



Brillouin HyperFine Spectrometer

High-throughput design: quality spectra, faster

Optimized for high SNR with shorter acquisition times — whether imaging live cells or characterizing materials

Exceptional contrast: >120 dB across applications

High spectral resolution combined with deep rejection of elastic scattering handles everything from biological samples to polymers and glasses

4 THz single-shot range with no ambiguity

VIPA-grating cross-dispersion delivers the complete spectrum in one shot — no scanning required

In-house optics expertise: VIPAs and etalons made by us

More than an instrument — a collaboration with scientists and engineers who design and manufacture the core technology

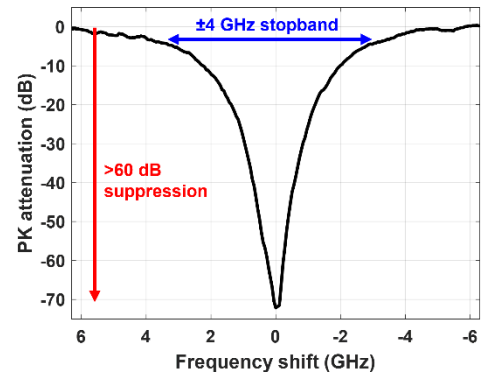
Flexible integration: compact and fiber-coupled

Customizable configuration fits into any existing setup

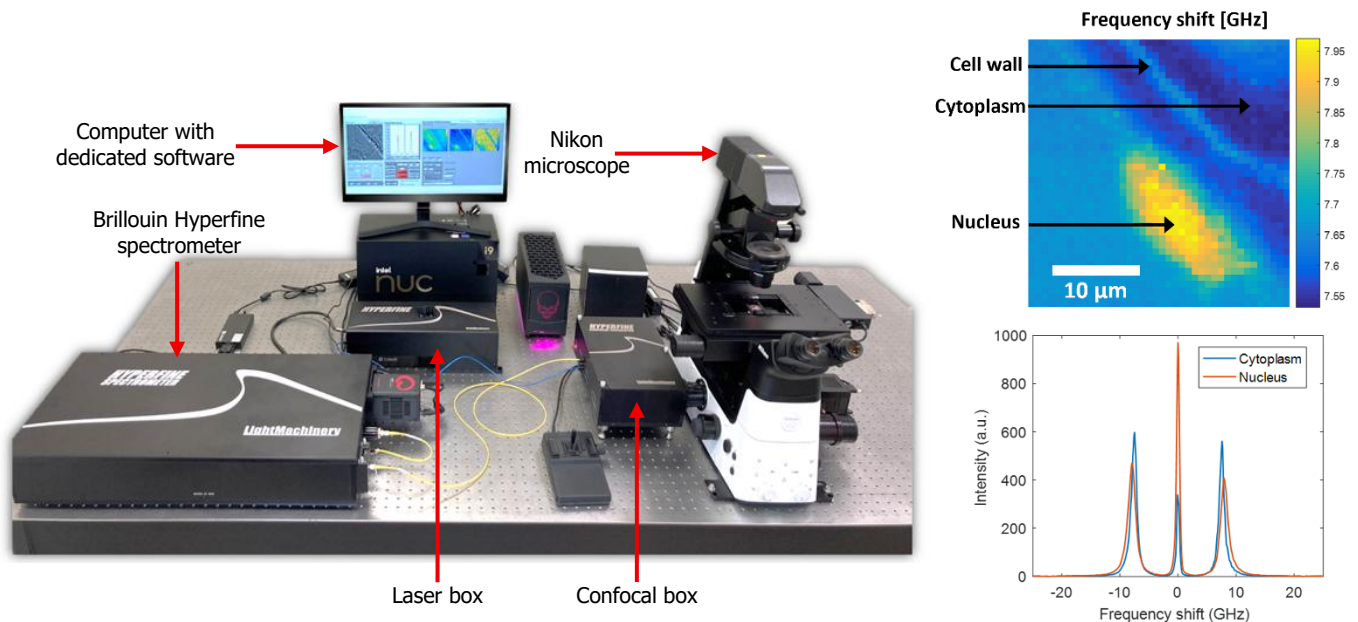
LightMachinery Brillouin HyperFine Spectrometer

The main challenge in Brillouin spectroscopy is the intense Rayleigh scattering that drowns out weak Brillouin signals. LightMachinery's Pump Killer (PK) solves this in the form of an ultra-narrow, tunable notch filter that precisely blocks elastic scattering while transmitting Brillouin-shifted light.

The PK is a quadruple-passed, air-spaced etalon, manufactured in-house using our fluid-jet polishing process. It delivers >60 dB attenuation within an exceptionally narrow ± 4 GHz stopband (3 dB width). Combined with our VIPA spectrometer technology, the Brillouin HyperFine spectrometer achieves 0.6 GHz resolution and total contrast of 120 dB, making it ideal for advanced Brillouin studies.



Brillouin Hyperfine spectrometer integrated with Nikon microscope



Brillouin shift map of an onion cell (top right) with typical Brillouin spectra for the cytoplasm and nucleus (bottom right). The laser wavelength is 532 nm, the laser power at the sample position is 25 mW, and the exposure time is set to 200 ms.

Specifications

Wavelength options	457 nm, 532 nm, 660 nm, 780 nm (customizable upon request)
Spectral resolution	<0.6 GHz (<0.3 GHz upon request)
Precision	<10 MHz (sample and exposure time dependent)
PK filter attenuation	>60 dB
PK stopband (3 dB width)	± 4 GHz
Total contrast (PK + VIPA)	>120 dB (at 15 GHz from pump)
Spectrometer input	Single-mode fiber
Dimensions	72 x 38 x 16 cm
Weight	25 kg

For further information, please contact LightMachinery Inc.

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