

The fabrication of complex patterns with high resolution and high aspect ratio pver large area by repetitive secondary sputtering lithography

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The development of large-area nano-patterning with high resolution, high aspect ratio and simple process scheme/cost is a challenging work for realizing their potential applications in opto-electronics and nano-biotechnology such as nanoelectronics, optics, optical sensing, light-emitting devices and bio-sensing devices. Several approaches towards nanostructure fabrication have been exploited without resorting to expensive tools such as those used in deep-UV projection lithography and electron-beam lithography. we have developed an highly advanced nanopatterning technique by adopting secondary sputtering lithography repetitively in order to achieve the very complex 3-dimeansional patterns and connected 10nm scale patterns. This was accomplished by rotating the second patterned PDMS mold with line and ring shapes with respect to the first gold patterns. The resulting periodic structures contained various complex 3D pattern and a range of feature sizes that are difficult and time-consuming to fabricate using other methods.