

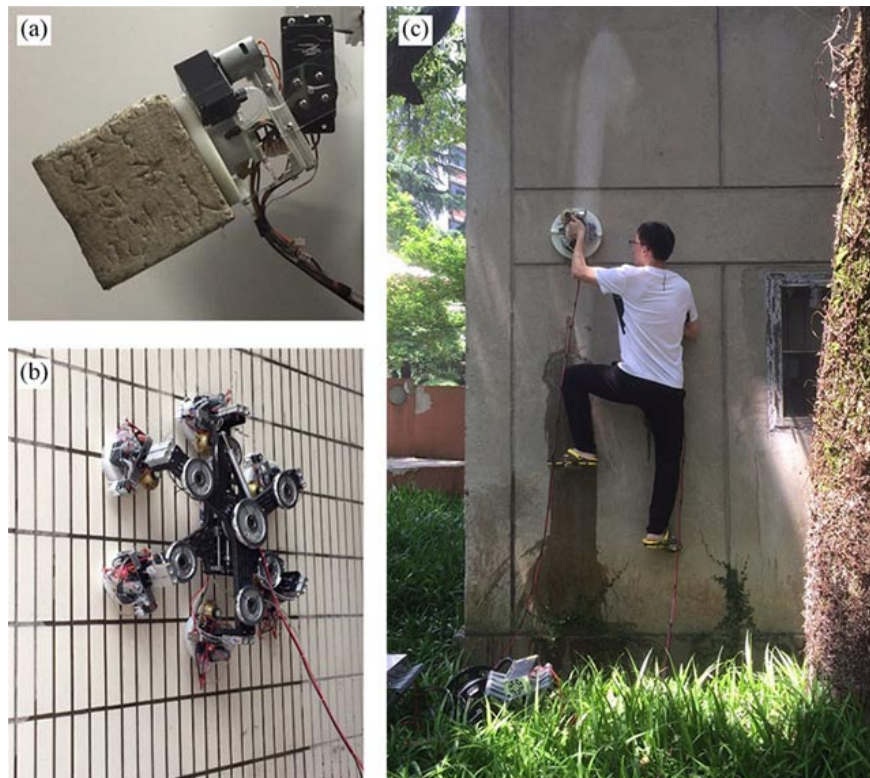
# This device can turn you into 'Spider-Man'

This is essentially a specially designed vacuum device.

Researchers Xin Li and Kaige Shi from Zhejiang University in China have recently developed a device that allows humans or robots to climb on rough surfaces, regardless of structure. come on, extremely easy and secure - similar to the Spider-Man character on the small screen.

This is essentially a specially designed vacuum device, which has an extremely strong adhesion mechanism, which can help to attach large objects to any surface - glass, smooth marble. , concrete, wood . provided that the surface is not easily broken.

Conventional evacuation methods, as well as previous vacuum devices, were often unable to maintain a constant and strong suction force on rough, bumpy surfaces due to vacuum leakage. To solve this problem, Xin Li and Kaige Shi developed a new vacuum method called Zero-Pressure Difference (ZPD), which could enhance the overall sustainability. evacuate the surface by dividing it into several small units, each of which 'manages' a smaller scope, which helps to prevent vacuum leakage in uneven surfaces. In addition the centrifugal force of the rotating water jet eliminates the pressure difference at the boundary of the vacuum zone, maintaining high vacuum pressure inside the suction cup.



'Our invention can be applied in many different fields, especially in developing models of climbing robots, robotic arms that help people perform complex tasks. Compared to conventional wall climbing robots, our ZPD-powered vacuum unit achieves astonishing improvement in adhesion performance, " said researcher Xin Li.

In addition, the ZPD mechanism will also help to save energy, being smaller and lighter than traditional suction methods. The researchers tested their device with three different sizes and suction applications: on a robotic arm to grip and handle objects, on a hexapod wall climbing robot and a Human-like wall climbing device. Spider.

The next step in this study is to cut back on water consumption in suction cups. If this is done, the suction unit will be able to operate for a very long time with a small amount of water, so the wall climbing robot can carry water itself instead of having to be connected to a fixed water supply such as The current.

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