IMPETUX
The Force of Light

Lunam™ T-40i

CONFIDENCE AND RELIABILITY

OFF THE BEATEN TRACK

Impetux's exclusive, patented technology leads you where other force methods cannot. Our products represent a change in the force measurement arena, making possible and simple experiments where traditional trap stiffness calibration fails.

The *Lunam*™ T-40i condensates a ten-year expertise with force sensing technology and includes the latest developments to provide you the **confidence** and **reliability** that your experiments require so you only need to worry about the results.

Discover what the *Lunam*™ T-40i can do for you

IRREGULAR SAMPLES:

Our patented technology permits measurements of force with non-spherical particles.

COMPLEX TRAPPING BEAMS:

The *Lunam*™ provides access to accurate force measurements to customers working with non-Gaussian beams or multiple permanent traps.

NON-VISCOUS MEDIA:

Direct force measurements inside viscoelastic materials, changing environments or living cells are now possible.

WE HAVE MADE OF FORCE MEASUREMENTS OUR FOCUS, SO YOU CAN KEEP YOUR OWN

***Impetux Optics* is a company established in Barcelona, specialized in the measurement of forces with optical tweezers.**

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SPECIAL FEATURES

NO CALIBRATION:

Our patented technology permits measurements of force without the repetitive and time-consuming, error-prone calibrations of other systems.

ADDITIONAL EXPERIMENTAL QUANTITIES:

Laser power at the sample and ambient temperature are also provided by the system, for convenience in the analysis of experimental results. Viscosity of the medium and size of sample can be easily obtained as well.

EASY INSTALLATION AND OPERATION:

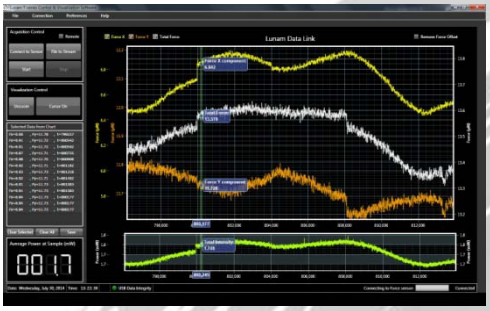
The *Lunam*™ replaces the microscope condenser and can be installed and set in operation through a simple procedure even by non-expert users.

Impetux technology

The key of our technology is that our systems measure the force as a derived magnitude of the direction of propagation of the beam, instead of the sample position, which provides a direct route to the force. After an accurate calibration at factory, the deflection of the beam produced as this goes through the sample directly corresponds to the optical force exerted on the particle. This gives our technology the advantage, as no restrictions on the sample are imposed.

For further information, visit our webpage: www.impetux.com

Data Acquisition and Processing



For a complete solution, the *Lunam*™ T-40i additionally integrates a traditional calibration mode, to obtain trap stiffness and position measurements with nanometer precision.

The standalone Windows application makes easy for the user to make these calibrations, as well as acquire, visualize and store the data generated by the *Lunam*™'s sensor. Data can be streamed to disk in real time for extended periods of time and the files are compatible with a host of data processing software, including Excel, MATLAB, LabVIEW, and Origin.

We can optionally provide a companion data processing suite. The application includes a complete set of visualization modes and mathematical functions and is optimized to handle the large data sets generated in many experiments.

Technical specifications

- Dual measurement mode: force measurements and trap stiffness calibration for position tracking.
- Symmetric opto-mechanical design, compatible with Nikon microscopes (TE2000 and Ti) (T-DH and TI-DH illumination columns).
- Straightforward installation and tuning routines ensure correct measurements and reproducibility (eyepiece with Bertrand lens incorporated or Centering Scope required).
- High Numerical-Aperture (NA=1.4) immersion optics. Optical design optimized for λ=1064 nm and λ=980 nm.
- Maximum laser power at the sample: 300 mW (Check with us different power ranges to fit your needs)
- Force resolution 10 fN
- Position resolution < 1 nm (typ.)
- Integrated sensor noise over the whole bandwidth < 0.1 pN (typ.)
- Temperature-compensated, duo-lateral position sensitive detector (PSD) (*50 kHz*).
- Up to 100 kHz, 18-bit, analog-to-digital conversion.
- Direct PC communication through Hi-speed 2.0 USB port.
- Highly-regulated, low-noise linear power supply (*models with 100/120/220/240 VAC- 50/60 Hz available*).
- Acquisition software and LabVIEW libraries included.
- Dimensions of the sensor head (L x H x W):
  22 cm x 18 cm x 11 cm