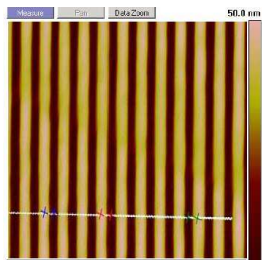




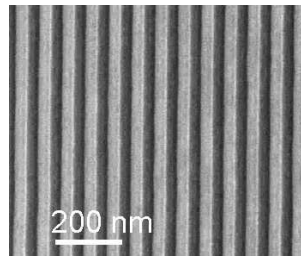
smaller better nanostructures

35 nm half-pitch gratings popular with researchers

Since its introduction earlier this year, the 35 nm half-pitch grating template has been used by many customers around the world and in collaborative projects of EULITHA. The introductory standard template having a patterned area of 2.4 mm² is popular with researchers in need of high resolution line structures or engaged in the development of nanoimprint processes. Large area custom made versions covering centimeter square areas are sought in studies in biology, and magnetic and optical properties of materials. The Institute for Polymer Nanostructures (known with its German acronym - INKA) in Switzerland utilized the structures to test their Nanoimprint and Nano-injection molding processes. In another study the templates were recently used by the EV Group of Austria to demonstrate their process for producing low cost plastic replica templates. This joint work will be presented at the NNT conference later this fall in San Jose, California.



AFM image of the 35 nm half-pitch polymeric working replica template (G. Kreindl, EV Group).



SEM image of a nanoimprinted pattern in PMMA resist. Imprint performed on a Hex03 tool from Jenoptik (M. Altana, H. Schift, INKA).

New e-beam machine boosts production capability, capacity

While capitalizing on its breakthrough EUV technology for producing large area periodic nano-structures, we also serve researchers who require arbitrary structures with e-beam lithography. EULITHA has started making nanostructures with a state-of-the-art e-beam system (Vistec EBPG 5000ES) that was recently installed at the cleanrooms of the Paul Scherrer Institute where EULITHA's production takes place. The new machine together with a LION LV-1 low voltage machine gives us the ability to manufacture structures with resolution down to 20 nm with quick turnaround times.



High-resolution templates for photonic crystals

Currently there is a tremendous incentive to increase the efficiency of LEDs as they continue to find application in more and more areas such as consumer products, residential and consumer lighting and automotive industry. Patterning photonic crystal structures on the surface of LEDs is one of the most promising ways to boost the efficiency. These periodic structures, typically consisting of etched holes at the surface, have periods in the 100-500 nm range. EULITHA has developed a template to be used in high resolution patterning of LED surfaces. The template, consisting of pillars with a periodicity of 106 nm on a silicon surface, is targeted for use in R&D studies. Areas on the order of several square centimeters are covered by step-and-repeat exposure of 1x1 mm² dies. The combination of resolution, quality and large areas make these unique templates a perfect choice in the drive to fabricate ever more efficient LEDs.

