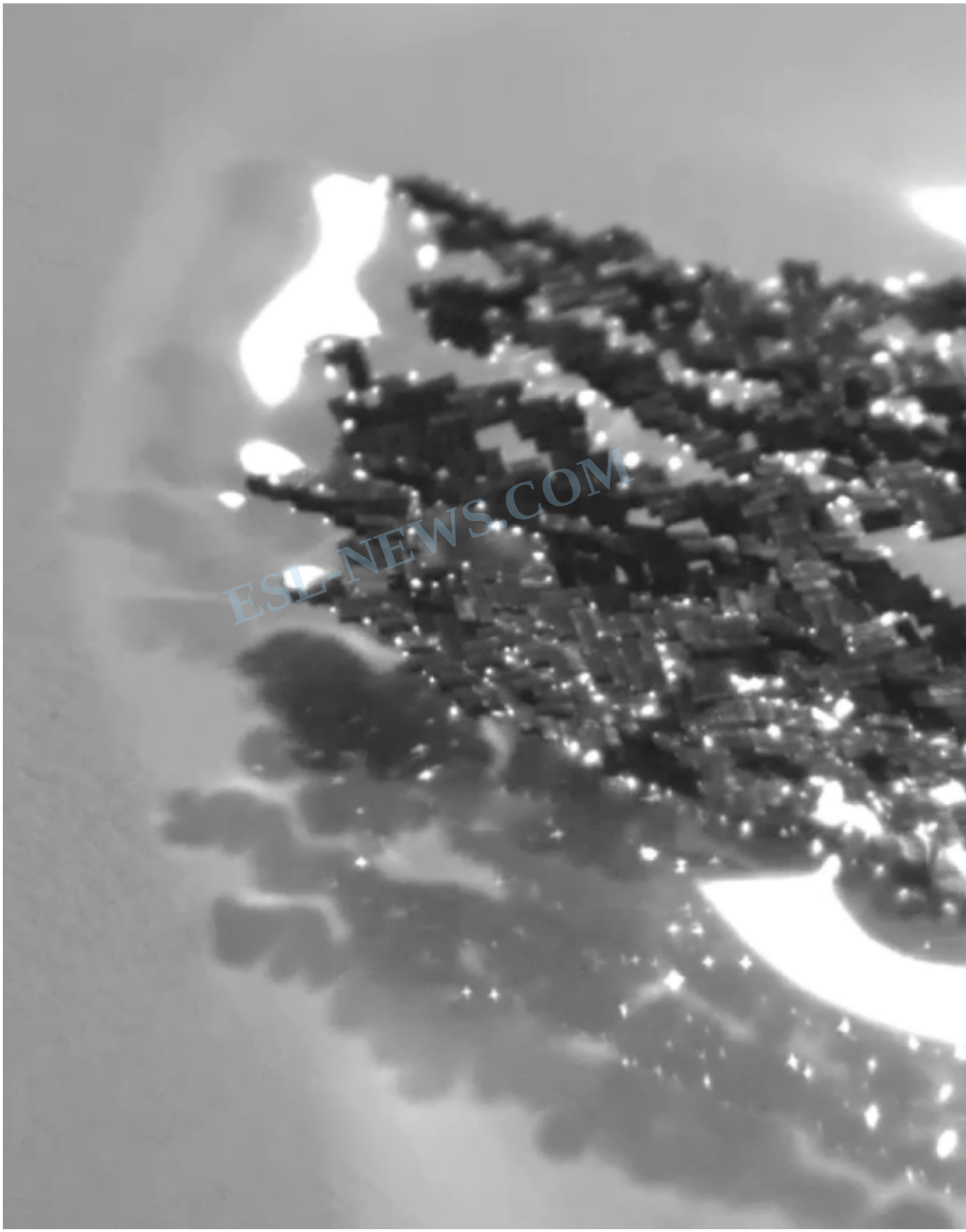
Ant-Inspired Microrobot Swarms Display Impressive Strength

Description


ESL-NEWS.COM

Swarms of tiny robots, no bigger than a grain of sand, are revolutionizing the world of robotics. These robots, guided by magnetic fields, can work together like ants. They can join forces to create floating rafts, lift objects much heavier than themselves, unblock blood vessels, and deliver drugs to specific areas inside the body.

Created by Jeong Jae Wie and his team at Hanyang University in South Korea, these cube-shaped robots are made from magnetic alloy embedded in epoxy resin. By exposing them to strong magnetic fields, the robots can be programmed to form different shapes and move in specific ways. This technology allows for the efficient production of hundreds to thousands of these microrobots, each designed for a particular task.

In experiments, the microrobot swarms showed impressive capabilities, such as climbing over obstacles and forming floating rafts. They even managed to transport a pill much heavier than themselves through liquid. While there are still challenges to overcome, experts like Xiaoguang Dong from Vanderbilt University believe these microrobots hold great promise for delivering drugs precisely and effectively to targeted areas in the body.

Despite safety concerns, the future looks bright for these tiny robots in the field of medicine, offering hope for more accurate and efficient treatments.

Topics: Robotics, Medical Technology, Nanotechnology

Vocabulary List:

1. **Swarms** /swɔːmz/ (noun): A large or dense group of insects or animals especially when in motion.
2. **Revolutionizing** /ˌrɛvəˈluːʃənʌɪzɪŋ/ (verb): Causing a complete or dramatic change in something.
3. **Cooperatively** /kəʊˈɒpəˌrətɪvli/ (adverb): In a manner that involves mutual assistance in working towards a common goal.
4. **Unblock** /ʌnˈblɒk/ (verb): To remove an obstruction or blockage.
5. **Efficient** /ɪˈfɪʃənt/ (adjective): Achieving maximum productivity with minimum wasted effort or expense.
6. **Capabilities** /ˌkeɪpəˈbɪlɪtiz/ (noun): The power or ability to do something.

Comprehension Questions

Multiple Choice

1. What are the main capabilities of the tiny microrobots mentioned in the text?

   Option: A. Create floating rafts, lift objects, unblock blood vessels, deliver drugs
   Option: B. Fly, dig underground, communicate with each other

Option: C. Build structures, generate electricity, predict weather patterns
Option: D. Drive cars, cook food, clean windows

2. What material are the cube-shaped robots made from?

Option: A. Plastic
Option: B. Metal
Option: C. Magnetic alloy embedded in epoxy resin
Option: D. Wood

3. Who created the tiny microrobots mentioned in the text?

Option: A. John Smith from MIT
Option: B. Lisa Brown from Oxford University
Option: C. Jeong Jae Wie and his team at Hanyang University
Option: D. Peter Johnson from Harvard

4. What is one of the future applications of these microrobots in the field of medicine?

Option: A. Cooking
Option: B. Cleaning
Option: C. Delivering drugs precisely to targeted areas in the body
Option: D. Playing music

5. What is the shape of the microrobots created by Jeong Jae Wie and his team?

Option: A. Spherical
Option: B. Cube-shaped
Option: C. Cylindrical
Option: D. Pyramid

6. Who believes that the microrobots have great promise in delivering drugs effectively to targeted areas?

Option: A. Elon Musk
Option: B. Xiaoguang Dong from Vanderbilt University
Option: C. Jeff Bezos
Option: D. Mark Zuckerberg

True-False

7. Swarms of tiny robots can be as large as a football field.

8. The microrobots are programmed using gravitational fields.

9. The microrobots in the experiments climbed obstacles successfully.

10. Experts like Xiaoguang Dong believe these microrobots have limitations in the medical field.

11. The tiny robots are made using wood and metal.

12. The future of these tiny robots in the medical field looks promising despite safety concerns.

Gap-Fill

13. Jeong Jae Wie and his team created the tiny robots at Hanyang University in _____ Korea.

14. The microrobots are guided by _____ fields.

15. The microrobots can join forces to create floating _____.

16. Xiaoguang Dong is from _____ University.

17. Despite challenges, the experts believe these microrobots hold great promise for delivering drugs precisely and _____ to targeted areas in the body.

18. The tiny robots are _____ than a grain of sand.

Answer

Multiple Choice: 1. A. Create floating rafts, lift objects, unblock blood vessels, deliver drugs 2. C. Magnetic alloy embedded in epoxy resin 3. C. Jeong Jae Wie and his team at Hanyang University 4. C. Delivering drugs precisely to targeted areas in the body 5. B. Cube-shaped 6. B. Xiaoguang Dong from Vanderbilt University
True-False: 7. False 8. False 9. True 10. False 11. False 12. True
Gap-Fill: 13. South 14. magnetic 15. rafts 16. Vanderbilt 17. effectively 18. no bigger

Answer

CATEGORY

1. Sci/Tech - LEVEL3

Date Created
2024/12/20

Author
aimeeyoung99