

## **CURRENT STATUS OF NANO IMPRINT TECHNOLOGY DEVELOPMENT IN CNMM**

**Eung-Sug Lee, Jun-ho Jeong**  
Korea Institute of Machinery & Materials  
171 Jang-Dong Youseung-Gu Daejeon-Si Korea 305-343  
les648@kimm.re.kr

### **ABSTRACT**

Ultraviolet-nanoimprint lithography (UV-NIL) is a promising method for cost-effectively defining nanoscale structures at room temperature and low pressure. In an attempt to apply a large area stamp to UV-NIL in a low vacuum environment, we used a UV-NIL process using an elementary patterned stamp (EPS), which consists of a number of elements, each of which is separated by a channels. Nano-scale patterns of each element were fabricated using e-beam lithography and an etching process in which a Cr film was employed as a hard mask for transferring nanostructures to a quartz plate. Before pressing the EPS, low viscosity resin droplets with a nono-liter volume were dispensed on each element of the EPS. Experiments on UV-NIL were performed on an EVG620-NIL. 50nm-70nm features of the EPS were successfully transferred to 4-in wafers. We measured patterns and residual layers on the imprinted wafers to evaluated the potentials of the proposed process. Experiments showed that the EPS enables UV-NIL using a large-area stamp in a low vacuum environment.

I'd like to introduce the current status of nano-imprinting technology development in CNMM (Center for Nanoscale Mechatronics & Manufacturing) focuss on process technology, application technology and tool technology.