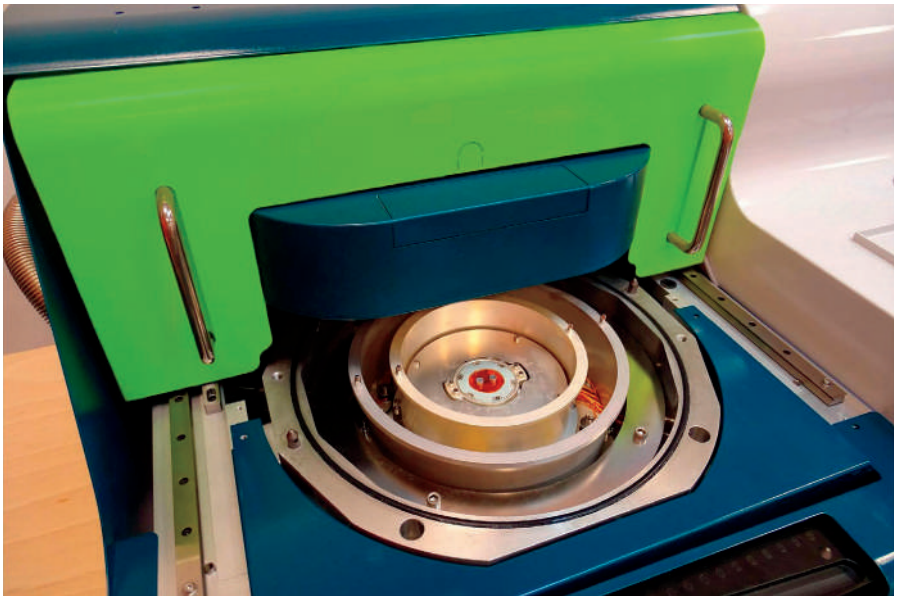
CALNEOS

# THE ULTIMATE MICRO-CALORIMETER

Without a doubt, the most powerful micro-calorimeter on the market.

# UMC IS THE FRUIT OF MANY YEARS OF FUNDAMENTAL RESEARCH.



- Very sensitive
- High-performance
- Ultra simple

The Ultimate micro calorimeter UMC is a differential temperature scanning micro calorimeter offering unrivalled sensitivity, enabling the study of all types of materials, including the most dilute solutions. It operates as a conventional micro-calorimeter.

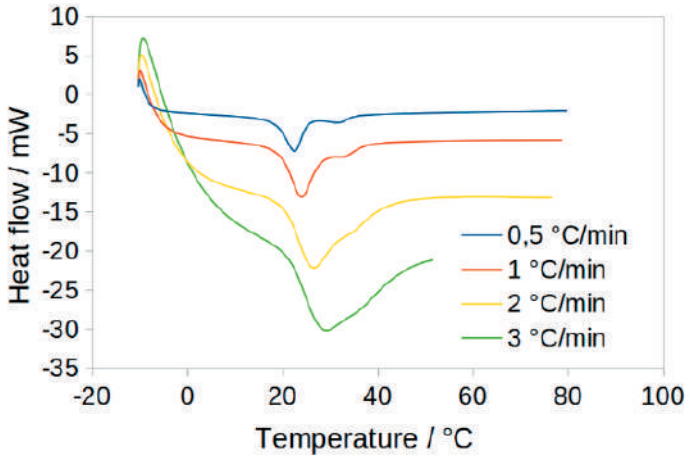
The UMC's unique, innovative design enables sensitive measurement at a level never archieved before for a micro-calorimeter with extractable cells/test crucibles.

## PTFE ANALYSIS

A 524 mg PTFE cylinder was placed in the measurement cell while the reference cell remained empty.

The Ultimate Micro Calorimeter was programmed to perform several heating ramps between -10°C and 80°C, at scanning speeds of between 0.5 and 3°C/minute. The thermograms obtained are shown opposite.

At all the speeds tested, the two Teflon phase transitions were observed. The separation of the two transitions is all the more marked on the thermograms when the scanning speed is low.



# AVAILABLE CELLS

## 1 BATCH CELLS :

These cells can be used to study solids and liquids. They are the best for precise heat capacities measurements (better than 3%) of and they are reusables. They can also be used to study transitions (melting/crystallisation) and liquid-solid or liquid-liquid phase diagrams.

Useful volume: 700 µl
Closed system (silicone O-ring): mass measurement
Pressure: a few bars

## 2 LIQUID CP CELLS HIGH PRESSURES :

These cells have been specifically developed to measure the heat capacity of liquids under pressure. Their unique design makes them easy to fill completely and clean.
Measurements are carried out in constant volume and the cells are installed in the instrument for the entire measurement campaign.
They do not need to be removed to change the liquid being measured, which means that the Cp volume can be measured with an accuracy of better than 1%.
These cells can be used to observe very weak liquid-liquid transitions such as "demixing" or "degassing".
They can be used at atmospheric pressure or under a few bars and have been tested up to 100 bars. With the right equipment, these cells can also be filled under pressure. They can therefore be used to analyse gas-laden solutions under pressure.

Useful volume: 750 µL
Open system: volume measurement
Pressure: 100 bar

## 3 BI-COMPARTMENT CELLS :

These cells enable enthalpy of reaction measurements to be made by limiting the Cp effect of the injection. A liquid is loaded into the upper compartment and injected into the lower compartment (solid or liquid).

Useful volumes: 150+250 µL
Closed system: mass measurement
Pressure: a few bars

## 4 CONTINUOUS A+B REACTION CELLS :

These cells measure the enthalpy of mixing of 2 fluids in a continuous flow (heat of chemical reaction, heat of gas dissolution or enthalpy of excess of a liquid mixture). The measurement is carried out dynamically. An internal tubing system is used to equilibrate the fluids to the temperature of interest, then mixing takes place within the measurement system and is discharged outside the calorimeter. The heat measured is directly proportional to the flow rates and heats measured.

Continuous flow system
Isothermal measurements
Pressures: up to 100 bar (higher pressures on request)
Flow rates: up to 1mL/min

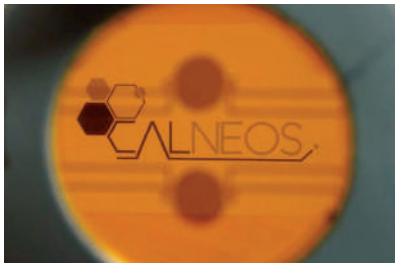
# Specifications

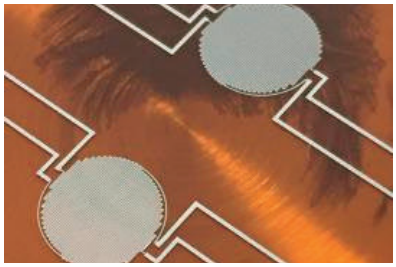
| | |
|---|---|
| Temperature range | -40 up to +160°C |
| Scanning rate : | 0,001 up to 5°C/min |
| Temperature precision regulation : | 100µ°C |
| Measurement time | 30 to 60 minutes typically |
| Sensors type | Peltier Elements |
| Sample volume | up to 750 µL depending on vessel type.<br>Measurement chamber : diam 9mm – H 24,5mm |
| Sensitivity | 250 µV/mW |
| Unique standard features | Direct T sample measurement Effet Joule calibration |
| Measurement range | +/- 150 mW |
| RMS noise | 0.05 µW |
| Dimensions | L*p*h =900 * 700 * 500 mm |

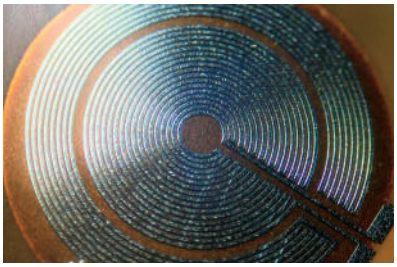
## ULTIMATE MICRO CALORIMETER

These are unique advantages

A wide temperature range
Cells adapted to your applications
Interchangeable sensor
Unrivalled accuracy and sensitivity





## CONTACT

There's nothing like a trial to convince you: send us your samples!

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