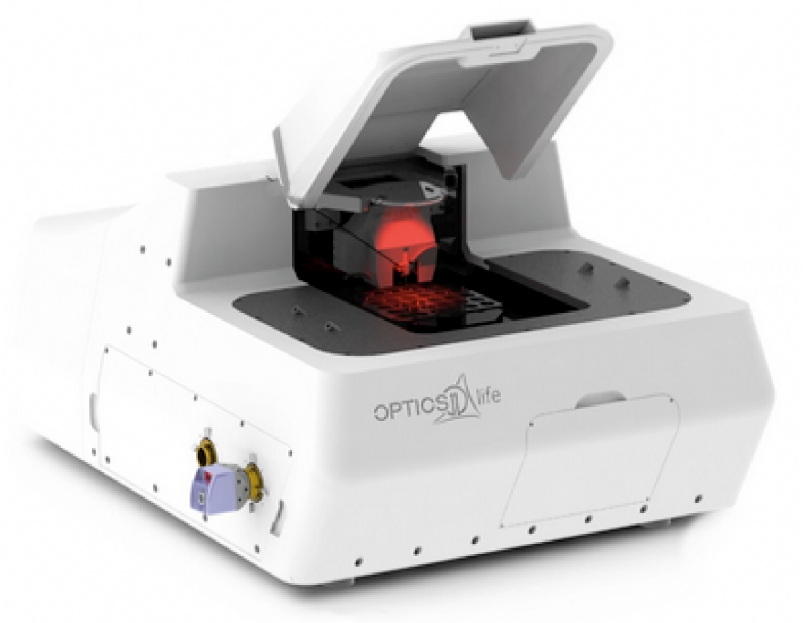
Optics 11 Pavone

High-Throughput Microindenter



Tool Type: “High-Trhroughput Microindenter”	
Location: “Elings Hall 2411”	
Supervisor	**Tool Lead**
Juan Manuel Urueña	“WW Name”
jmuruena@ucsb.edu	“WW Email”
Description: “High-Throughput Microindenter”	
Manufacturer: “Optics11 Life”	

About

The Optics11 Pavone is a high-throughput microindenter designed for the mechanical characterization of biological samples. It's a versatile tool capable of measuring the mechanical properties of cells, tissues, and biomaterials at various scales, from subcellular to whole tissues.

Detailed Specifications

* **High-Throughput:** Capable of testing up to 2 x 96-well plates in a single run, enabling large-scale experiments. * **Automated Workflow:** Reduces the need for specialized operators and minimizes hands-on time. * **Combined Imaging and Indentation:** Offers both bright-field and fluorescence imaging capabilities, allowing for correlation of mechanical properties with morphological features. * **Environmental Control:** Maintains physiological conditions (temperature, humidity, and gas composition) for long-duration experiments on living samples. * **Versatile Probe:** A single, pre-calibrated, reusable probe can be used for a wide range of indentation depths and forces.

cantilevers

Stiffness (N/m)	Tip Radius (µm)
0.021	25.5
0.43	25
0.47	49.5
0.43	52.5
3.52	48
53.5	25.5

Safety Concerns

General Safety Concerns

* **Electrostatic Discharge (ESD):**

- Handle components carefully to avoid electrostatic damage.
- Use ESD mats and grounding straps when working with sensitive electronic components.

* **Laser Safety:**

- Never look directly into the laser beam.
- Wear appropriate laser safety goggles.
- Follow laser safety guidelines and procedures.

* **Mechanical Hazards:**

- Use caution when handling moving parts.
- Be aware of potential pinch points and crush hazards.

* **Chemical Hazards:**

- Handle chemicals with care and wear appropriate protective equipment (gloves, lab coat, safety goggles).
- Dispose of chemicals properly.
- Be aware of chemical compatibility and potential hazards.

* **Electrical Hazards:**

- Avoid working with live electrical circuits.
- Use proper grounding techniques.
- Be aware of potential shock hazards.

To avoid breaking the cantilevers, it's crucial to:

* **Handle the probes with care:** Avoid touching the tip.
* **Store the probes properly:** Store them in a clean, dust-free environment.

* **Calibrate the instrument regularly:** Ensure accurate measurements.
* **Follow the manufacturer's guidelines:** Adhere to the recommended procedures for operation and maintenance.

Operating Procedures

Well Plate Calibration

multiwellplatecalibration.pdf

96 well plate experiment

96-wellexperiment.pdf

Reference Documentation

pavone_manual_v1_6.2.pdf

Training Documentation