DTA PT1600

thermal analysis with**out** limits

LINSEIS

TA

The **DTA** uses a dynamic measuring principle. This instrument will measure endothermal and exothermal heat flow between the sample and reference (enthalpy).

In general these heat flows are characteristic of chemicalorphysical changes of the sample. The test sample and an inert reference material are heated simultaneously in the same atmosphere.

Both the sample and reference material temperatures are measured with thermocouples.

Then these 2 thermocouple output voltages are subtracted from one another. There sult is a low voltage signal which is proportional to the endothermal andexothermalreaction.

Endothermic sample reactions absorbheat and exhibit a lower sample temperature when compared to the reference material. Exothermicreactions produce heatand exhibit a higher sample temperature when compared to the reference material.

Options include operations in vacuum and inert atmospheres.

Temperature range RT - 1600 °C

Differential - measuring system - Thermocouple PtRh(10)/Pt.

The sensitivity range of the Delta T-signal is selectable between 50 -1000uV.

The differential measuring system is easily exchangable. It is secured to the baseusing a gold pinned Lemo plug.

The following characteristics can be determined by DSC measurements:

- Enthalpy, melting energy
- Specific heat
- Glass point
- Crystalinity
- Reaction enthalpy
- Thermal stability
- Oxidation stability
- Aging
- Purity
- Phase transformation
- Solidus / liquidus - relationship
- Eutecticum
- Polymorphs
- Product identification

LINSEIS DTA PT1600

Features

- Temperature range -150°C up to +2400°C
- Different easy exchangeable furnaces
- Different easy exchangeable sensors
- Low temperature model with LN2 cooling or with Intercooler

The **DTA PT1600** was developed to specifically for the high – as well as low temperature range (-150 up to 2400°C).

For this broad temperature range a number of different exchangeable furnaces is available. Furthermore emphasis was placed on a stable baseline and high reproducibility.

Due to its unique features the DTA PT1600 is an indispensable tool for quality control and R&D.

The Instrument can be equipped with a number of different exchangeable furnaces, different measuring systems and numerous different crucibles. Measurements under vacuum, inert, reduced and oxidized atmospheres are possible.

The vacuum tight construction (10E-5 mbar) allows quantitative measurements under cleanest gas atmospheres.

Measuring system

User-friendly exchangeable and diffenent measuring systems. This allows the perfect choice for any application or atmosphere.

Options

- LN2 cooling system
- Turbo molecular pump (10E-5 mbar)
- Two stage rotary pump (10E-3 mbar)
- Different protection tubes
- Coupling with MS/FTIR

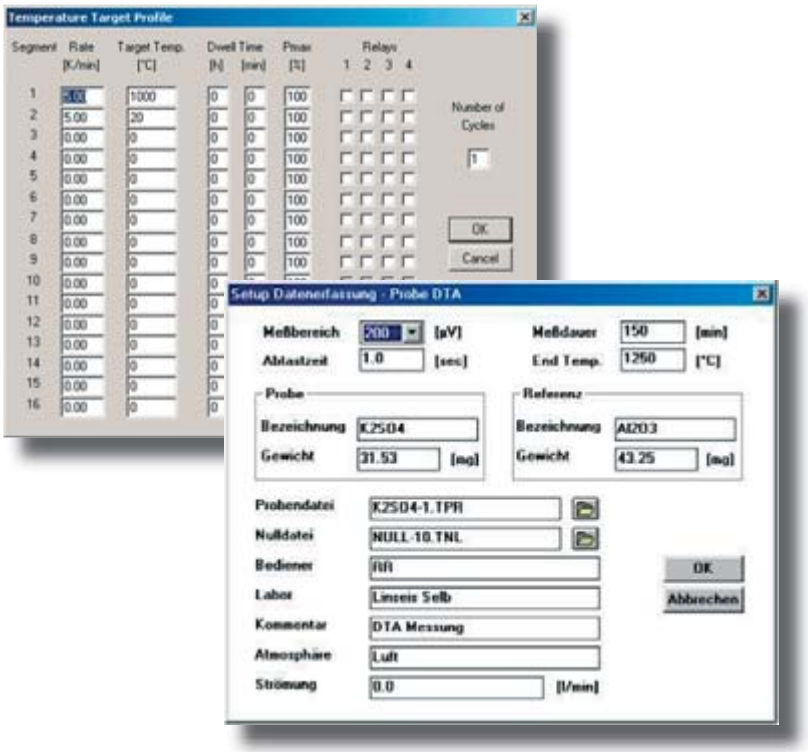
Software

All thermo analytical devices of LINSEIS are PC controlled, the individual software modules exclusively run under Microsoft® Windows® operating systems.

The complete software consists of 3 modules: temperature control, data acquisition and data evaluation.

The Linseis 32 – bit software encounters all essential features for measurement preparation, execution and evaluation with a DSC run, just like with other thermo analytical experiments.

Due to our specialists and application experts LINSEIS was able to develop this easy understandable and highly practical software.



Features

- Program capable of text editing
- Repetition measurements with minimum parameter input
- Evaluation of current measurement
- Curve comparison up to 32 curves
- Curve subtraction
- Multi-methods analysis (DTA TG, TMA, DIL, etc.)
- Zoom function
- 1. and 2. Derivative
- Complex peak evaluation
- Multipoint calibration for sample temperature
- Multipoint calibration for change of enthalpy
- Storage and export of evaluations
- Export and import of data ASCII
- Data export to MS Excel
- Signal-steered measuring procedures

LINSEIS accessories

The versatility of the LINSEIS DTA is supported by the large selection of crucibles. Select for your application and samples the ideal crucible material, the best form and kind of sealing.

Crucibles made of metal; precious metal, graphite and oxide ceramics are available in different dimensions.

Aluminum crucibles can be sealed gas-tight in a handy locking press, so that samples can be protected from the influence of the Environment atmosphere and that gas splitting off from the samples is suppressed.

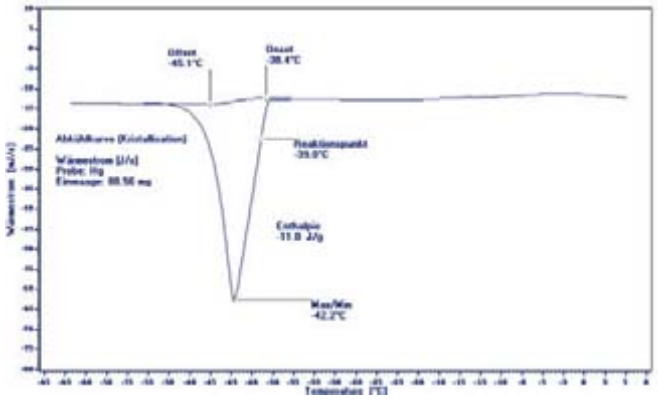
Specifications LINSEIS DTA systems

Temperature range	-150 …2400°C*
Heating/Cooling rates	0,1 up to 50°C/min
Temperature accuracy	+/- 0,5°C
Time constant	7 s
Resolution	0,05 µV
Data acquisition rate	0,1 s up to 3600 s / data point
Atmospheres	N2, Argon, O2 etc., reducing and oxidizing
Measuring range	50 …1000µV

*Different Furnaces

Calibrations material included
Calibration: recommended 6 month interval

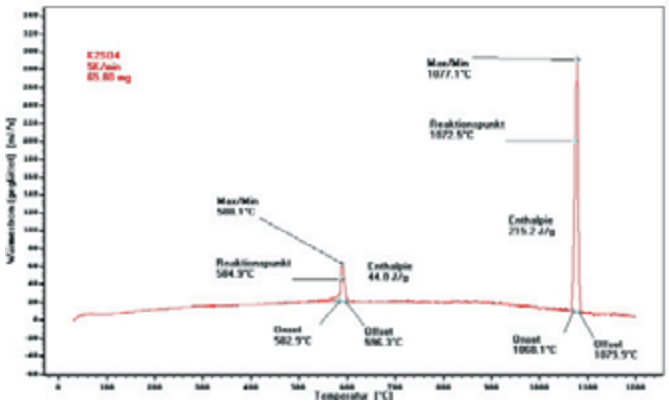
Applications



Silversulfat (AG2SO4)

Silversulfat (AG2SO4) changes it's crystalinestructure from a orthorhombic configuration toa hexagonal system at 424°C.

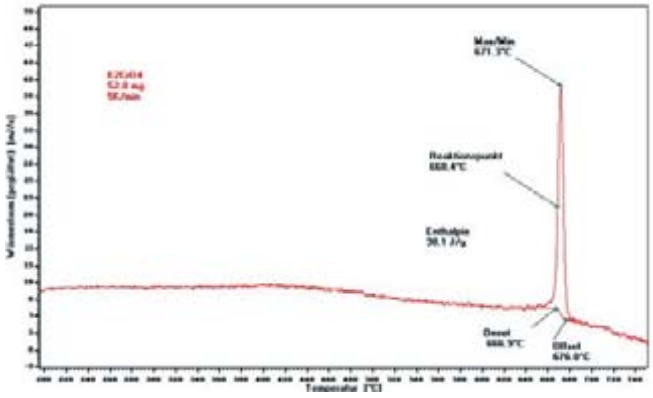
The energy thatis needed for this crystaline restructuring canbevery good determined by means of the HDSC method (high temperature differentialscanning calorimetry).



Temperature of potassiumsulfat (K2SO4)

Potassium sulfat (K2SO4) is changing it's crystal structurefrom a orthorhombicto a hexagonal system at 582°C.

The energy that is needed for this restructuring can be determined with the HDSC methodquantitavely (high temperature differential scanning calorimetry).



Caliumchromat (K2CrO4)

The crystaline structure of K2CrO4 changesfrom a orthorhombic to a hexagonal structure at 665°C.

This endothermal phase change can be evaluated by means of HDSC, relative totemperature, as well as relative to the energy, that is needed for the phase change.

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