

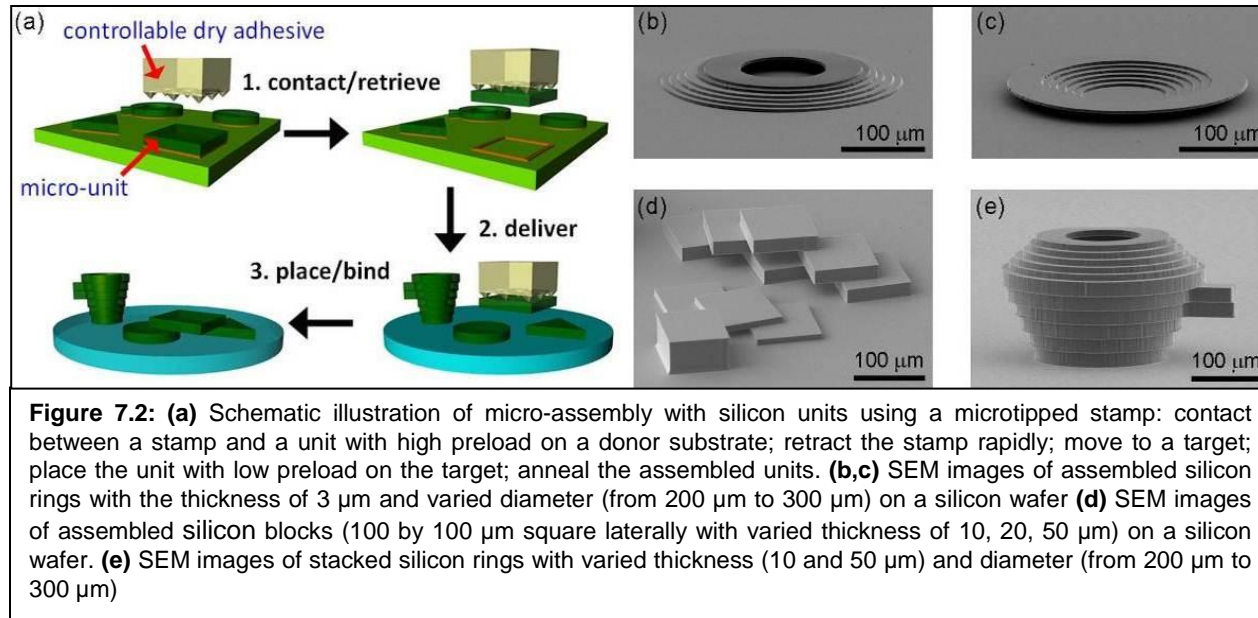


Micro-Assembly using Elastomeric Surfaces with Switchable Dry Adhesion

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This work presents a micromanufacturing method for constructing microsystems, which we term ‘micro-masonry’ based on individual manipulation, influenced by strategies for deterministic materials assembly using advanced forms of transfer printing. Analogous to masonry in construction sites, micro-masonry consists of the preparation, manipulation, and binding of microscale units to assemble microcomponents and microsystems. We used microtipped elastomeric stamps as manipulators and built three dimensional silicon microstructures [1]. Silicon units of varied shapes were fabricated in a suspended format on donors, retrieved, delivered, and placed on a target location on a receiver using microtipped stamps. Annealing of the assembled silicon units permanently bound them and completed the micro-masonry procedure.



[1] H. Keum, A. Carlson, H. Ning, A. Mihi, J. D. Eisenhaure, P. V. Braun, J. A. Rogers, S. Kim, “Silicon Micro-Masonry Using Elastomeric Stamps for Three-Dimensional Microfabrication,” *Journal of Micromechanics and Microengineering*, accepted for publication (2012)