Superomniphobic tape adheres to any surface

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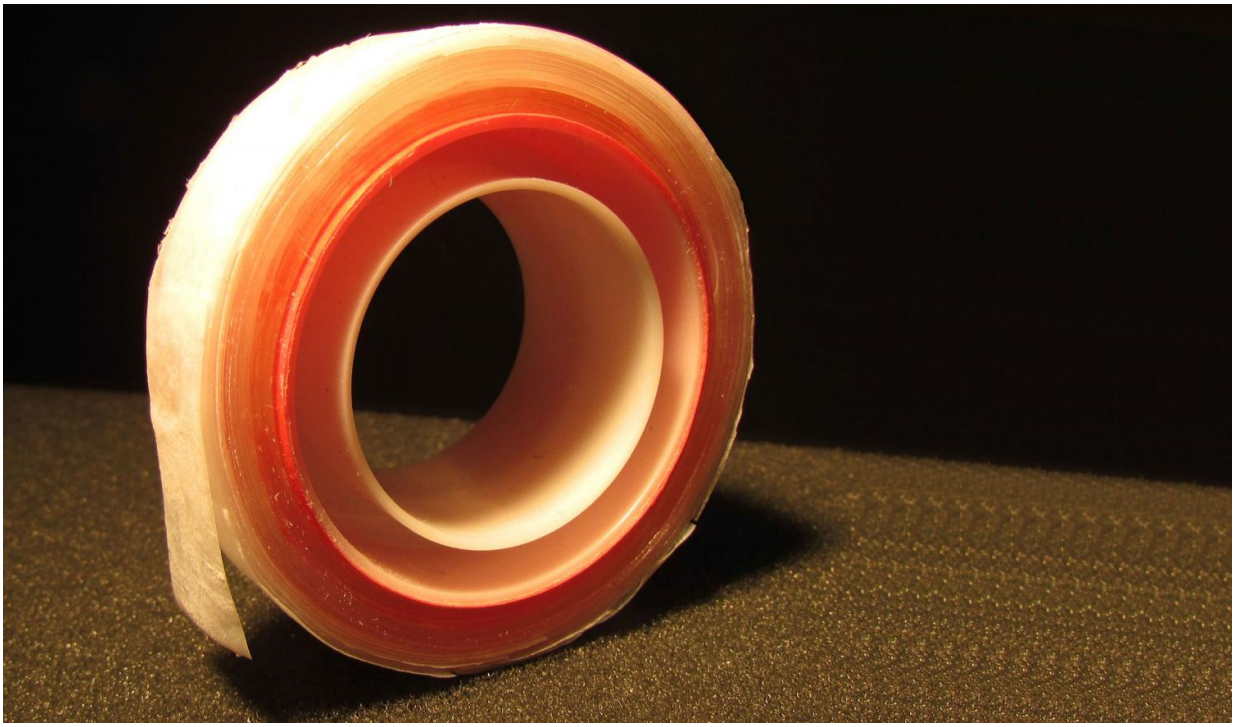

The Kota lab at Colorado State University has created a superomniphobic tape that adheres to any surface and imparts liquid-repellant properties. Credit: Kota lab/Colorado State University

Arun Kota, assistant professor of mechanical engineering at Colorado State University, has made a superomniphobic tape that, when adhered to any surface, gives the surface liquid-repelling properties. This recent breakthrough has been published by *ACS Applied Materials & Interfaces*.

Superomniphobic surfaces are extremely repellent to all liquids, made possible by an air cushion that lies between a liquid and a solid surface. With more than 10 years of research in this area, Kota has made many breakthroughs in super-repellent coatings. This latest product is similar in flexibility to Scotch Tape, but has the additional functionality of being extremely liquid-repellant.

Kota, doctoral student Hamed Vahabi, and postdoctoral fellow Wei Wang, developed the unusual tape. Though simple at first glance, the technology's potential impact is extraordinary, the researchers say.

The concept of superomniphobic surfaces isn't new. Researchers have been studying superomniphobic coatings since about 2007, and currently superomniphobic coatings can be sprayed, deposited or etched onto any surface for a similar effect; however, it requires costly equipment, complex techniques, and must be done by an experienced professional.

By contrast, the Kota group's superomniphobic tape can be used by anyone, making it a practical solution in a variety of civilian, commercial, and military applications including corrosion resistance, self cleaning, drag reduction, liquid waste minimization, and more.

The researchers feel that future challenges in this field are exciting - yet puzzling. While many applications of superomniphobic coatings have already been outlined, coming up with a superomniphobic coating that is mechanically durable remains a major challenge.

Kota has filed a patent and sees tape and adhesive manufacturers as well as the packing industry having a strong interest in the product. He and his group will continue to research the mechanical durability of their product.

More information: Hamed Vahabi et al, Free-Standing, Flexible,

Superomniphobic Films, *ACS Applied Materials & Interfaces* (2016).
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