

Introducing  
the new  
**6000**  
generation of  
3D Atom Probes

# LEAP 6000 XR<sup>TM</sup>



# Microtip compatible and capable of utilizing advanced automation features, CAMECA's LEAP 6000 XR offers improved yield and higher sensitivity for your research applications!

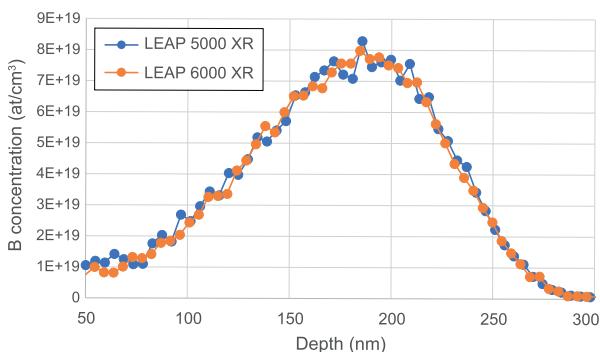
With the introduction of the Local Electrode Atom Probe (LEAP) in 2003, Atom Probe Tomography (APT) has become a standard material science method enabling 3D nanoscale compositional characterization of metals and alloys, ceramics, semiconductors, biomaterials and geological materials.

Building on decades of success in APT instrumentation and application, CAMECA is ready to launching its next APT product line, the 6000 generation of 3D Atom Probes.

The **LEAP 6000 XR** inherits key features from previous APT generations, such as a high sample throughput through Microtip arrays, adding deep UV (DUV) laser pulsing to the proven local electrode design to deliver higher yield and data quality.

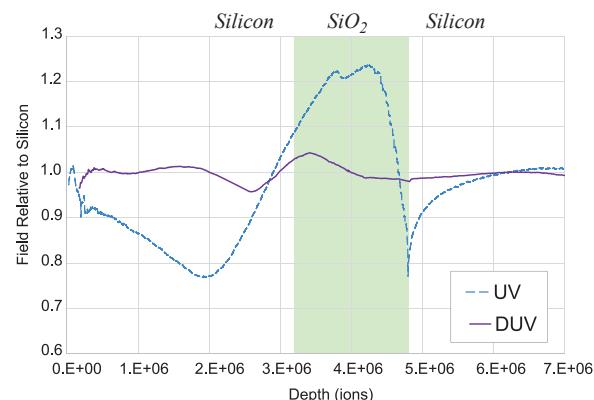
## LEAP 6000 XR: the ideal platform for a high sample throughput environment

Whether in a user facility with a wide range of users and samples, or in a near-fab lab focused on high-volume process monitoring, CAMECA's LEAP 6000 XR maintains the microtip compatibility and automation required to support a high sample volume environment.

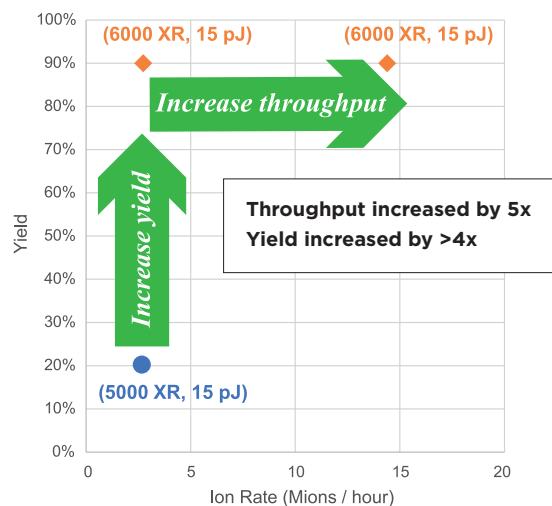


NIST B SRM implant sample showing a consistent result between a LEAP 6000 and LEAP 5000 analysis after applying a constant offset to each point in the LEAP 5000 profile.

A unique deep UV laser technology enabling a more uniform evaporation field across layers



The deep UV photons interact with layers in an Si/SiO<sub>2</sub> multilayer in such a way that the relative evaporation field differences are significantly reduced, thus providing improved yield and reconstruction accuracy for analysis of structures containing silicon and silicon dioxide.



Experiments comparing success rates for analysis through a Si/SiO<sub>2</sub>/Si structure demonstrate significant improvements in specimen yield between the LEAP 6000 XR and the LEAP 5000. In addition, the LEAP 6000 XR maintains these yield advantages for dramatically faster analysis rates (>5x) to provide major benefits in specimen throughput and data quality.

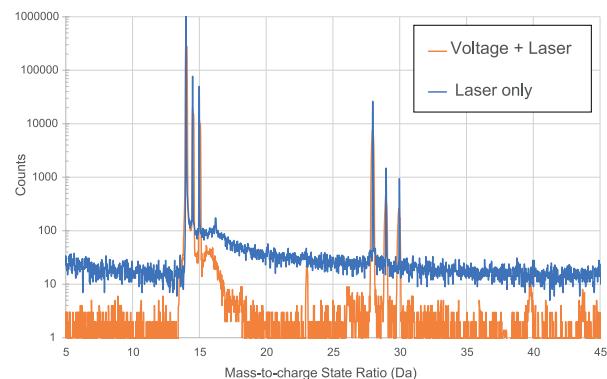
# The first 3D Atom Probe operating under simultaneous voltage & laser pulsed mode.

The **LEAP 6000 XR** introduces a new operational mode that applies both a laser pulse and a voltage pulse to the specimen at the same time. Since the majority of the spectral background is caused by out of time evaporation due to the standing voltage, this novel, hybrid operating mode results in a significantly lower background throughout the experiment, and dramatically enhanced detection sensitivity.

## Key benefits of combined voltage & laser pulsed operation:

- Low concentration peaks near the background level become easier to find and identify.
- Enhanced accuracy and precision of measured peaks.
- More accurate 3D visualization and analyses.

Simultaneous voltage & laser pulsing reduces background levels.



Reducing the standing voltage on a silicon specimen by 30% between pulses, reduces the background level by more than 10x.

## An overview of new features and benefits of the LEAP 6000 XR 3D Atom Probe

Key feature	Result	Benefit
Deep UV laser wavelength	More uniform heat adsorption and reduced evaporation field differences producing more uniform specimen shapes	<ul style="list-style-type: none"><li>• Improved yield</li><li>• More accurate reconstructions</li></ul>
VLP (voltage + laser pulsing) operation	Improved signal-to-noise in mass spectrum	<ul style="list-style-type: none"><li>• Higher sensitivity</li><li>• Easier peak identification</li></ul>
LEAP Automation	Enhanced ease of use and productivity	<ul style="list-style-type: none"><li>• Reduced training requirement for new and occasional users</li><li>• Off-hours operation</li><li>• Faster return on investment</li></ul>

# LEAP 6000 XR™

## The new generation 3D Atom Probe



First 3D Atom Probe operating under simultaneous voltage & laser-pulsed mode, the LEAP 6000 XR delivers unparalleled accuracy and precision while maintaining the microtip compatibility and automation required to support a high sample volume environment.

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