Optical DSC450

Correlate DSC Analysis with Imaging

Thermal Analysis
Measure glass transitions and melting peaks, crystallisation and oxidation

Wide Temperature Range
Accurate control from –150°C up to 450°C for a range of applications

Real Time Imaging
Better understand your sample by correlating visual changes with heat flow data

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Introducing the Optical DSC450

The combination of optical microscopy with enthalpy data can help you better understand your sample and reveal its characteristics. Differential scanning calorimetry (DSC) is a technique used to measure temperature and heat flow associated with thermal transitions in materials. The optical DSC system has been optimised for those wishing to measure the transition temperatures and enthalpy changes of their samples. The designs allows mounting of the stage on a microscope, enabling image and time lapse recording of sample transitions at high resolution. A sealed crucible is also available for those wishing to conduct closed experiments.

The DSC450 enables the user to measure thermal and glass transitions of a wide range of substances whilst accurately controlling temperature from -150°C to 450°C. The atmosphere of the stage can also be purged with gas as required by the user.

The system is provided with an imaging station, image capture software and high quality camera. Optional modules include Thermal Analysis by Structural Characterisation (TASC) modules and for below ambient temperatures, the liquid nitrogen cooling pump.

Features

DSC Analysis
The optical DSC450 system is ideal for measuring glass transitions and melting peaks for a range of applications including materials, pharmaceuticals and food.

Wide Range Temperatures
The temperature control range from –150°C (with the optional addition of a liquid nitrogen pump) up to 450°C, for a wide variety of experiments. The standard 2L LN dewar provides cooling for several hours.

Optical Capabilities
The stage has been optimised for the Linkam Imaging Station which allows simultaneous imaging and DSC analysis. The stage lid is fitted with a quartz window for high quality image capture and recording.

Highly Sensitive
Study thermal transitions at low heating rates, or with small sample sizes, with no loss of sensitivity.

Thermal Analysis by Structural Characterisation (TASC)*
A unique patented structural characterisation software developed by Professor Mike Reading and Linkam Scientific. TASC is an optional module that tracks changes in surface structure and is highly sensitive to glass and melt transitions. In addition to the DSC signal, TASC makes it possible to analyse different parts of the same sample to identify inhomogeneities. TASC can be combined with any Linkam thermal stage, creating a modular thermal analysis system.

*Cyversa

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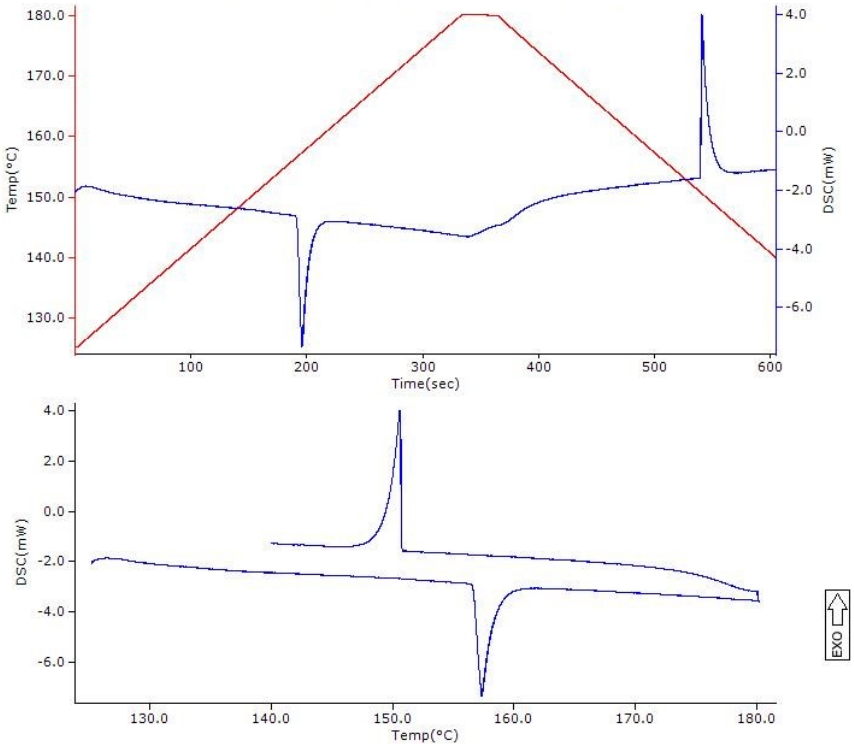
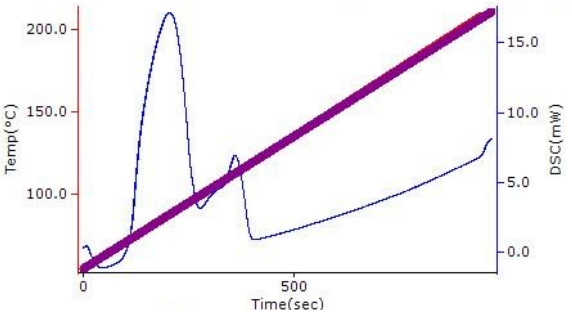
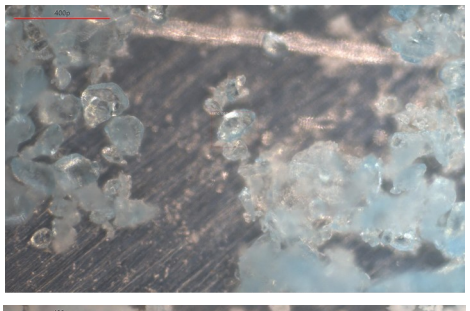
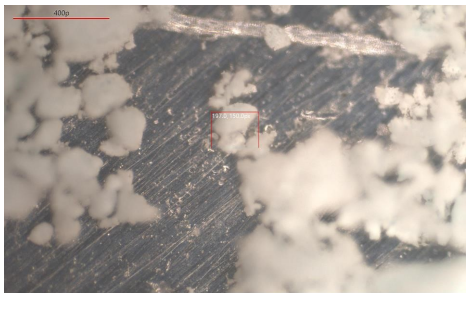
Application Examples

The DSC450 is a thermoanalytic tool which is used to measure melting peaks and glass transitions, as well as optical and physical changes in your sample. The system can be used in a variety of different fields, including 3D printing, pharmacology, plastic manufacturing and many more.









The graphs shown are typical DSC curve outputs from the LINK control software; indium samples are on the left and copper sulphate on the right.

The images on the right are taken through the LINK Imaging module. They illustrate the copper sulphate sample undergoing a colour change with application of temperature. The optical feature of the DSC system allows both data and image sampling throughout the experiment. Captured images are shown by the purple line on the graph.

Technical Specification*

Temperature Range	-150°C to 450°C
Heating Rates	0.1°C/min to 30°C/min
Temperature Stability	<0.1°C
Objective Lens Working Distance	8.2mm (minimum)
Sample Pans Options	Aluminium and Sapphire
Furnace Lid Options	Silver, Sapphire
mW Accuracy	0.01mW

*subject to change

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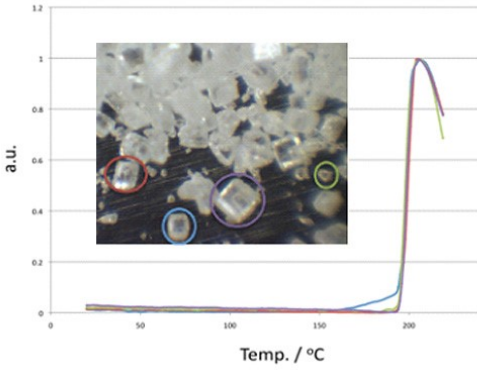
Discover More...

FDCS196

With a temperature range down to -180°C, ultra low temperature eutectics can be investigated with the FDCS196 system. Chamber pressure is monitored by a Pirani vacuum gauge mounted directly on the stage. The XY manipulators can be used to follow the drying front moving across the sample. Pressure can be automatically controlled by the new Linkam MV196 motorized valve. A graph of temperature against time also shows the plot of the chamber pressure throughout the experiment.

Humidity

The RH95 Relative Humidity Controller provides environmental sample control to Linkam's range of temperature stages. It provides precise control in a compact, self-contained package with no requirement for dry air supply. The RH% is accurately controlled between 10%-90% (temperature range ambient to 85°C).



Thermal Analysis by Structural Characterisation (TASC)

TASC* is an image analysis technique that can be used to analyse highly localised changes in sample features that occur during heating or cooling. For example, when a crystalline material melts, there is significant loss of structure as the material changes from solid to molten form. TASC can measure many different locations across the sample making it ideal for studying sample inhomogeneity. TASC and DSC can be seen as complimentary techniques. TASC is an optional module of the LINK software (requires LINK Imaging Module). Add thermal analysis to your Linkam stage.

** TASC products are a family of techniques developed by Cyversa and Linkam Scientific*

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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?

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