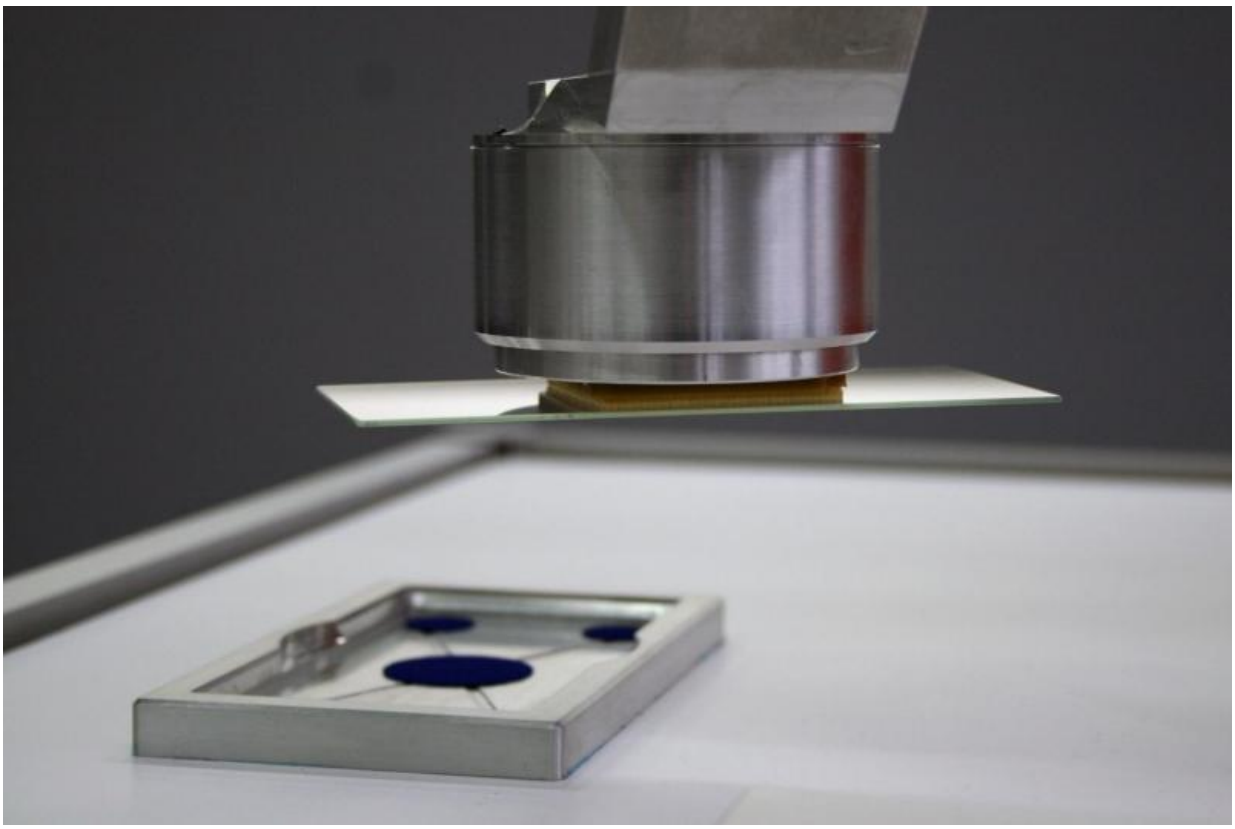
New robotic gripping surface for sensitive devices adds a new dimension to handling: a boost for Industry 4.0

April 11 2016



New robotic gripping surface for sensitive and heavy devices.

Components with highly sensitive surfaces are used in automotive, semiconductor, display and optical technologies.

During production, these parts have to be handled repeatedly by pick-and-place processes. The proprietary Gecomer principle reduces the risk of surface contamination with residues, and of mechanical damage due to gripping. In their latest version, researchers at the Leibniz Institute for New Materials (INM) have improved the adhesive force in their Gecomer structures up to 20 kilogram per 25 square centimeter. This conforms to the weight of 40 tablets handled with a surface half postcard size. Within these new findings, it will be possible to use the same gripper for heavy and lightweight, sensitive devices. These innovations will open up new avenues for Industry 4.0.

The researchers will be presenting their results from 25 to 29 April 2016 in Hall 2 at the stand B46 of the Hannover Messe in the context of the leading trade fair for R & D and Technology Transfer.

"Artificially produced microscopic pillars, so-called gecko structures, adhere to various items. By manipulating these pillars, the adhesion can be switched on and off. Thus, items can be lifted and released quickly and precisely," Karsten Moh from INM explains. "Our new materials add a new dimension to the handling of heavy devices which are sensitive, even in vacuum," says Moh. "With the currently developed adhesion system, adhesive forces of more than eight Newton per square centimeter can be achieved. In our tests, the system has proved successful even after 15,000 cycles," the technology expert Moh says. Even slightly rough surfaces can be handled reliably.

The development group now focuses on the gripping of objects with non-planar surfaces. Additionally, new triggers for switching the adhesion are being explored.

Provided by Leibniz Institute for New Materials