

Preparation of Various Nanoscopic Gold Patterns by Capillary Force Lithography

정진미, Francesco Stellacci¹, 정희태*

한국과학기술원; ¹MIT

(heetae@kaist.ac.kr*)

We report a novel method for creating many different complex structures from a single prepattern that is either prepared from a master mold or stamped onto a solid substrate by printing with a PDMS replica mold. We used silicon masters with ellipsoidal dot patterns of four different feature sizes, in which the dimensions of the ellipsoidal dot patterns are defined by the size of a single ellipsoidal dot and their vertical/lateral periods. Various metal patterns with various feature sizes could be generated from a single pattern of isolated ellipsoidal dots by simply varying the residual polymer film thickness and the reactive ion etching (RIE) time. Such structures are difficult to fabricate with other methods, and their fabrication with such methods is very time-consuming. This approach shows the flexibility of generating various types of pattern shapes from a single prepattern, and it has the significant additional advantages of low cost and high efficiency because it is free of sophisticated processing.