New Ideas. New Materials.

# PRESS-INFORMATION – NANO TECH, TOKYO

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

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 kg per 25 $cm^2$. Within these new findings, it will be possible to use the same gripper for heavy, robust and lightweight, sensitive devices. These innovations will open up new avenues for Industry 4.0.

The researchers from the INM will be presenting their results at the International Nanotechnology Exhibition and Conference *nano tech 2016*, Tokyo, Japan.

"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 7.5 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. .

From January 27 to 29, the researchers of the INM will be presenting their results at the German Area, Booth 5J-17.

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INM conducts research and development to create new materials – for today, tomorrow and beyond. Chemists, physicists, biologists, materials scientists and engineers team up to focus on these essential questions: Which material properties are new, how can they be investigated and how can they be tailored for industrial applications in the future? Four research thrusts determine the current developments at INM: *New materials for energy application*, *new concepts for medical surfaces, new surface materials for tribological systems* and na*no safety and nano bio*. Research at INM is performed in three fields: *Nanocomposite Technology*, *Interface Materials*, and *Bio Interfaces*.

INM – Leibniz Institute for New Materials, situated in Saarbrücken, is an internationally leading centre for materials research. It is an institute of the Leibniz Association and has about 220 employees.