NANO IMPRINT LITHOGRAPHY FOR MANUFACTURING NANO SCALE FEATURE SIZES

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LEO is offering nano imprint lithography systems, which can be used for manufacturing sub-100 nm features on silicon and non-silicon substrates.

The manufacturing is based on Step and Flash Imprint Lithography. Feature sizes of 20 nm have been demonstrated. In this talk the manufacturing process of nano imprint lithography components is described: First a quartz template is manufactured, which represents the negative of the features to be imprinted on a wafer. Usually this is done with e-beam or ion-beam lithography. Afterwards the wafer is imprinted by dispensing a resist fluid in a very controlled manner, bringing the template and the wafer into contact, so that the template pattern is replicated in the resist of the wafer, then hardening the resist by a UV flash and removing the template from the wafer. The second process, which consists of four steps, can be repeated many times. This makes the nano imprint lithography systems an ideal tool for small and medium volume manufacturing. Furthermore two tools have got alignment capabilities for imprinting several lithography steps onto one another. Measures for improving the alignment capabilities and increasing the throughput are discussed.