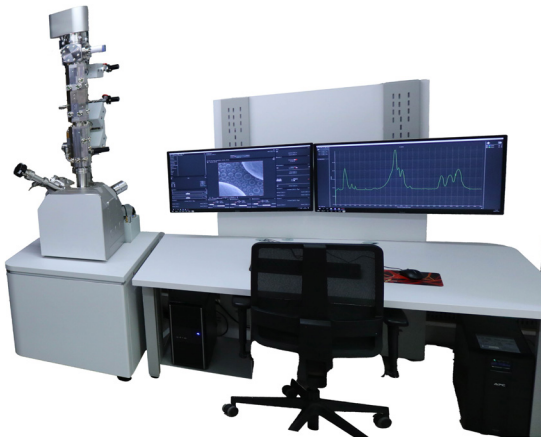
ORSAY PHYSICS TESCAN GROUP

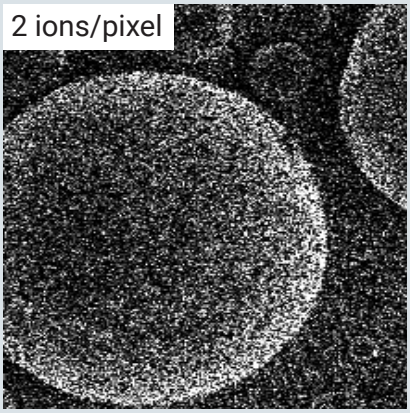
ORSAY PHYSICS QuiiN

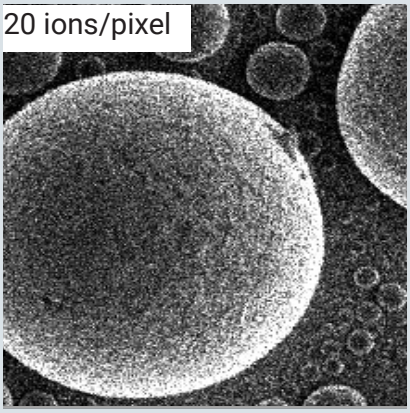
FOR MATERIALS & QUANTUM SCIENCE



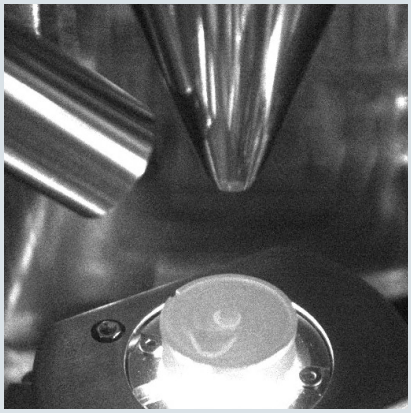
Precise multi-ion Implantation for discovering full spectrum of New Materials Possibilites

ORSAY PHYSICS QuiiN (Quantum Ion Implanter at Nanoscale) is a conveniently versatile ion beam specially designed to perform implantation applications. Modification of material properties through ion implantation has allowed the world to experience the computer revolution by enabling the creation of small semiconductor chips taking advantage of different ion ratios inside of them. The next phase of this revolution is quantum computing, which goes even further and requires a large variety of ion species, precisely placed within the materials structure, and that is what QuiiN is all about.





▲SE images of tin on carbon captured with two different dwell time 3.2 µs/pixel (left) and at 32 µs/pixel (right) using $^{14}N^{+}$ with a current of 106fA and a landing energy of 30kV. A clear image of the tin particles are visible even with only 2 ions/pixel



▲ In-situ heating stage allows a unique hot ion implantation, and a direct in-situ annealing up to 950°C

Key benefits:

- ✓ **Fine-tune and create new materials surface characteristics by unprecedented milling precision and Isotope Selection seamlessly** using the Wien filter in our ion implantation tool
- ✓ **Activitate dopants, repair unwanted lattice damage and immediately enhance materials properties** by In-situ annealing capabilities
- ✓ **Ensuring a seamless transition in your experimental setups and maximize your research efficiency** with switching between specie (N, Ar, O, He, Xe, or gas mixtures) or (Au, Ge, Si), all from the same source
- ✓ **Ensure your resultats are free from photoluminescence artifacts, implantation irregularities and surface damage** by excellent dose controlling in the system and removal of the neutral charge
- ✓ **Visualize and acquire clearer and more accurate results** by leveraging the advanced detection capabilities of YAP scintillators
- ✓ **Precisely control the ion implantation depth** through fine control of the acceleration voltage with a range of energy from 5 keV to 30 keV
- ✓ **Implant a single ion of any species** by adjusting the dose precisely prior to the experiment using a ultra sensitive current measurement system
- ✓ **Locate the area of interest and avoid the ion contamination** with A SEM in coincidence point with the FIB column
- ✓ **Design your own experiments and analytical routines** by utilizing advantages of ORSAY PHYSICS's open access hardware and software policy