# Unveiling the future of precise single ion implantation

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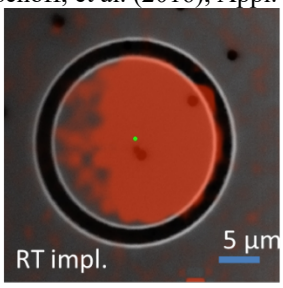
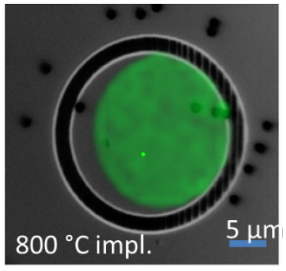
The Focused Ion Beam (FIB) has emerged over the past decade as an exceptionally powerful tool that has taken its place among other material science instruments. Whether configured as a single-beam or dual-beam microscope, this instrument can be used for a variety of purposes including ion microprobe, secondary ion mass spectroscopy, ion microscopy, lithography, microfabrication, ion beam etching, ion beam deposition, or ion implantation.
Combined with a Wien Filter capable of separating the different species of a Liquid Metal Alloy Ion Source (LMAIS) or plasma source, such a filtered FIB (ExB FIB) enables the use of a vast majority of ion species [1] and increases, even more, the potential applications.

ORSAY PHYSICS, part of the TESCAN GROUP, is going to introduce a new dedicated single ion implantation tool, including an *in-situ* heating stage, and that can give access to a wide range of species for the implantation application with precise control of the vertical and lateral position of the implanted ion.

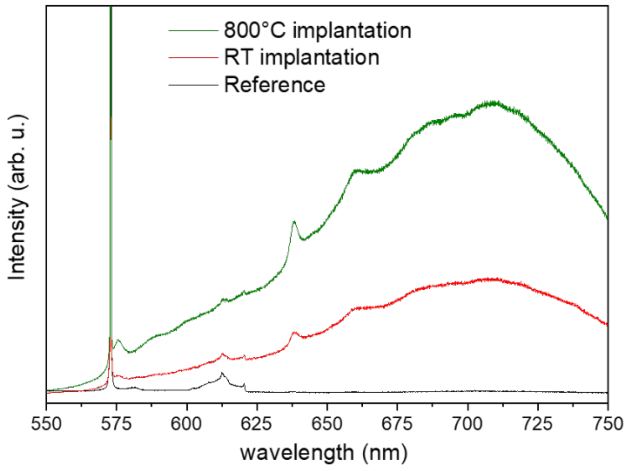
[1] L. Bischoff, et al. (2016), Appl. Phys. Rev., 3 021101.




(a)




(b)




(c)

*Figure 1: Photoluminescence maps acquired at a wavelength of 638 nm from two ellipses implanted at room temperature in red (a) or 800 °C in green (b) with the implantation tool. PL spectra in this spectral region are plotted in (c) to compare their intensity*