Colloidal Particle-Assisted Nanopatterning

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Polymeric substrates with well-defined feature sizes are of practical significance for biosensors in life sciences and semiconductor processing. Recently, various polymeric structures were made by using lithographic pattern formations. These lithography-based techniques are very useful in the pattern fabrication for the microelectronic devices and biotechnology applications such as microelectrode arrays, memory devices, and biosensors. Advanced (E-beam, X-ray, and ion beam) lithographic techniques to fabricate finer feature sizes need high cost, long process time, or complex equipments. Although these advanced lithographic technologies have been used to make nanoscale masters, they have a few limitations in reducing master size or feature scale. Alternative methods are based on the "bottom-up approach" using self-assembly of colloidal particles. In this work, we fabricated various nanopatterns by using a novel method via colloidal particle-assisted lithography.