

SPRINGER
REFERENCE

Bharat Bhushan
Editor

Encyclopedia of Nanotechnology

 Springer

Bharat Bhushan (ed.), *Encyclopedia of Nanotechnology*, DOI: 10.1007/978-90-481-9751-4, © Springer Science+Business Media B.V. 2012

Editor

Bharat Bhushan

Encyclopedia of Nanotechnology



[Home](#) > [Encyclopedia of Nanotechnology](#) > Reference work entry

Nanogrippers

Reference work entry

pp 1552–1569 | [Cite this reference work entry](#)[Peter Bøggild](#)  375 Accesses

Synonyms

[Nanotweezers](#)

Definition

Nanogrippers are micro- or nanoactuators equipped with high-precision dual end-effectors, capable of applying controllable, opposing forces on nanoscale objects, and thereby allowing these to be lifted free from a surface, held in a well-defined position, moved to another position, and placed in a controlled way.

Overview

Nanogrippers allow structures with at least one dimension being of order 100 nm or smaller to be manipulated in a predictable manner. Such grippers consist of one or more actuators, which determine the gap between two or more end-effectors. The actuators are operated through variations of a physical quantity, which is typically an electrical current or voltage, but might also be the temperature, a magnetic field, or even light. While there is a wide selection of actuators available for conventional microelectromechanical systems (MEMS), nearly all nanogrippers which have been demonstrated in practical manipulation of nanostructures so...
