Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Repeated Shape Recovery of Clustered Nanopillars by Mechanical Pulling

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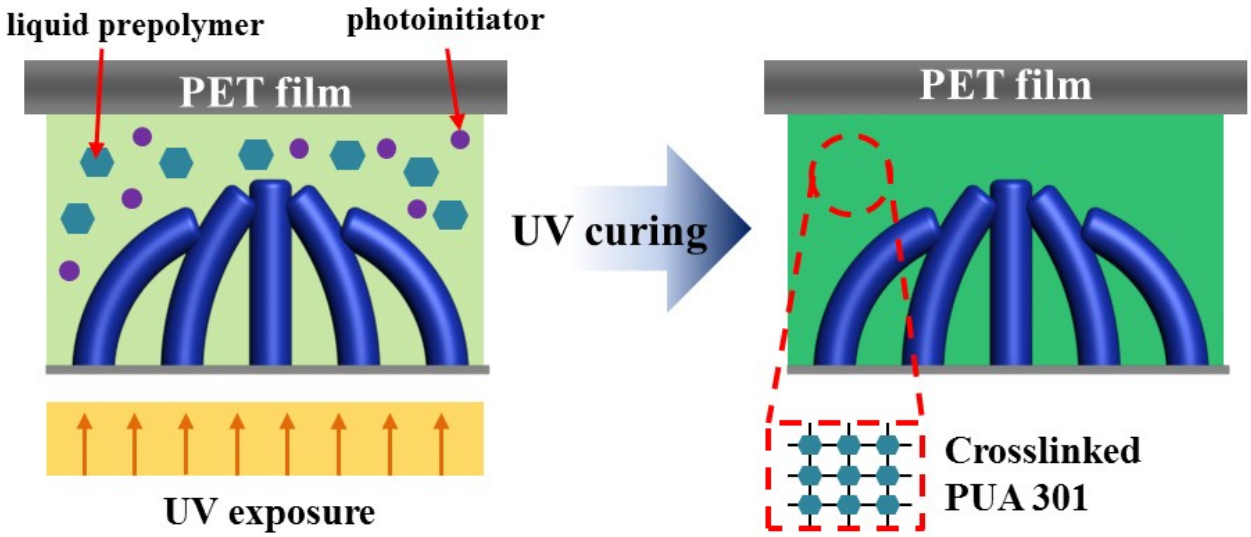

Figure S1. Schematic illustration of the UV curing process of PUA infiltrated between the nanopillars. During UV exposure, free radicals are generated from the photoinitiator, which react with the acrylate groups on the prepolymer, leading to a crosslinked network.

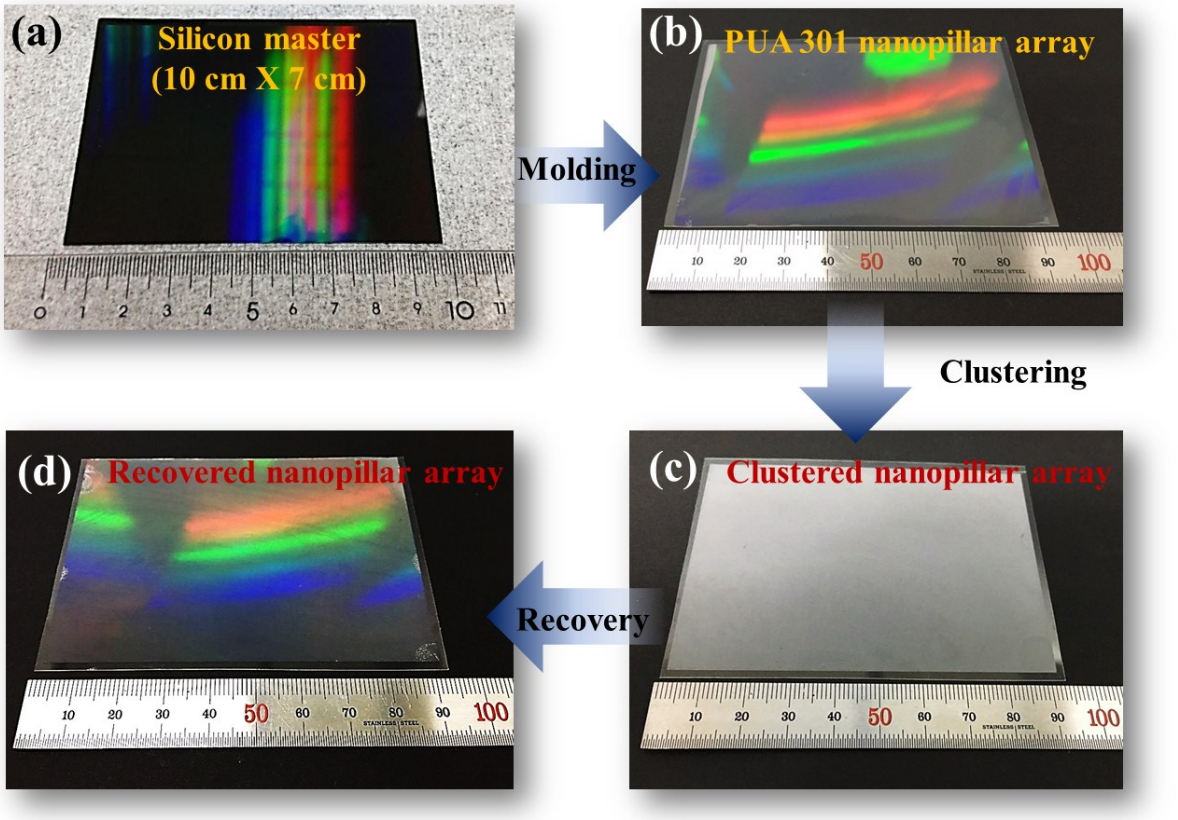

Figure S2. Optical image of (a) an as-fabricated silicon master with a nanohole array over a large area (~10 cm × 7 cm), (b) a replicated PUA 301 nanopillar array from the silicon master, (c) a clustered nanopillar array, and (d) a recovered nanopillar array.

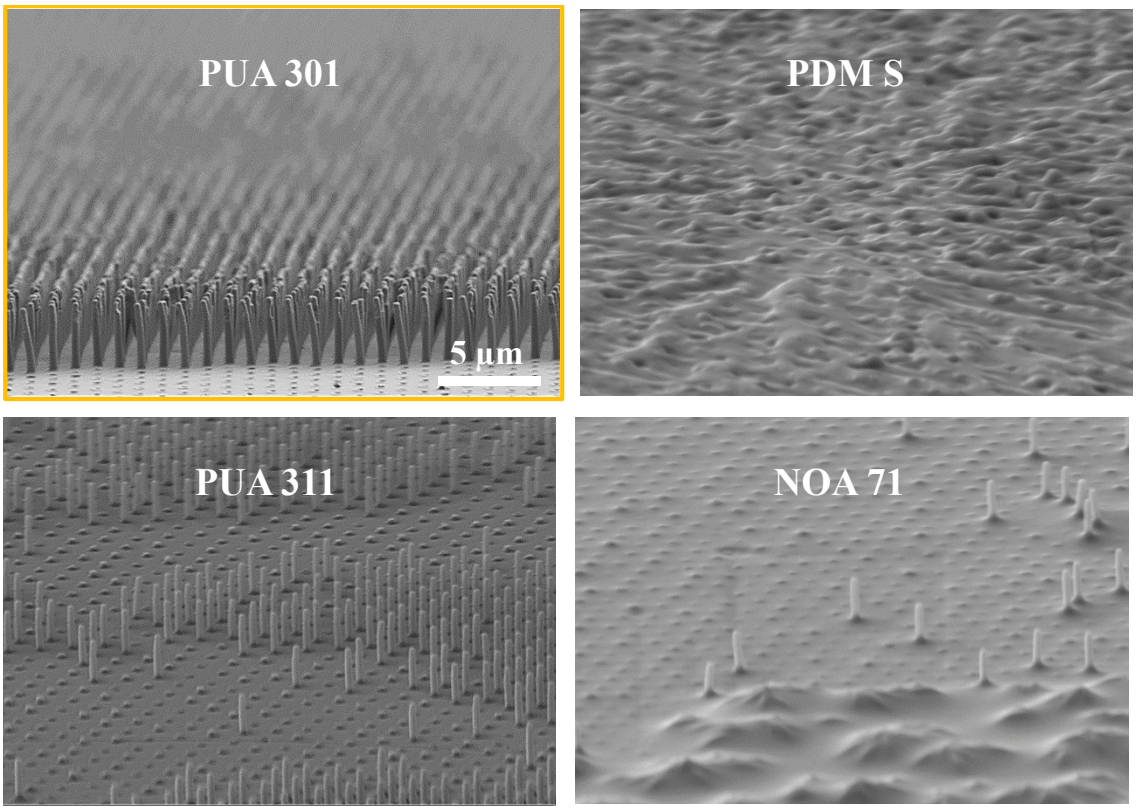

Figure S3. SEM images of the fabricated HAR nanopillar arrays using soft PUA (MINS 301), PDMS, hard PUA (MINS 311), and NOA 71, respectively. PUA 301 apparently is the most suitable material for replicating the HAR structures from a silicon master compared to other polymers. The scale bar in PUA 301 image is applicable to all images.

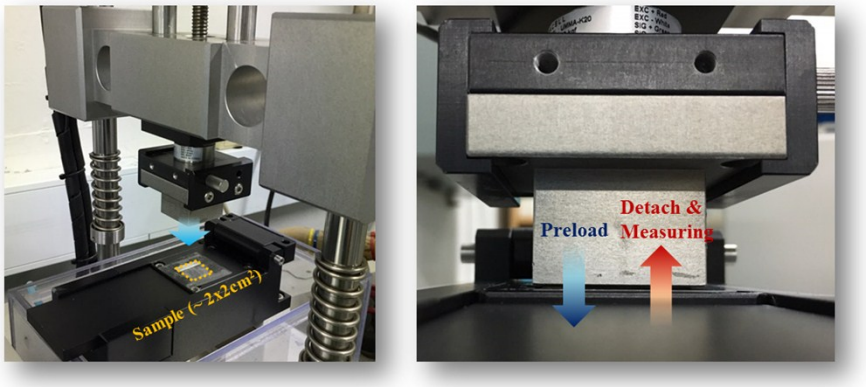

Figure S4. Pictures of a custom-built equipment for measuring the adhesion force of samples. The measured value was ~10.8 ±1.1 N cm^{-2}, which is higher than the calculated separation force (~3.7 N/cm^2) to overcome adhesion between clustered pillars.

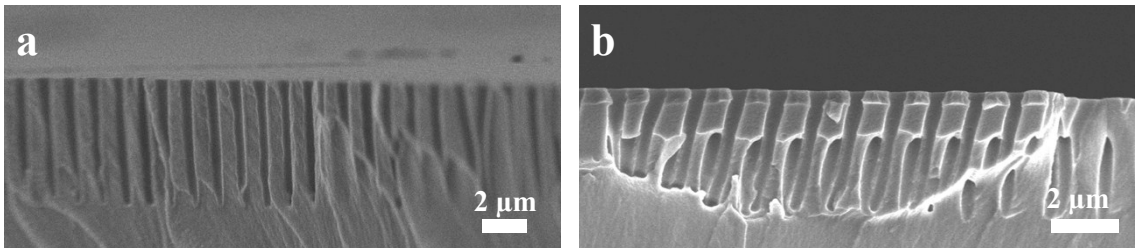

Figure S5. Cross-sectional SEM images of the negative PUA patterns after demolding from (a) the originally straight and (b) the clustered HAR nanopillar arrays.