

CAP500

Capillary Pressure Stage



Wide Temperature Range

Capillary temperature precisely controlled from $< -195^{\circ}\text{C}$ to 500°C

Optical Techniques

Supports brightfield, Raman, light microscopy, IR and more

Sample Manipulation

25mm in X and 3.5mm in Y manipulation for accurate sample position control

Introducing the CAP500

The CAP500 stage is designed to study samples in a $\leq 50\text{mm}$ section of high pressure quartz capillary from $< -195^\circ\text{C}$ up to 500°C . Samples can be pumped through the capillary at a specific pressure using a pump and pressure gauge* to investigate the rheology of the sample with respect to temperature and pressure using brightfield, IR or Raman microscopy. The CAP500 stage has also been used to study geological fluid inclusions created in quartz capillaries. The CAP500 now comes with a diamond-shaped insert which can be easily rotated to allow quick-switching between two different capillary sizes. If required, two capillaries can be tested side by side by selecting our Dual Capillary CAP500-D option.

The capillary is inserted through the body of the chamber and housed in a 1.0mm \varnothing channel at the surface of a 50mm silver heating block. The block itself has been designed and engineered to minimise the temperature gradient across the length of the capillary. Capillaries loaded into this channel can be moved 25mm in the X direction and 3.5mm in the Y direction using the XY mechanism to allow for observation across the length of the sample in the capillary. Sealed capillaries can also be used by clamping them to the XY mechanism. The CAP500 is suitable for capillaries with an outer diameter of $\leq 1.6\text{mm}$.

A system requires a CAP500 stage and a T96-S temperature controller, which is available with either LINK software for computer control, or a LinkPad touch screen for stand-alone control. For cooling below ambient temperatures an optional LNP96-S liquid nitrogen pump is also available.

*supplied by user



Features

WIDE TEMPERATURE RANGE

The temperature range spans from $< -195^\circ\text{C}$ (with the addition of an optional LNP96-S) up to 500°C for a versatile range of experiments.

HIGH DEGREE OF ACCURACY AND STABILITY

The embedded high quality Pt100 platinum sensor guarantees accuracy and stability throughout the temperature range.

DUAL CAPILLARY CAPABILITY

Diamond-shaped insert enables quick-switching between two capillary sizes.

VARIOUS OPTICAL TECHNIQUES

Whether you need to perform Raman spectroscopy, IR or brightfield, the CAP500 can handle it.

XY SAMPLE MANIPULATION

Sample position can be controlled over 25mm in the X direction and 3.5mm in the Y direction via the precision manipulators.

QUICK-RELEASE GAS PORTS

Simple and easy stage purging to allow atmospheric composition control.

WATER-COOLED

Water-cooled stage body for work above 300°C .

CUSTOM OPTIONS

Please contact us with details of your requirements.

Application Examples

The versatile nature of the CAP500, with its precision temperature control and options for various capillary sizes, means it can be tailored to suit a variety of applications:

Earth Sciences and Geology

The CAP500 is used to aid advances in geological research, such as studies of dissolved gases or mineral content in geological fluids. The CAP500 adds precise atmospheric control in combination with many microscopy and spectroscopic characterisation techniques.

Fluid Inclusions

Thermal Maturation

Volcanology



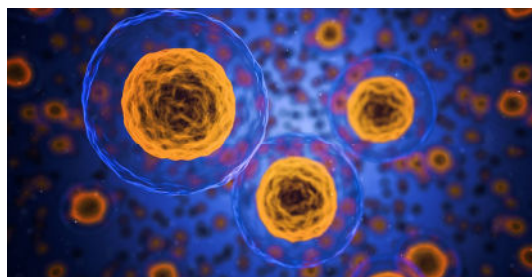
Life Sciences

The flow mechanics of biological and pharmaceutical materials are often modelled with capillary studies. The CAP500 can be combined with spectroscopy techniques to non-invasively provide information on the thermal and in vivo stability and structure of biological compounds.

Pharmaceuticals

Needle Flow

Medical Applications



Plastics and Polymers

The CAP500 is used for high temperature and atmospheric chemical characterisation of flowing materials such as polymer emulsions, paints, inks, and food and drinks. It can also be used to study flow dynamics of fluids used in all types of automobile and aerospace technologies.

Fluid Dynamics

Viscous Materials

Nanoparticle Flow



Technical Specification

Temperature Range

< -195°C (with the addition of an optional LNP96-S) to 500°C

Heating/Cooling Rates

0.01 to 50°C/min

Temperature Stability

0.1°C

XY Manipulation

25mm in X direction, 3.5mm in Y direction

Capillary Sizes

Supports 1/16" and 1/8" as standard, custom sizes available

Compatibility

Brightfield, Raman and IR. Clamping options are additionally available for most microscopes.



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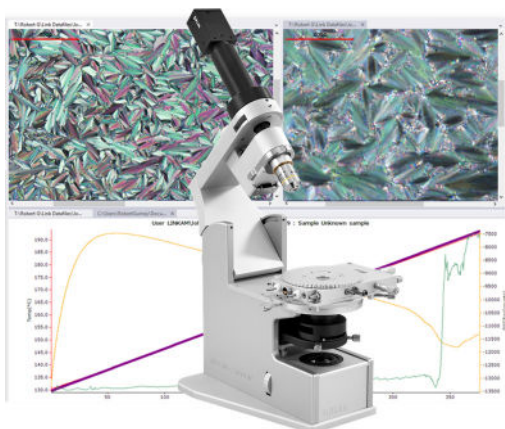


Control Options

Take control of your experiment with LINK software, or the stand-alone LinkPad touch screen, alongside the T96 temperature controller.

Both LINK software and LinkPad share a unified user interface that can control and monitor temperature and many other parameters including vacuum, humidity, tensile and shear force (dependent on system). The LinkPad provides an easy-to-use interface to the T96, for total control without a PC. Profiles with up to 100 ramps can be programmed, allowing simulation of complex processes.

LINK software enhances this with data-logging functions and real time graphical feedback. Optional modules to enhance your system include the LINK Imaging Module for synchronised image capture, the LINK Extended Measurements module to measure key image features, the LINK 21CFR11 Module for data regulatory compliance, and LINK TASC providing image-based thermal analysis.



Imaging Station

The Imaging Station provides a digital imaging platform compatible with Linkam temperature and environmental control systems. Use our high-resolution camera to capture images and videos of your samples while controlling the temperature and environmental conditions.

The Imaging Station has been specially designed with a pivoted mechanism to allow greater access to your Linkam stage, making it quick and easy to access the chamber and change samples. It has a built-in LED light source for transmitted light with further options available for reflected light, polarisation and phase contrast imaging.

The Imaging Station is also compatible with a range of long working distance objective lenses which can be easily switched with the quick-release mechanism.



CSS450

The Linkam Optical Shearing System (CSS450) is the market-leading device for optical rheological measurement. It allows the structural dynamics of complex fluids to be observed directly via a standard optical microscope under precisely controlled temperature using various shear modes.

The quartz-windowed parallel plates can accurately handle gap sizes from several millimetres down to tens of microns, allowing transmitted and reflected light measurements. The CSS450 is also available with X-ray windows for use in SAX/WAX and synchrotron systems.

Contact Details


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We make scientific instruments that help characterise materials from polymers to biological tissue and metals to composites. Our instruments are used for research by the world's most advanced scientific organisations and companies. Each of our instruments are designed and manufactured in-house by our team of highly experienced electronics, software and mechanical design engineers. We design and develop solutions for sample characterisation by collaborating with the best scientists in the world. Will you be next?

Linkam products are constantly being improved, hence specifications are subject to change without notice.
TASC products are a family of techniques developed by Prof. Mike Reading (Cyversa) and Linkam.



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