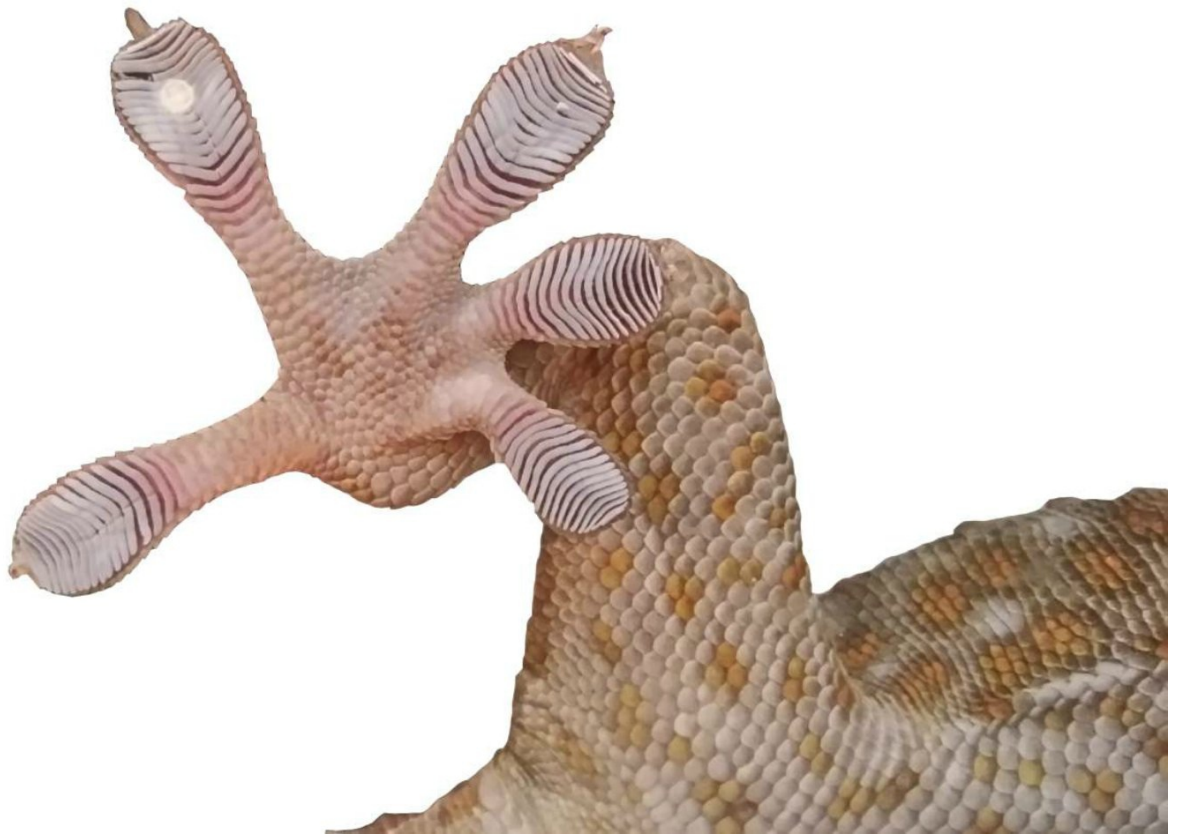


Wet/Dry Adhesive Mimics The Complex Structure Of A Gecko's Foot

Northwestern University



Inspired by the striking ability of geckos to attach themselves to vertical surfaces, and the cement-like sticking power of mussels, engineers at Northwestern University, Evanston, Ill., have invented a reusable adhesive that performs well in both wet and dry conditions.

“Biomimetic Modular Adhesive Complex” was developed in 2006 at Northwestern’s Biomedical Engineering Department by professor Phillip D. Messersmith, PhD, graduate student Haeshin Lee, and Bruce P. Lee of Nerites Corp., a biotechnology company in Madison, Wis. The research was funded by National Institutes of Health and NASA.

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Called geckel, the tape-like material mimics the adhesive strategies of geckos and mussels. The bottom-most layer is

an adhesive backing or strip. The structure of the gecko's foot is imitated by nano-arrays of silicone pillars that are attached to the strip and are flexible enough to adapt to rough surfaces.

The pillars are then coated by a thin layer of a synthetic polymer that is chemically very similar to the compound mussels excrete to adhere to underwater surfaces.

Although other gecko-mimetic adhesives have been created, this one is the first that works well on wet surfaces or underwater. Possible applications include using geckel as a water-resistant adhesive for bandages, closing wounds, denture adhesives, sports grips, and an all-purpose adhesive for use in marine environments.

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