NanoFab News

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We are pleased to distribute the first Newsletter for current and potential users of the NanoFab at the NIST Center for Nanoscale Science and Technology (CNST). This quarterly newsletter is intended to keep users up to date on our fabrication process development, tool installations, safety and access policies, and other notable news. This newsletter is for you, the NanoFab user, so if you have suggestions for improving it, please let us know via email.

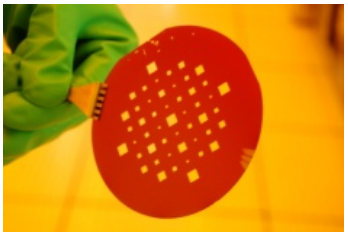
People

NIST, CNST Welcome New NanoFab Manager

The CNST is pleased to welcome Vincent Luciani as the new NanoFab Manager. Vincent has over 30 years of private industry experience in semiconductor and nanotechnology process development and project management. He previously worked for Solarex Corporation, the Bendix Advanced Technology Center, Allied-Signal, and Covega Corporation. Vincent is an expert in Project Management, with a Six Sigma Blackbelt, and holds five patents in semiconductor and nanofabrication technology.

Processes and Products

One of Vince's first projects is to compile a list of all the standard processes the CNST NanoFab can easily offer our customers. We will then take that information and place it on a number of platforms from print materials to the web to let current and future users know more about our capabilities. If you have a process you have developed in the NanoFab that you can share with others, please outline your work and provide Vince with the relevant recipe so he can include it in our list of NanoFab processes.



NanoFab staff members Gerard Henein and Marc Cangemi have developed a process to fabricate thin film nitride membranes for use in the NanoFab. Membranes can be used as starting "platforms" for the fabrication of micro-and nanoscale devices. The 100 nm-thick membranes can be fabricated in sizes from 1 mm x 1 mm to 5 mm x 5 mm, suspended over a silicon frame that is typically 1 cm x 1 cm. This new capability will allow users to have a membrane supply on hand. As an extension of this work, the NanoFab staff is now developing a process to create stencil masks from these membranes.

Safety and Access Policies

New Chemical Waste Labeling Procedures for the NanoFab Cleanroom

New procedures have been implemented for labeling chemical waste. There are preprinted labels for some common chemicals used in the cleanroom. These labels can be found in the chemical pass-thrus (i.e. solvent waste, acid waste, etc.). For chemical waste for which there are no preprinted labels available, we have provided a central location in B101 near the login computer with blank NFPA chemical waste labels to be filled out by the user. There you will also find the NFPA Hazard Rating Chart and chemical waste reclaim instructions. *Please do not write directly on the bottles unless there are no labels available*. Immediately notify the NanoFab staff when the chemical waste label supply is low or depleted.

Personal Protective Equipment (PPE) Reminder

PPE devices (acid apron, face shield, high wrist gloves) are required when doing *any* chemical processing in the cleanroom. PPE must be used when working at the wet benches and at the fume hoods. (Full PPE is not required when using only solvents in the small squirt bottles.) Some products are more dangerous than they appear; for example some of the Tetramethylammonium Hydroxide (TMAH) developers have a pH of 13.5 and can cause serious skin burns and blindness. A face shield is required when using the wet benches, but is optional if you work behind the sash in a fume hood.

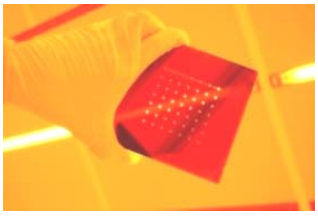
NanoFab Access Policies

The NanoFab Safety Team wishes to remind users of the policy for admittance to the NanoFab cleanroom. *No new or existing user of the cleanroom will be allowed access until he/she has passed the safety exam, which must be retaken every year*. Unauthorized access is not permitted. In addition, all NanoFab users must receive authorization from the NanoFab Manager prior to bringing visitors into the cleanroom. Authorized visitors to the cleanroom must be escorted at all times by a certified user or NanoFab staff member. For full details on these policies, review our safety manual.

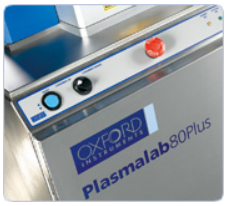
Finally, a word about updating identity and admission cards for the NanoFab. Many users have waited until the last minute to renew their credentials to gain admission to the 'Fab. In many cases when that has happened, the user has tried to reach Facility Coordinator Jeff Pasternak only to discover he is away or the equipment to code the cards is not available. To avoid this problem and any interruption in your access to the NanoFab, please note when your credential expires, and contact Jeff in advance to make a renewal appointment.

NanoFab Tool Updates!

The new Heidelberg DWL 66FS maskless laser lithography system is up and running in the NanoFab. It supports both mask writing as well as direct-write lithography for patterning sub-micron features on a variety of substrate materials. This state of the art system is capable of binary and grey scale exposure, layer to layer alignment, and can produce minimum features down to 0.6 µm. According to the manufacturer, the DWL 66FS is ideal for use in fabricating MEMS, micro-optics, ASICs, microfluidics, sensors, CGHs, and any application that requires microstructures. It can be used for mask making or direct exposure on basically any flat material coated with photoresist. The software can accept a number of data input formats, including DXF, CIF, GDSII, Gerber, BMP, ASCII, and STL.



The CNST now has a working timeline for delivery, installation, and start of work on a new JEOL E-beam lithography tool to be located in bldg. 216 (outside the cleanroom). We anticipate the vendor will deliver the new system on January 26th. After a three week installation process, the vendor and the CNST NanoFab staff will enter a 'shakedown' period to calibrate the equipment and make sure the tool is operating properly. If all goes well, we expect that our second E-beam writer will be available to users by the end of March.



We are still working to install and begin operations on our new Atomic Layer Deposition system, as well as a new Oxford Reactive Ion Etch tool. We also expect to install a new wet chemistry bench in the first quarter of 2009. Vince Luciani expects to announce availability dates for these three new tools sometime soon.

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