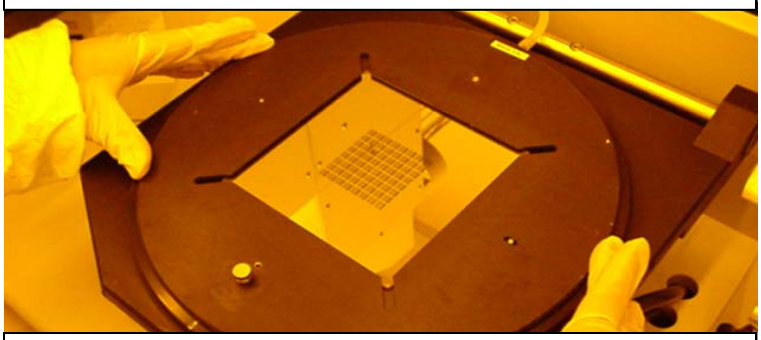
KY NanoNet KORE PhotoMask Generation and Advanced Lithography

The University of Louisville Micro-Nano Technology Center (MNTC) has established tremendous capabilities in the areas of mask generation and advanced lithography. Utilizing a grant through Kentucky NSF EPSCoR, the UofL MNTC has initiated a program called Kentucky Optical Resources (KORE) through its Kentucky NanoNET (KYNN) initiative (www.kynanonet.org). KORE provides lithographic resources to academia and industry including photomask generation, e-beam lithography, and grayscale imaging. We accept design files created from most common design software packages including gdsii, dxf, and cif. L-Edit is an approved commercial design tool that is available at no cost to our KYNN academic users through a complementary KYnanoNET program called KRUNCH.

Photomask Generation

Through KORE the University of Louisville has recently purchased a Heidelberg DWL 66FS, a laser pattern generator that is capable of producing photomasks. The machine uses a 405nm diode laser and a raster writing method that has greatly improved the writing speed compared to similar models. A 5" photomask with smallest feature size of 2µm can be written in roughly one hour. This machine is also capable of creating photomasks with distinguishable features down to 500nm. The Heidelberg DWL 66FS is also capable of direct write lithography, meaning it can write on any semi-flat substrate. This means that the MNTC can provide lithography services for wafers and other substrates sent in from customers. The UofL MNTC also provides a wide variety of photomasks for customers capable of doing exposures themselves:

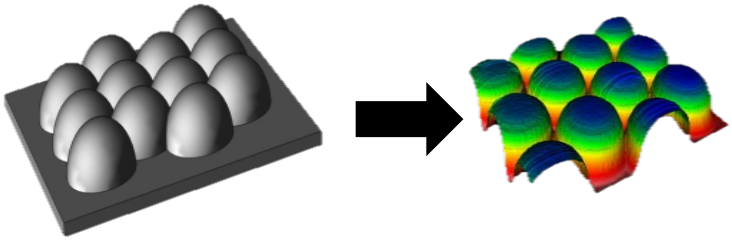
- 4", 5", 7", and 9" photomasks
- Chrome and Iron Oxide masks
- Test and Prime grade masks



Contact Information:
If interested visit the KY NanoNET website at www.kynanonet.org to read more about KORE and KRUNCH or to submit a mask design.
Any other questions can be sent directly to Curt McKenna at curt.mckenna@kentuckynanonet.org

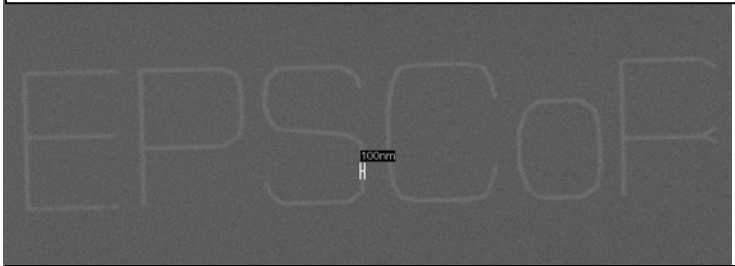
Grayscale Lithography

The Heidelberg DWL 66FS is also capable with grayscale lithography. This process can result in the creation of complex 3D structures in photoresist simply from using a single exposure lithographic technique. The Heidelberg DWL 66FS is able to distinguish 128 grayscale levels for exposure. Grayscale lithography can be performed in almost any photoresist, with the tallest structures created to date measuring over 40 microns tall. The UofL MNTC staff is more than happy to help in designing and refining grayscale photolithography techniques for specific customer's needs.



E-Beam Lithography

An additional lithography tool available at the UofL MNTC is a Raith 150 e-beam writer. The Raith 150 is a SEM that has been modified to expose e-beam resists. Due to the small diameter and wavelength of the electron beam, this machine is capable of exposing resist below 50nm.



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