

## Plasma-FIB (Focused Ion Beam)



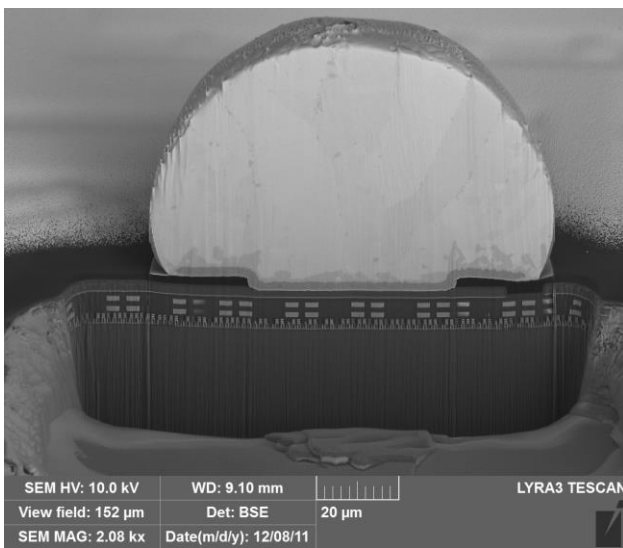
### *Analytical Services*

The C2MI plasma-FIB is mainly used to perform micro cross-sections on samples by using an ion source. The ion source is focused on the sample to obtain a small beam that can etch the surface with material removing. This small beam can be scanned on the surface of the sample reaching a precision smaller than 1  $\mu\text{m}$  to produce local cross-section of the desired shape without the defects caused by standard mechanical polishing.

The plasma-FIB instead of having a liquid gallium ions source like standard FIB has a xenon plasma ions source. This new source type allows cutting rate 50X faster than regular liquid gallium FIB. Therefore it is possible to mill volume up to 100x100x100  $\mu\text{m}$  that could not be achieved with a regular FIB in a reasonable time.

The plasma-FIB is coupled with a scanning electron microscope (SEM) and with an x-rays energy dispersive spectrometer (EDS) to observe and analyze the section obtained. A Gas Injection System (GIS) is also available, offering the possibility to locally coat the sample with platinum or tungsten (to protect the surface or to create pads), to deposit an electric insulating material or to use water or  $\text{XeF}_2$  to accelerate milling of some materials.

Nearly all material can be mill with FIB. Other applications are also possible like: micro-machining and circuit editing.



Solder bump on chip observed after FIB cut. The cut was done in a few minutes with the plasma-FIB. The cutting time with a regular FIB would take several hours.