

Synchronized Magneto-Actuation of Micropillar Arrays

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Programmable stimuli-responsive materials are fascinating candidates for shape-reconfigurable devices. Especially, magneto-responsive materials provide programmability of alignment for magnetic components, resulting in directed mechanical actuation by external magnetic field which is not limited by the obstacles between the magnetic source and the target objects. In this study, we prepared magnetically active polymer composite microarrays based on polydimethylsiloxane (PDMS) and ferromagnetic iron particles via replica molding. To pre-program various alignment states of iron particles, external magnetic field was applied during the replica molding. In this presentation, we will discuss reversible synchronized magneto-actuation of microarrays programmed by the alignment of the magnetic component.