



Kavli Nanolab Delft  
Enabling nanodevice fabrication

Dear cleanroom user,

This is the 17<sup>th</sup> edition of **Kavli Nanolab News**. In this issue you can find some general news on the cleanroom and on newly installed equipment.

### Ultratech Fiji ALD

The Ultratech Fiji G2 Atomic Layer Deposition system has been installed recently. It offers thermal and plasma ALD, and is equipped with a Sentec in-situ ellipsometer to follow the layer-by-layer growth process. The system will primarily be used for deposition of nitride films, like TiN and NbN based superconductors. It will operate next to the existing Oxford Instruments Flexal ALD machine. We are currently working out the best split of processes between the two tools.

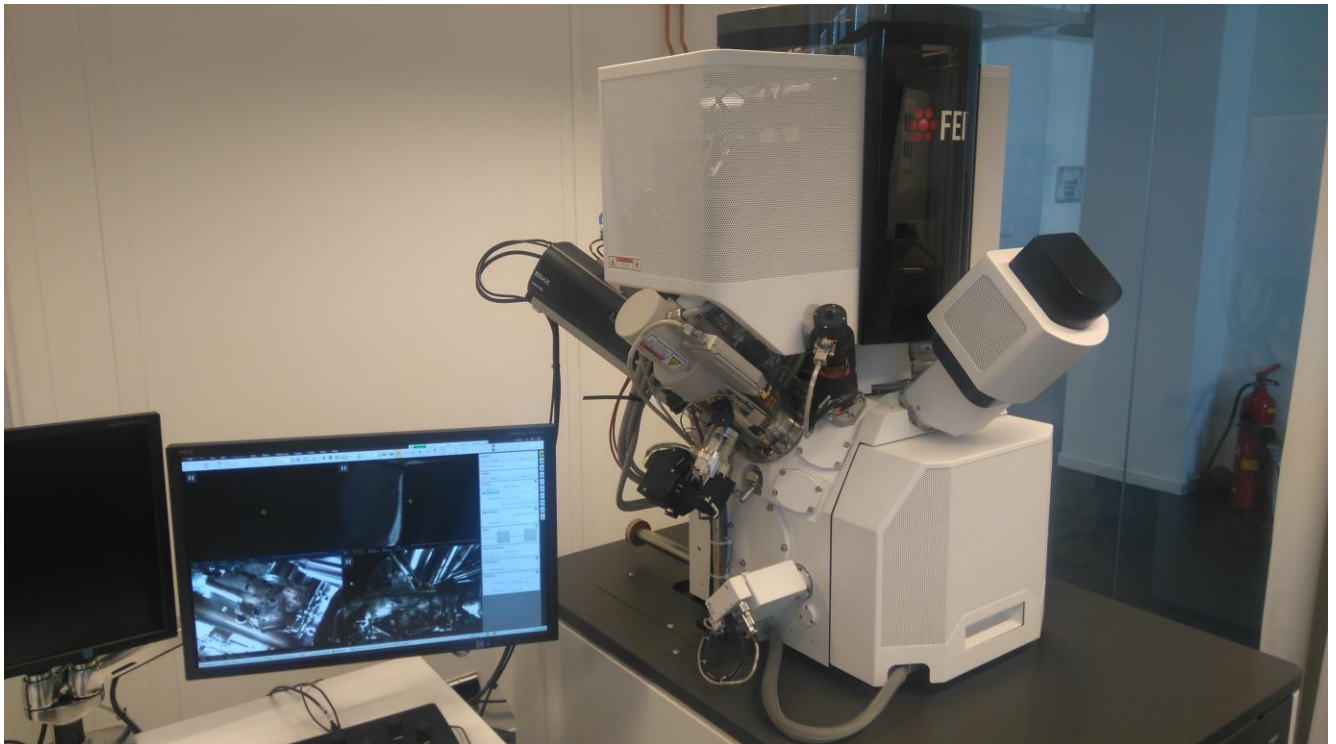
Please contact Marc Zuiddam for more information.



## FEI Helios C3 FIB/SEM

Very recently we acquired a new Dual Beam (FEI Helios C3). The machine is installed in the recently opened VLLAIR laboratory (ground floor D-Wing TN). The tool has four basic functions. It can be used for nanofabrication by ion milling, for ion and electron beam induced deposition (source for 4 precursor gasses), for TEM lamellae preparation and for 3D cross sectional imaging by slice and view. The system also has EDX for materials analysis, is equipped with a 5-axis manipulator and has a high degree of automation enabling easy workflow management.

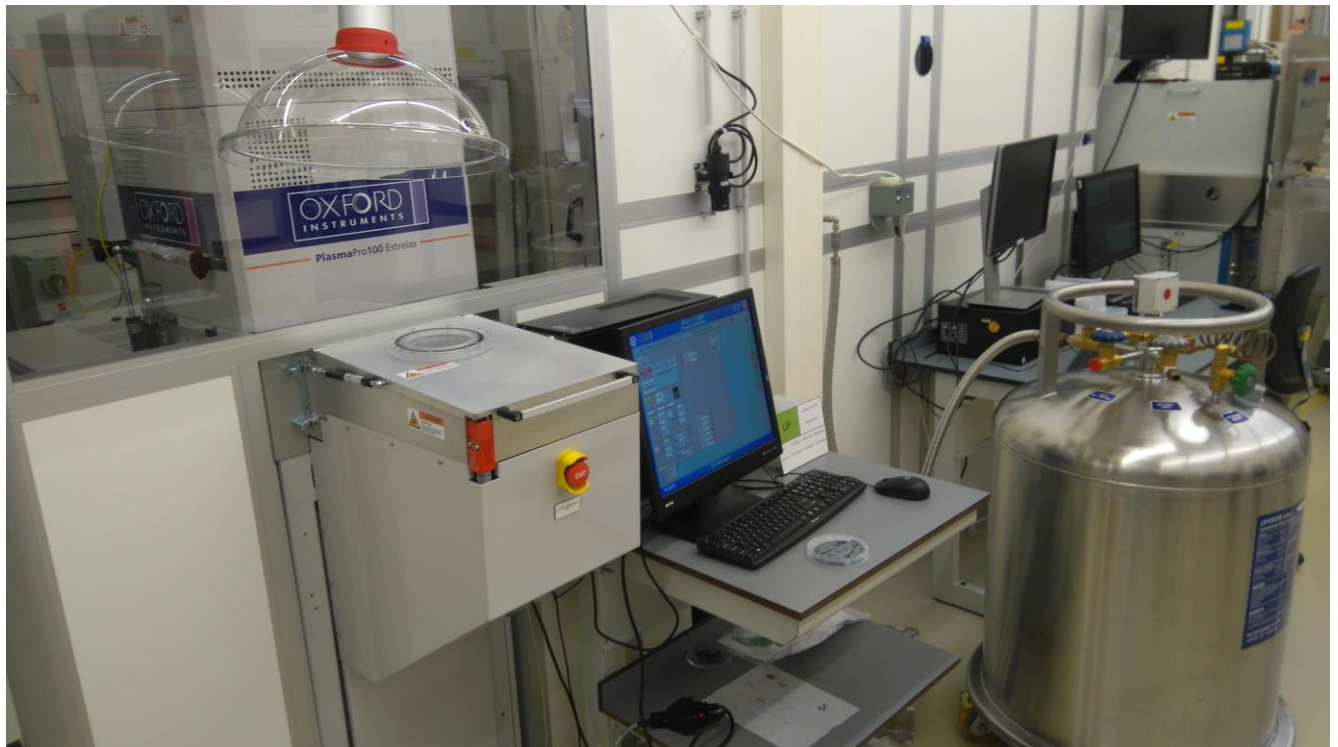
Please contact Hozan Miro for more information



## Oxford Instruments Estrellas for DRIE of Si

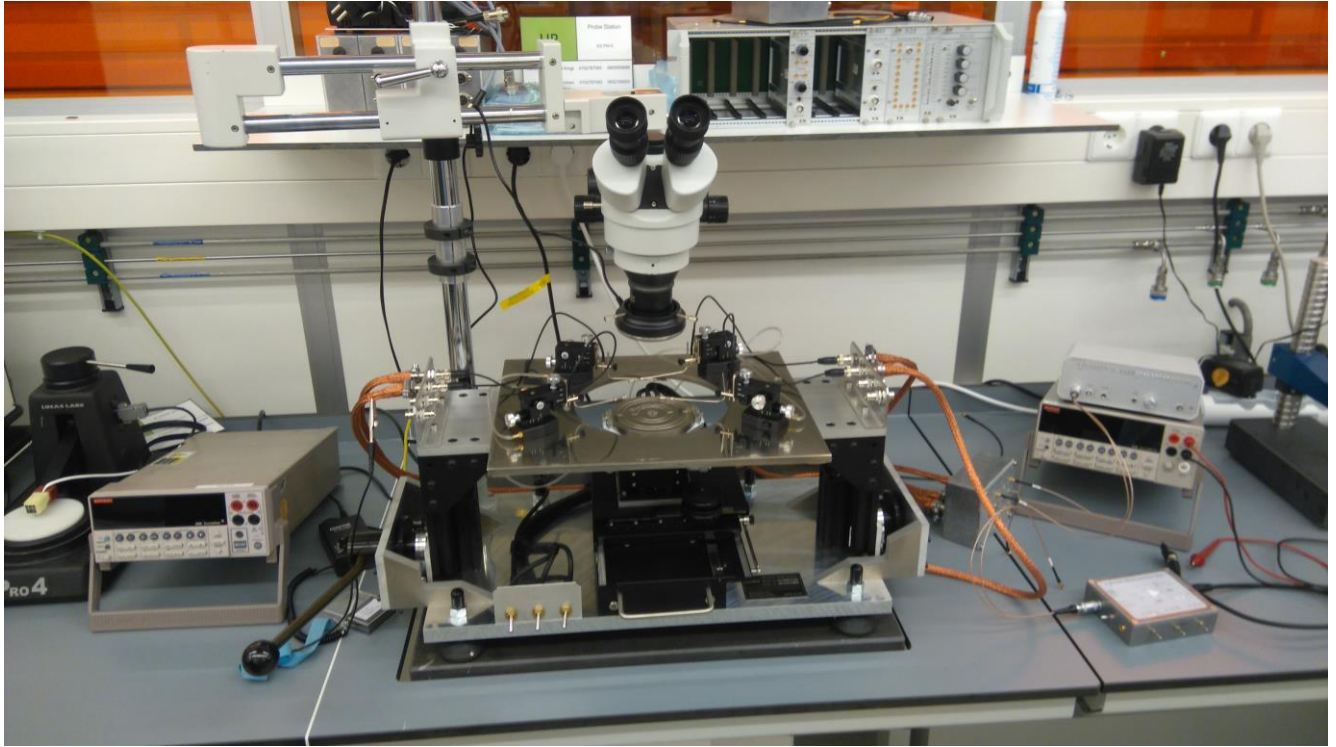
Deep reactive Ion Etching of Si is an important process at KN. Because our AMS-100 Bosch and AMS-100 cryo etcher are out of service we invested in a new combined Bosch/cryo etcher. In the new Oxford Instruments PlasmaPro 100 Estrellas tool both the Bosch process as well as the cryo process can be executed and switching between the two modes can be done automatically by the operator. The performance of the Bosch processes in this new tool have been improved in that higher etch rates ( $>25$   $\mu\text{m}/\text{min}$ ) or more precise etching with lower scalloping ( $<20$  nm). Final commissioning will be done between June 12 and 16.

Please contact Marc Zuiddam or Charles de Boer for more information



## Probe Station renewed

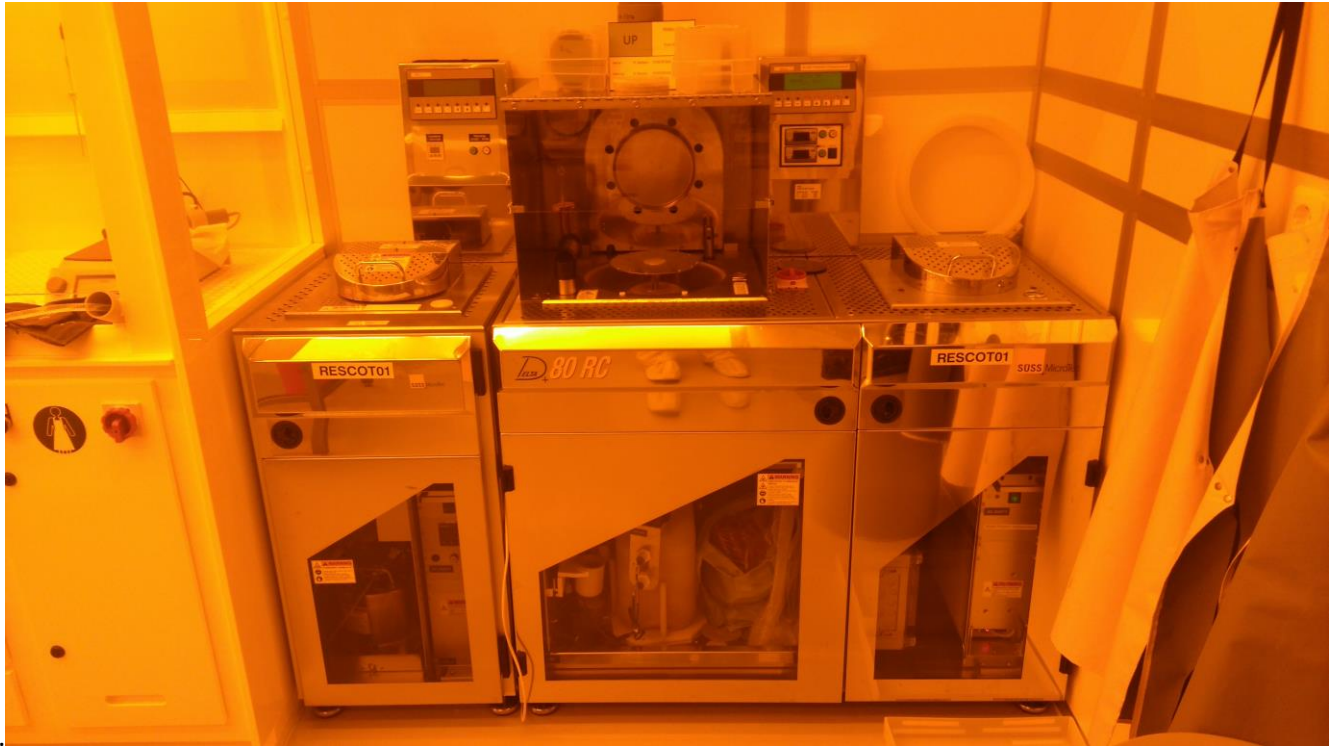
Thanks to the support of QuTech a new probe station has replaced the old Suss PM5 probe station. This system offers better control of the manipulators, better illumination and a better microscope. The electronic measuring system is unchanged.





## EBR and HMDS primer process in Delta RC80

Last KN news we reported on the HMDS primer process on the Delta RC80 machine. Now we also have Edge Bead Removal (EBR) available as a post treatment process or as a concurrent step during resist coating. EBR is to be used to avoid sticking to the mechanical clamping rings when 100mm wafers are used in some of our reactive ion etchers (e.g. the AMS 100 systems)



## Other new equipment in the cleanroom

- A high temperature (1200 °C) vacuum annealing furnace is being installed in P.00.350 (next to the ellipsometer). Its main function will be implantation damage healing of diamond.
- In Q3 2017 we expect a microwave CVD tool to deposit diamond films. The owner of the system will be QuTech and it will be installed in room P.00.370 opposite to the MB-AJA.

## **New version of safety and behaviour rules**

The safety and behaviour rules have been updated to version 4.0. In particular the regimes for working with chemicals have been altered. If this is relevant for your work you should visit the safety page of the KN website to download the new version and read sections 5, 6 and 7.

See also: <https://www.tudelft.nl/en/faculty-of-applied-sciences/about-faculty/departments/quantum-nanoscience/kavli-nanolab-delft/safety/>

## **Maintenance week VLL**

The facility maintenance weeks will be in week 26 (this used to be week 28) and week 50. This means that the cleanroom will be closed for processing from 26-06-2017 07:00 till 30-06-2017 17:00.