

Three Dimensional Hybrid Microassembly Combining Robotic Microhandling and Self-Assembly

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Abstract

Hybrid microassembly combining robotic microhandling and self-assembly aims at having the best of the both: good efficiency, reliability, accuracy and capability in creating complex structures. In this paper, a microassembly technique combining robotic tweezer-type microgripper and droplet self-alignment is discussed. The assembly method is evaluated by applying it in different 3D assembly cases, which would pose problems to a solution based on robotics or self-assembly alone. In the first, part rotation is realized by capillary forces. In the second, hierarchical structures are realized. Finally, cantilever structures are created using the method.