hydrophobic for oil and one hydrophilic for water. This innovation aims to enhance the efficiency of separation.

Yang articulated that past attempts at this method were hindered by fluctuating concentrations during the extraction process, which undermined membrane efficiency. However, by funneling the mixture into a narrow channel between the two membranes, oil droplets are more likely to cluster and be efficiently extracted by the hydrophobic layer, thus facilitating a continuous recovery cycle.

The researchers found that refining the channel width significantly increased oil recovery from a mere 5 percent to an astonishing 97 percent, while water recovery surged from 19 percent to 75 percent. With only minimal waste left behind, Yang is optimistic about scaling this process for industrial applications in the near future.

Topics:

Vocabulary List:

1. **Separation** /,sep.ə'reɪ.ʃən/ (noun): The act of moving or being moved apart.
2. **Mixture** /'mɪks.tʃər/ (noun): A combination of different substances.
3. **Hydrophobic** /,haɪ.drə'fəʊ.bɪk/ (adjective): Repelling water; characterized by a lack of affinity for water.
4. **Efficiency** /ɪ'fɪ.ə.n.si/ (noun): The ability to accomplish something with the least waste of time and effort.
5. **Remnants** /'rem.nənts/ (noun): A small remaining quantity of something.
6. **Surged** /sɜːdʒd/ (verb): Increased suddenly and powerfully.

Vocabulary quizzes



Multiple Choice (Select the Correct answer for each question.)

1. Which term refers to something of considerable size or importance?

- Option: Efficiency
- Option: Substantial
- Option: Challenging
- Option: Metabolism

2. Which term means hidden or not easily noticed?

- Option: Surged
- Option: Concealed
- Option: Vulnerability
- Option: Amino Acids

3. Which term is synonymous with involved or occupied?

- Option: Separation
- Option: Engaged
- Option: Mixture
- Option: Anticipation

4. What term describes a combination of different elements?

- Option: Depleting
- Option: Culinary
- Option: Mixture
- Option: Efficiency

5. Which term describes the repulsion of water?

- Option: Metabolism
- Option: Anthology
- Option: Hydrophobic
- Option: Dynamics

6. Which term is associated with providing incentive or encouragement?

- Option: Anticipation
- Option: Vulnerability
- Option: Metabolism
- Option: Motivating

7. Which term means to increase suddenly or rise rapidly?

- Option: Remnants
- Option: Escapism
- Option: Surged



Option: Speculative

8. Which term means to reduce or exhaust the supply of something?

Option: Amino Acids

Option: Depleting

Option: Culinary

Option: Highlight

9. Which term is related to cooking or the art of preparing food?

Option: Separation

Option: Efficiency

Option: Culinary

Option: Vulnerability

10. Which term describes the ability to accomplish a task with minimal waste of time and effort?

Option: Speculative

Option: Efficiency

Option: Anticipation

Option: Metabolism

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

11. A _____ is an observable fact or event.

12. The child's illness left him with a sense of _____.

13. After the fire only a few _____ of the building stood.

14. The library features an _____ of short stories by various authors.

15. The students waited in _____ for the exam results.

16. Investing in cryptocurrency can be highly risky and _____.

17. Your body's _____ affects how efficiently you burn calories.

18. The journey was made easier by the presence of loyal _____.

19. The trip's _____ was seeing the majestic waterfall.

20. The final exam was extremely _____.



Matching Sentences (Match each definition to the correct word from the vocabulary list.)

21. The artist created intricate designs in her work.
22. Understanding the of a new team can help improve collaboration.
23. Their was amicable and they remained friends.
24. In harsh conditions finding can be a struggle.
25. The coach gave a speech that inspired the team.
26. Improving in production can lead to cost savings.
27. The chef's skills impressed all the guests.
28. The professor published an of poetry by modern writers.
29. The novel offered readers a form of from their daily lives.
30. The movie's was the stunning visual effects.

Answer

Multiple Choice: 1. Substantial 2. Concealed 3. Engaged 4. Mixture 5. Hydrophobic 6. Motivating 7. Surged 8. Depleting 9. Culinary 10. Efficiency

Gap-Fill: 11. phenomenon 12. vulnerability 13. remnants 14. anthology 15. anticipation 16. speculative 17. metabolism 18. companions 19. highlight 20. challenging

Matching sentence: 1. meticulously 2. dynamics 3. separation 4. sustenance 5. motivating 6. efficiency 7. culinary 8. anthology 9. escapism 10. highlight

CATEGORY

1. Sci/Tech - LEVEL4

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