

MicroscopeHeaters.Com ADVANCED MICROSCOPE INCUBATION TECHNOLOGY

Advanced Microscope Incubation Technology™ Whole Microscope and Stage Top Incubation, Gas Control, Heater/Cooler Systems

Whole Microscope Incubation Systems with Advanced Microscope Incubation Technology™

Zero vibration, zero sample perturbation Extended T range Class leading thermal homogeneity Design warms microscope and objectives Light Tight Enclosures CO₂ Sealed Enclosures 360° access available, doors to enclosure rear and side All platforms and modalities supported

CO₂ and CO₂-O₂ Gas Control Systems

Control range of 0-15% Internal Pump- No Air Supply Required Compatible with 3rd party inserts

Sealed Stage Inserts

Maintain elevated CO₂ concentration at the sample. Compatible with all major stage manufacturers. Sample holders for 96-well, Petri and slides.

Whole Microscope Heater/Cooler Systems

This allows users to cool advanced sample holders, such as microfluidics systems. Typical applications include biofilm formation and plant research.

Excellent Customer References, Publications and Feedback

Single Molecule Imaging

"We use Microscope Heaters Incubation system for our single molecule imaging. The compact vibration free design has excellent temperature stability. Our two systems have been working 24/7 for 7 and 5 years now"

> Dr Emmanuel Derivery MRC-LMB Cambridge

Cellular Force Measurements

"Our lab specializes in mechanical characterizations of living biological tissue. Temperature control is crucial for both live imaging of cultured cells and organoids, as well as the calibration of force measurements. MicroscopeHeaters worked with us to understand the specific instrumentation requirements of our research and develop a custom live imaging incubation solution, including heating, humidity, and CO₂."





Leica Stellaris DMi8 Max Planck Institut Munich



Zero Sample Perturbation Zero Vibration

Light Tight Enclosure FLIM FRET

"Exceptional Quality and Functionality- A Game Changer for Live Functional Cell Imaging with excellent ability to maintain a stable, controlled environment for live cell imaging. MicroscopeHeaters clearly understands the unique needs of researchers like myself."

Dr Conor Treacy

Kings College London



Whole Microscope Incubation Systems with Advanced Microscope Incubation Technology[™]

The First and Only Proprietary

Vibration Free Heater Technology

Our proprietary internal heaters gently warm the sample with zero vibration. This makes demanding imaging easier. it really is one less thing to worry about.

Zero Sample Perturbation

With little or no airflow across the sample, delicate physical cellular measurements are possible using, optical, magnetic, tweezers, nanoparticles or even diamond quantum sensors!

Enhanced Microscope Access

No large bulky pipes or external fan systems means our technology provides the greatest possible access to your microscope, now and in the future!

Extra Access Points for Peripheral Equipment

With no external fans connected we can provide access point to the back of the microscope. This for example allows the user to bring in additional pieces of equipment, without breaking any fluidic or power connections, while keeping cables away from the front of the system

Class Leading Thermal Homogeneity

Our own measurements show that across a typical XY stage, there is a temperature range of +/-0.2°C. This excellent performance is also support by cell motility measurements made by our users

Light Tight Enclosures

These are designed for applications where every photon counts, such as FLIM or FRET. Designed to allow dim illumination in the experimental area without adding background, allowing precise signal measurements.

Available with internal LED illumination and optional laser safety interlocks on all doors and viewing points.

CO₂ Sealed Enclosure Incubation System

For experiments where complete access to the top of the sample is required, while maintaining elevated levels of CO2 at the sample. MIcroscopeHeaters have developed a range of microscope enclosures with enhanced sealing. Our design criteria, maintains CO₂ levels of up to 10% within the whole enclosure.



Lin Group, Confocal.nl Nikon TIE - UCLA



Light Tight Enclosure - Poland Group, King's College London

Simultaneous Nanorheometry and Nanothermometry **Using Intracellular Diamond Quantum Sensors**

We use diamond nanocrystals as biocompatible sensors for in vitro measurements. We combine subdiffraction resolution single-particle tracking in a fluidic environment with optically detected magnetic resonance spectroscopy to perform simultaneous sensing of viscoelasticity and temperature. We use our sensor to demonstrate probing of the temperature-dependent viscoelasticity in complex media at the nanoscale.

https://pubs.acs.org/doi/full/10.1021/acsnano.3c05285

Atature and Knowles groups Cavendish Laboratory Cambridge



Extended Temperature Range-Zebrafish, Drosophila, Yeast, Bacteria

Conventional fan-based heating systems, struggle to control temperature in the 24-30°C temperature range. Our technology can control from 1°C above ambient! This allows researchers to study a greater range of model system Zebrafish, Dictyostelium, Drosophila, Yeast and Bacteria.

Whole Microscope Heater/Cooler System

Adds cooling to our enclosure based incubation systems. Developed in conjunction with the University of Oxford these system use proprietary cooling technology, to cool the whole sample area. This allows users to cool sample holders, such as microfluidics systems. Typical applications include biofilm formation and plant research.

Flexible Chamber Options

Clear, Smoke, Matt Black or Matt Black with Clear Front Matt Black enclosures

Full CAD Based Design

Accurate models of all the major microscopes and peripherals provide a allows us to fit any microscope configuration. With flexible door and access positions as standard.

Panel Assembled Enclosures

Our design approach allows us to fit our enclosures around complex microscope geometries. This also provide for changes in your experimental setup, by supplying easy fit panel modifications.

CO₂ Gas Control Systems- Requires only 100% CO₂ Supply

Many mammalian cell lines benefit from elevated levels of CO₂. Traditionally this has been achieved by Using introducing a 5% CO₂ supply from a cylinder in the laboratory. Many researchers are now seeing improved cell viability by increasing the CO₂ concentration to 6,8 or even 10% CO₂. With a control range of 0-15% MicroscopeHeaters CO₂ controllers provide the range concentrations to optimise your cell and sample viability.

Internal Pump- No Air Supply Required

Unlike many systems our gas controller has an internal gas mixing reservoir, as well as a powerful internal pump, all in one compact unit. A precise control knob, allows you to reach a perfect gas flow for your samples. A range of humidifying options are available.





Durham Group, Heater Cooler Nikon TiE - Sheffield



Atature and Knowles groups, Custom Designed **Enclosure - Cavendish Laboratory**

Light Tight Enclosure

"We are pleased we chose Microscope Heaters for our microscope enclosure system. Very knowledgeable about all things concerning microscope incubation and enclosure. A very smooth process from the initial contact, design, build and construction at our site. Great communication throughout, very friendly team and would use them again in the future."

> **Prof Stanley W. Botchway FRSC FRMS UKRI-STFC** Fellow and Research Lead Harwell, Oxford



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Sealed Stage Inserts

Standard sample holders are open and therefore cannot maintain elevated levels of CO₂ at the sample. Microscope_Heaters have designed a range of sealed inserts compatible with the majority of motorised XY stages from Prior, ASI, Marzhauser, Ludl and other manufacturers including the major microscope companies. All accept a range of sample holders including, 96-well format, Petri dish and slides from Ibidi and Matek.

Stage Top Heater/Cooler Systems

Designed in collaboration with the University of Oxford for Drosophila research, this system uses reversable Peltier technology to heat/cool a sample in a 35mm Petri dish, between 14 and 40°C. It comes complete with a water circulator. Adaptors to all microscope stage are available. This system is ideal for conducting precise experiments Xenopus, Drosophila, Zebrafish model systems, where temperature control is essential.

Precise Cellular Mechanical Measurements

"Our lab specializes in mechanical characterizations of living biological tissue. Temperature control is crucial for both live imaging of cultured cells and organoids, as well as the calibration of force measurements. MicroscopeHeaters worked with us to understand the specific instrumentation requirements of our research and develop a custom live imaging incubation solution, including heating, humidity, and CO₂."

Dr Elijah Shelton LMU Munich

Scale invariance of mechanical properties in the developing mammalian retina

Elijah Robinson Shelton, Michael Frischmann, Achim Theo Brinkop, Rebecca Marie James and Friedhelm Serwane Faculty of Physics and Center for NanoScience (CeNS), Ludwig-Maximilians-University, Munich, Germany

https://www.biorxiv.org/content/10.1101/2024.10.21.619491v2



CO, Controller and Sealed Stage Inserts



Stage Top Heater Cooler



Padilla-Parra Group, Evident PicoQuant Kings College London

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