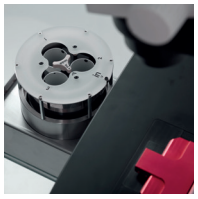
Leica
MICROSYSTEMS

LEICA EM ICE

High Pressure Freezer

"Leica EM ICE is a platform for game-changing discoveries. It is the only high pressure freezer with fully integrated light stimulation. The only tool that can capture dynamic phenomenon on a millisecond scale. It opens new possibilities for researchers in life science and industry."

Cveta Tomova
Product Manager, Leica Microsystems



HIGH PRESSURE FREEZER LEICA EM ICE

HIGH PRESSURE FREEZING WITH OPTIONAL LIGHT STIMULATION

C.elegans, courtesy of Elly van Donselaar, Martin Harterink and Karin Vocking, Utrecht University, Netherlands

WHY HIGH PRESSURE FREEZING?

High Pressure Freezing arrests aqueous samples in their native state to deliver the best possible sample preservation. Currently cryo-fixation is the only way to fix cellular constituents without introducing significant structural alterations.

PREPARATION WORKFLOW

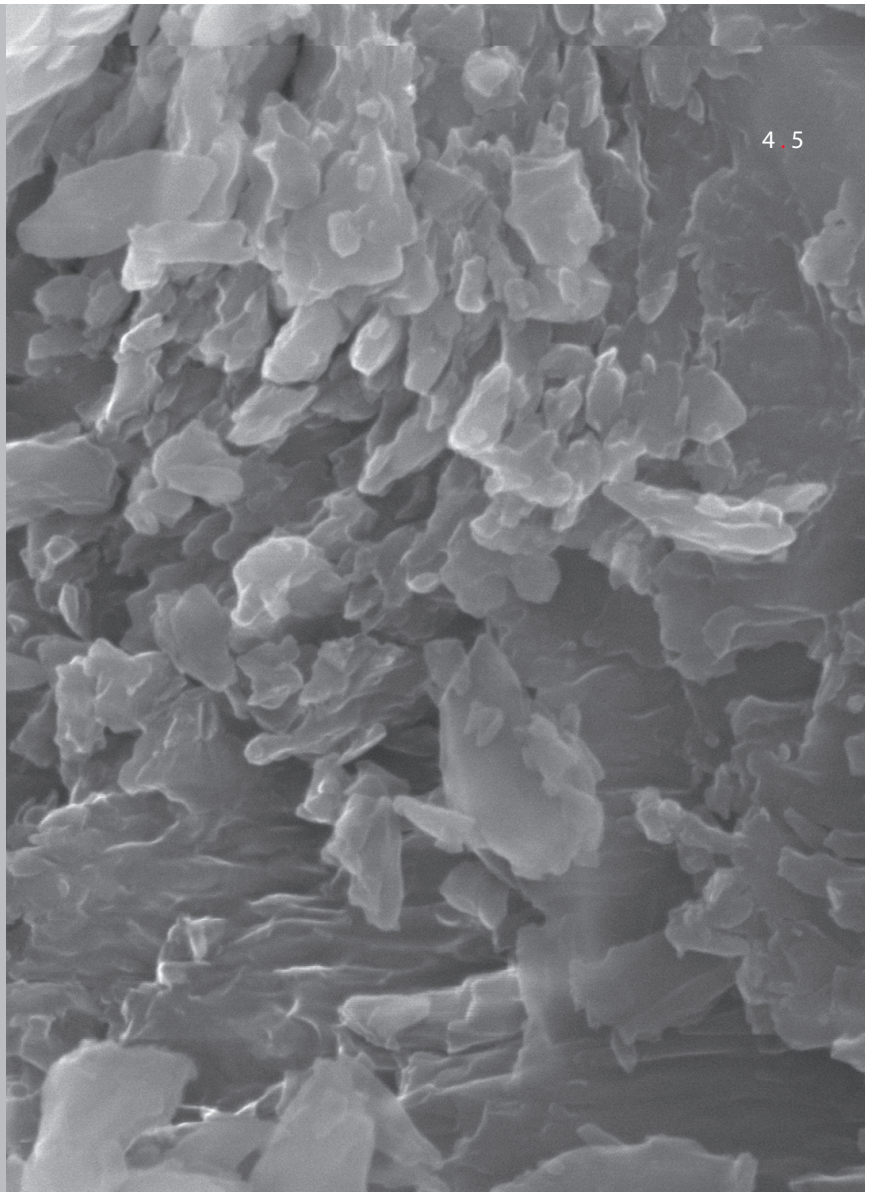
Leica EM ICE for high pressure freezing with light stimulation

Leica EM VCM for sample transfer to ...

... Leica EM ACE600 to fracture and coat the sample to ...

... Leica EM VCT500 for shuttle transfer to the cryo SEM

Cryo-SEM analysis



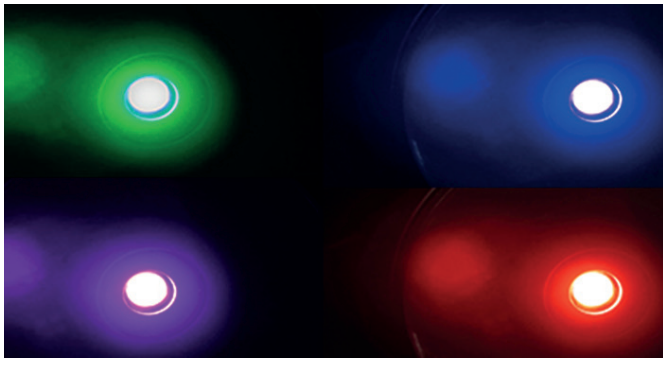
Revealing changes in the fine structure of a suncream lotion frozen after millisecond UV light stimulation

WHY HIGH PRESSURE FREEZING WITH LIGHT STIMULATION?

The synchronization of light stimulation and high pressure freezing allows the visualization of highly dynamic process such as synaptic vesicle fusion at a nanometer resolution and millisecond precision.

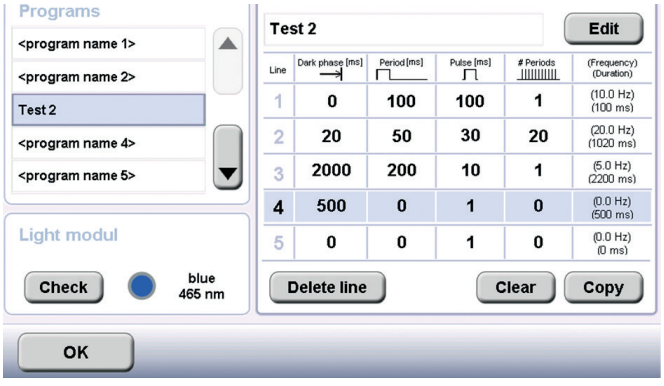
Discover new possibilities
in life science and industrial research!

COMPLETELY INTEGRATED LIGHT STIMULATION



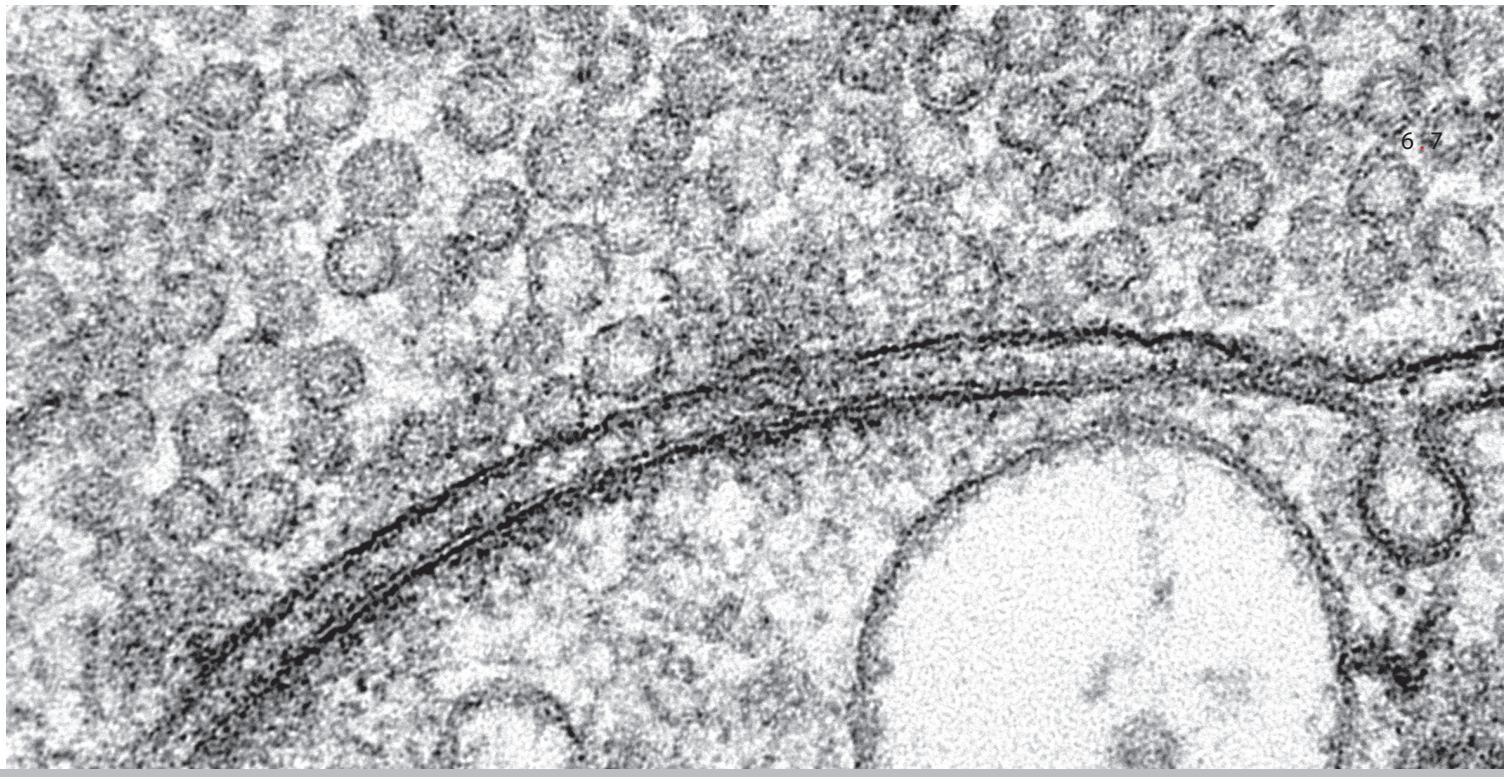
Light source

- LED light modules with 5 different wave lengths (red, blue, green, UV, amber).
- Automatic recognition of the connected LED module by the instrument software.
- Easy one-click connection.



Experiment parameters

- Software-integrated programming offers a range of parameters to enable the design of your experiment.
- All details of a light stimulation experiment are incorporated in the log file.



HOLDS THE PROMISE FOR A BRIGHTER FUTURE

Symmetric synapse. Dr. Shuwen Chang, Charité Universitätsmedizin, Berlin, Germany

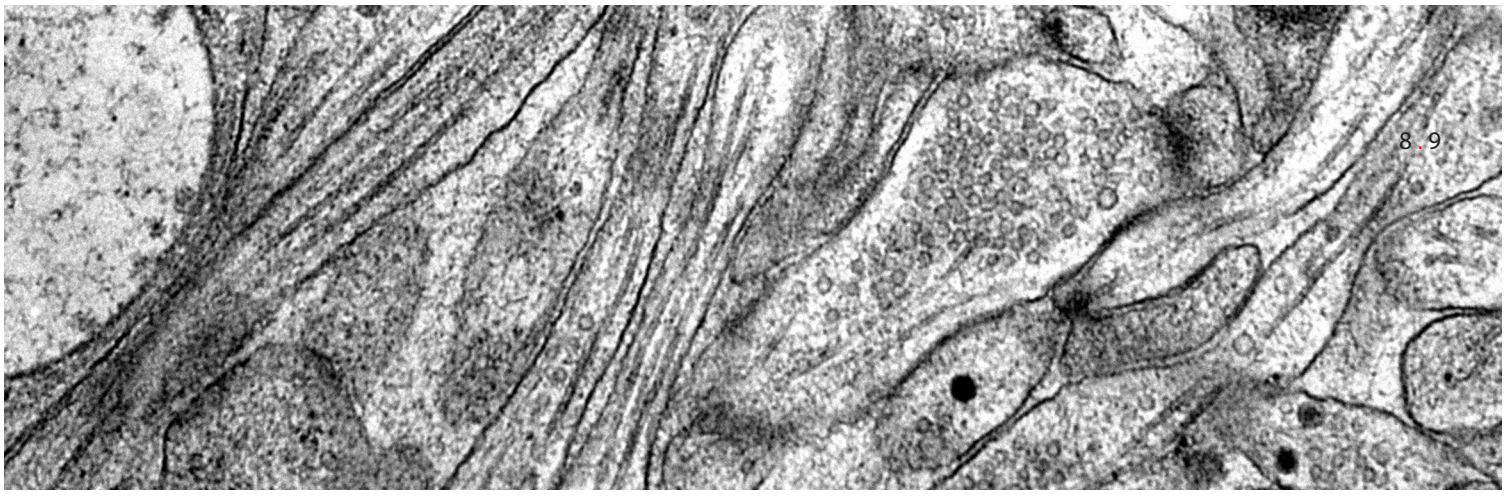
"Electron microscopy only captures a static image of a cell. What is the cell doing? What is the true sequence of events in a cellular process? We can make flip books from our micrographs that tell a story, but their arrangement can be influenced by the story we want to tell. With the advent of optogenetic tools a flash of light can trigger dynamic cellular events such as neurotransmission. By coupling a flash of light with rapid high-pressure freezing, regulated vesicle fusion and subsequent vesicle recycling at synapses can be visualized."

Shigeki Watanabe, PhD, Erik M. Joergensen,
University of Utah, Salt Lake City, UT, USA

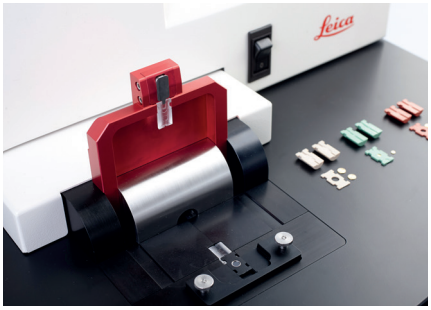
Join our vision and obtain excellent results, capturing scientific phenomenon with a temporal resolution of milliseconds!

DISCOVER LEICA EM ICE UNIQUE FEATURES

- Only 1 second from loading the sample in the carrier to frozen
- Only 1 minute recovery time between freezing cycles
- Only 20 minutes to cool down and ready to use
- Only 30 liters LN_2 daily consumption, including cooling down
- No alcohol or additional synchronization fluids used
- Upgradable to light stimulation mode at any time at your work place



Neuron, courtesy of Elly van Donselaar, Martin Harterink and Karin Vocking, Utrecht University, Netherlands



FOCUS ON YOUR SAMPLE

One move, fully automated specimen loading

> The cartridge assembly and the freezing process is triggered automatically by closing the cover of the loading station. Concentrate on the sample, not on the instrument.

ONE SAMPLE DEWAR – MANY POSSIBILITIES

Work quickly and efficiently with the Leica EM ICE

> **Programmed rotation:** Software integrated programming of sample position, name and number in the specimen Dewar.
> **Three separate positions:** Allows for three different samples to be frozen subsequently. Or three different conditions of the same sample.
> **Nine consecutive freezing cycles:** Your time and your sample are critical. Concentrate on what is really important.
> **Sample safety:** Automated re-filling of the sample storage Dewar with LN2 through out the freezing session.

MODULARITY TO MEET USER PREFERENCES

Flexible & ready for upgrade

> Integrated workstation with configurable microscope selection.
> Temperature control options for the loading station and table.
> Environmental chamber for optimal sample preparation.
> Software integrated tutorials.
> Timeless value: Upgradeable to light stimulation mode at any time at customer site.

ENVIRONMENTAL IMPACT

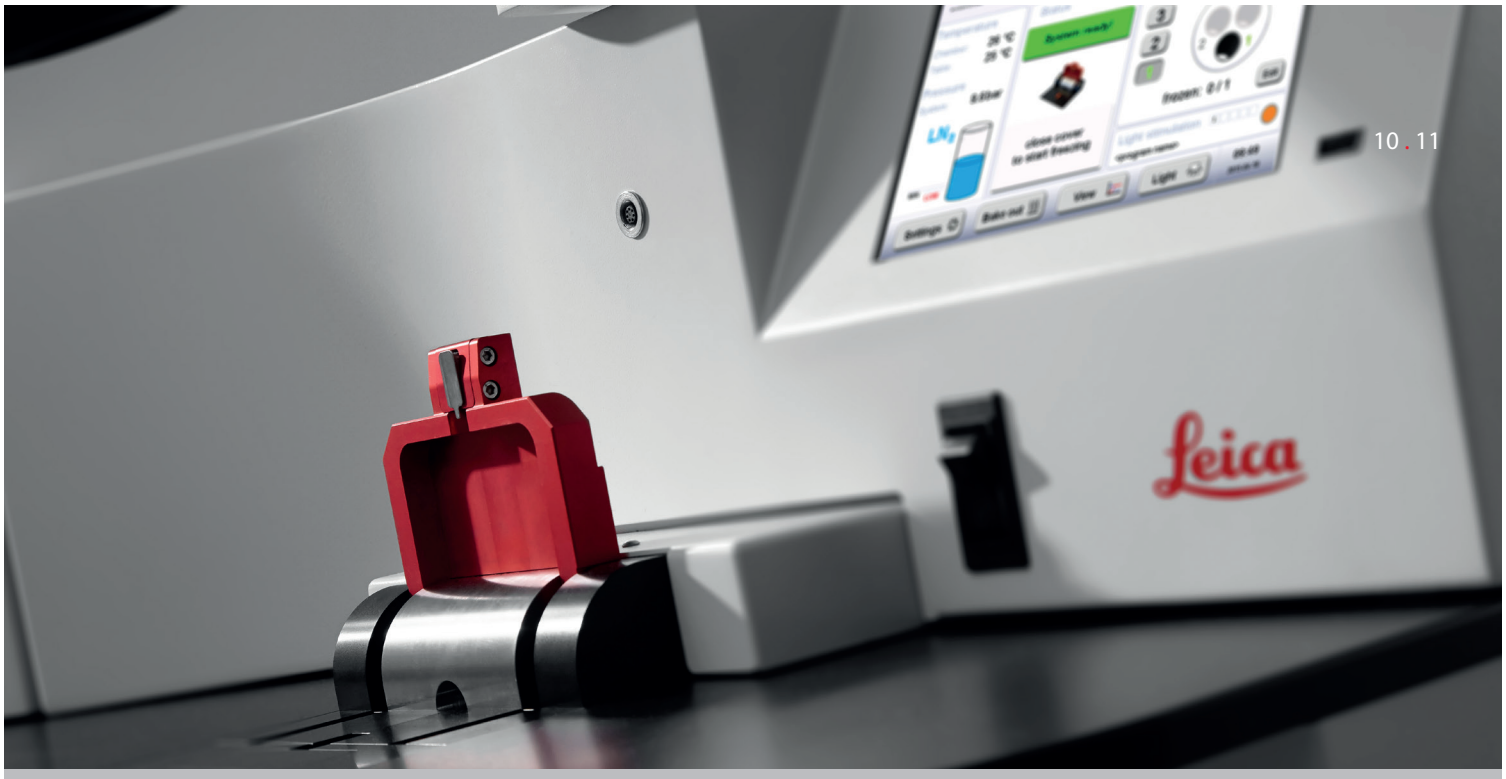
- LN_2 consumption per day, including cooling down, is only 30 liters.
  This is approx. 65% less than in previous models.

- LN_2 consumption during cooling down has been reduced
  by approx. 70% in comparison to previous instruments.

- No alcohol or other fluids for synchronization of pressure and cooling are necessary.

- The Leica EM ICE comes in sustainable packing: a multiple-use box with integrated access ramp
  that we use for transportation within the factory as well as shipping to customers.
  This packaging was awarded the Austrian state prize “smart packaging” November 2014.

- Environmental management system DIN EN ISO 14001 has been implemented



TECHNICAL DATA

DIMENSIONS AND WEIGHT	WIDTH	DEPTH	HEIGHT	NET WEIGHT
Instrument packed (crate size)	89 cm	151 cm	155 cm	510 kg
Main body plus working station *For details see drawings*	1160 cm	79 cm	128.5 cm	380 kg*
Please consider working distance of	front	back	left site	right site
	60 cm	5 cm	3 cm	3 cm

*NB! Additional 12 kg should be considered when the instrument is filled with LN_2

ROOM CONDITIONS	
Relative humidity	< 55% (no condensation)
Operating temperature	+ 15 °C – + 30 °C
Storage temperature	+ 5 °C – + 35 °C
Environment	free of dust and other destructive particles

Leica
MICROSYSTEMS

CONNECT
WITH US!

Leica Mikrosysteme GmbH | Vienna, Austria
T +43 1 48899-0

www.leica-microsystems.com