LINSEIS

pushing boundaries

PRODUCT OVERVIEW

Thermal Analysis, Thermo Physical Properties & Calorimetry

WWW.LINSEIS.COM

Since 1957 LINSEIS Corporation has been delivering outstanding service, know-how and leading innovative products in the field of thermal analysis and thermo-physical properties.

Customer satisfaction, innovation, flexibility, and high quality are what LINSEIS represents. Thanks to these fundamentals, our company enjoys an exceptional reputation among the leading scientific and industrial organizations. LINSEIS has been offering highly innovative benchmark products for many years.

The LINSEIS business unit of thermal analysis is involved in the complete range of thermoanalytical equipment for R&D as well as quality control. We support applications in sectors such as polymers, chemical industry, inorganic building materials, and environmental analytics. In addition, thermophysical properties of solids and liquids can be analyzed.

Rooted in a strong family tradition, LINSEIS is proudly steered into its third generation, maintaining its core values and commitment to excellence, which have been passed down through the family leadership. This generational continuity strengthens our dedication to innovation and quality, embodying the essence of a true family-run business.

LINSEIS provides technological leadership. We develop and manufacture thermoanalytic and thermophysical testing equipment to the highest standards and precision. Due to our innovative drive and precision, we are a leading manufacturer of thermal analysis equipment.

The development of thermoanalytical testing machines requires significant research and a high degree of precision. LINSEIS Corp. invests in this research to the benefit of our customers.

C L A U S L I N S E I S

C E O D I P L . P H Y S .

Engineering & Innovation

To strive for the best due diligence and accountability is part of our DNA. Our history is affected by German engineering and strict quality control.

We want to deliver the latest and best technology for our customers. LINSEIS continues to innovate and enhance our existing thermal analyzers. Our goal is to constantly develop new technologies to enable continued discovery in Science.

Thermal Analysis, Thermophysical Properties & Calorimetry

The characterization of thermal and thermophysical properties is a central component of modern materials science. Whether polymers, metals, ceramics, semiconductors, batteries, or thin films—every material reacts to temperature, atmosphere, or mechanical stress with specific changes. These reactions significantly determine the functionality and reliability of a product.
Thermal analysis methods, calorimetry, and thermophysical methods provide the relevant parameters for this.

Applications

Applications

Automotive & Aviation

Building Materials

Batteries

Chemistry

Thin Films

Research

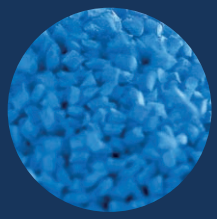
Semiconductors & Electronics

Nuclear & Energy

Hydrogen Technology

Ceramic & Glasses

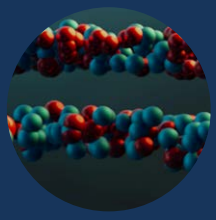
Pharmacy & Food



Polymers

Metals & Alloys

Life Science



Enzyms & Proteins

Linseis **Service**

Customized Solutions - The Linseis Advantage

At Linseis, we believe that every measurement challenge is unique — and so should be your instrument.
While many suppliers rely on standardized configurations, Linseis distinguishes itself through exceptional flexibility and the capability to deliver customer-specific adaptations in record time.

Our experienced engineering teams work hand in hand with you to design and implement fully customized solutions that meet your precise application requirements — whether that means a unique sensor configuration, an extended temperature range, or a specialized software integration.

With decades of experience and a modular product architecture, we turn customization into a standard service — fast, efficient, and reliable.
Choose Linseis and experience what true flexibility in thermal analysis and material characterization means.

Contact form

Service & Support

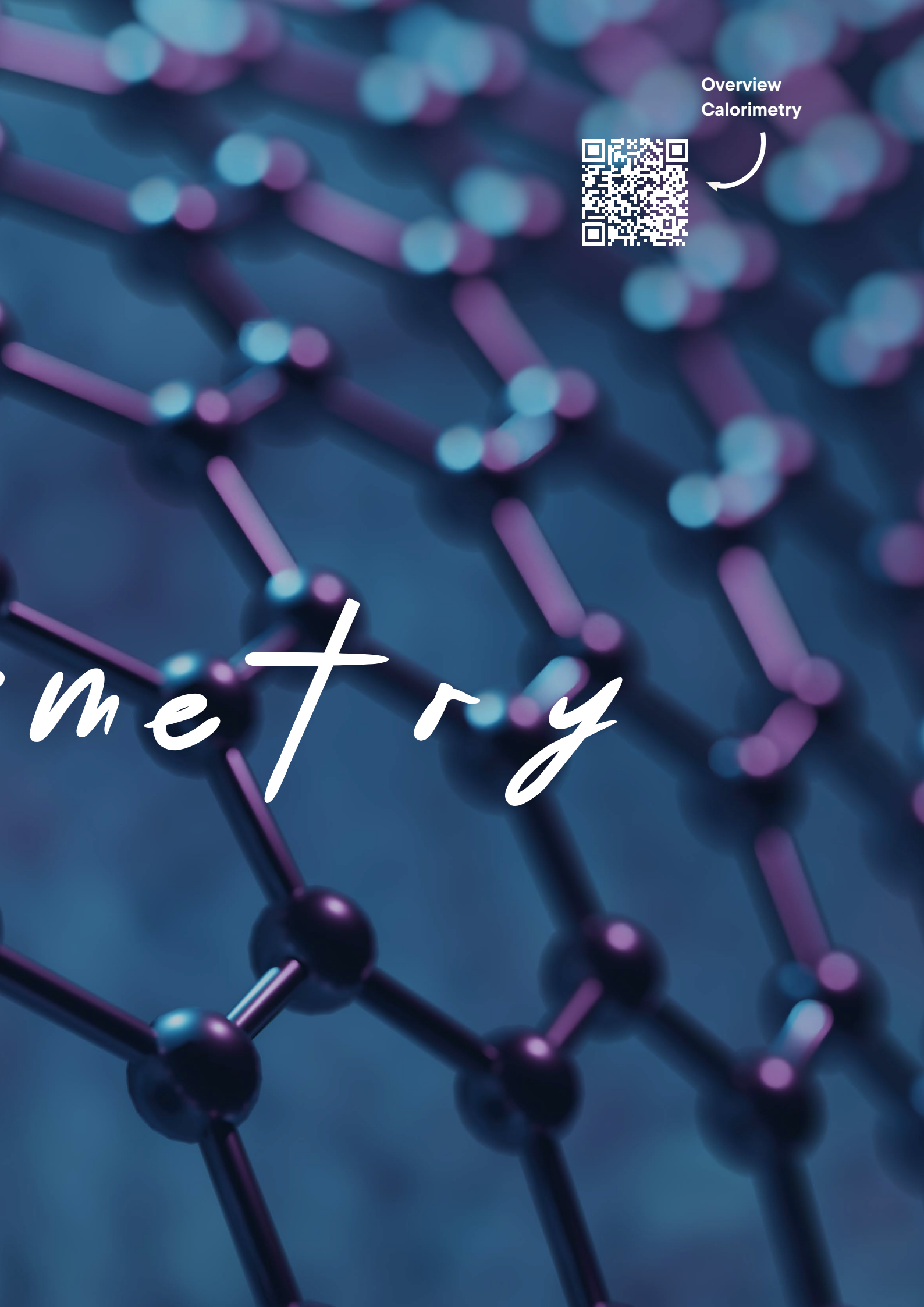
Redefining Ownership

When investing in analytical instrumentation, long-term value matters just as much as precision. That's why Linseis systems are engineered to deliver the lowest **Total Cost of Ownership** in their class — combining reliability, efficiency, and flexibility in every detail.

Our instruments are built with robust, high-quality components designed for longevity and minimal maintenance. This means fewer service interventions, shorter downtimes, and reduced operating costs over the entire product lifetime. Intelligent software updates and remote support further ensure that your system remains state-of-the-art, even years after installation.




Calori


Overview
Calorimetry
metry

Calorimetry

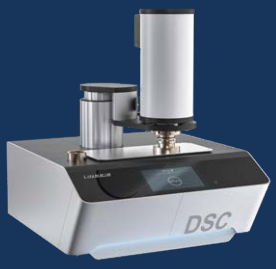
DSC Overview

Measurable Properties

- Heat Capacity (Cp)
- Enthalpy (ΔH)
- Endo-/ Exothermic
- Phase changes
- Melting temperature (Tm)
- Heat of reaction
- Glass transition temperature (Tg)
- Crystallization temperature (Tc)
- Thermal stability
- Oxidative stability
- Oxidative Induction Time (OIT)
- Heat of interaction (ITC)

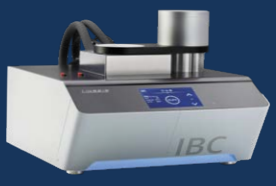
All DSC fulfill all relevant international standards such as **ASTM E967, ASTM E968, ASTM E793, ASTM D3895, ASTM D3417, ASTM D3418, DIN 51004, DIN 51007, DIN 53765 and ISO 11357** and thus guarantee reproducible and standard-compliant results.

Instrument Overview



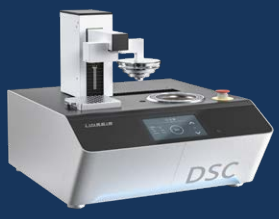
HDSC L62/DTA

- -150 °C up to 2400 °C
- Up to 10^{-5} mbar
- Sample robot up to 42 positions



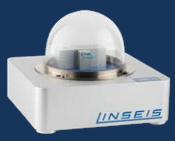
IBC L91
80/300

- -40 °C up to 90 °C
- Isothermal battery calorimeter
- Heat flow, temperature & battery performance



DSC L63

- -170 °C up to 750 °C
- Sample robot up to 90 positions
- Flexible cooling options



Chip DSC L66
Basic/Advanced/Ultimate

- -150 °C up to 600 °C
- Highest resolution
- User exchangeable sensor
- unsurpassed sensitivity

Linseis *Calneos* Applications

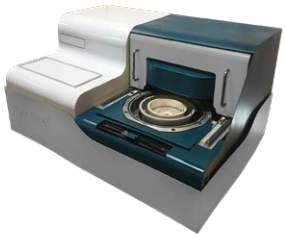
NEW Linseis *Calneos* - Product Line

With the acquisition of *Calneos*, Linseis is expanding its expertise in calorimetry for **life sciences, pharmaceuticals and materials research.**

Instrument Overview

CAL L92

- -60 °C up to 170 °C
- Scan rates 0.001 to 5 °C/min
- Ultra high sensitivity
- measurement under pressure up to 1000 bar



UDSC L64

- -60 °C up to 160 °C
- Scan rates up to 10 °C/min
- Tailored for protein stability analysis

UDSC L64-LT

- Low temperature option
- -170 °C up to 50 °C
- Cooling without using LN_2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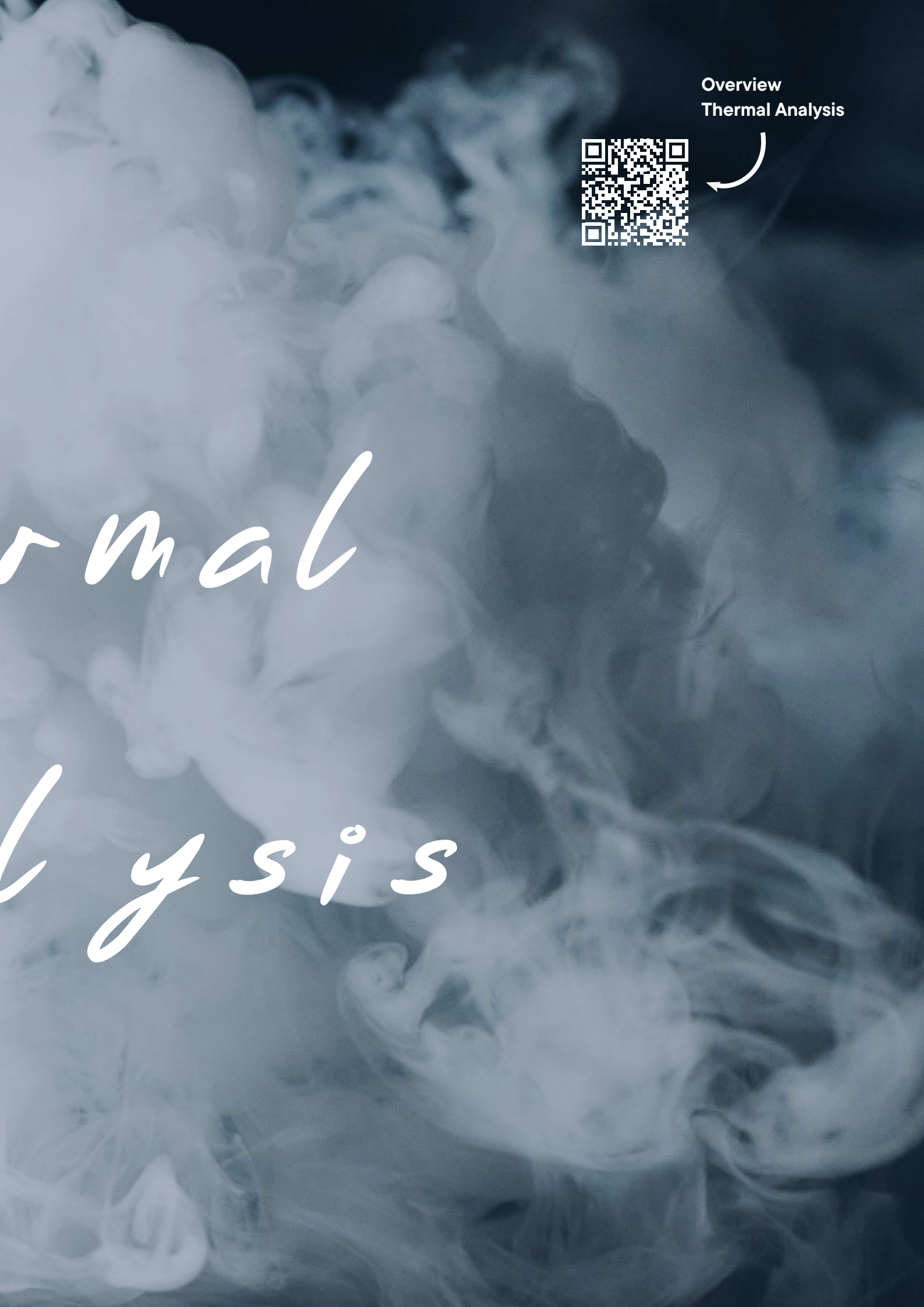
Overview
Thermal Analysis
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Simultaneous **Thermal Analysis**

STA Overview

Measurable Properties

DSC

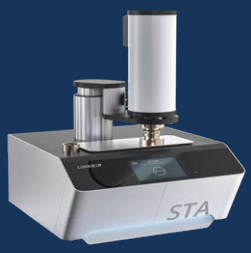
- Heat Capacity (Cp)
- Enthalpy (ΔH)
- Endo-/ Exothermic
- Phase changes
- Melting temperature (Tm)
- Glass transition temperature (Tg)
- Crystallization temperature (Tc)
- Thermal stability
- Oxidative stability
- Oxidative Induction Time (OIT)

TGA

- Compositional analysis
- Mass Change
- Residual mass

The simultaneous measurement of mass change **(Thermogravimetry / TG)** and energy conversion **(Differential Scanning Calorimetry / DSC)** on a single sample (Simultaneous Thermal Analysis – STA) offers a considerable information advantage over separate measurements in different devices.

Instrument Overview



STA L81

- -150 °C °C up to 2400 °C
- Tri-Couple DTA measuring-system
- Patentet "Forced Flow" method

STA L82

- RT up to 1100 °C
- Sample robot up to 90 positions
- Temperature precision: 0.001 °C

STA/TGA HP L85

- RT up to 1200 °C
- High Pressure STA: up to 150 bar
- customized pressure solutions on request

TGA Overview

STA HP L84

- RT up to 1800 °C
- extremely high resolution and long-term drift stability
- Pressure range up to 150 bar

STA/TGA L86

- -150 °C up to 1000 °C
- RT up to 2400 °C
- up to 10^{-2} mbar vacuum
- Temperature precision: 0.001 °C

STA L81 Nuclear

- -150 °C up to 1000 °C
- RT up to 2400 °C
- For nuclear materials
- Sample robot up to 42 positions

TGA Instrument Overview

Our thermobalances (TGA) operate in accordance with the following national and international standards:
ASTM E1131, D3850, ISO 11358, DIN 51006, ISO/DIS 9924

TGA L81

- -150 °C up to 2400 °C
- MS/FTIR coupling for evolved gas analysis
- High-resolution microbalance

TGA L83

- RT up to 1100 °C
- Ultra-high-resolution microbalance
- Flexible atmosphere control with MS/FTIR coupling capability

TGA/GSA L87 MSB

- -196 °C up to 2400 °C
- For high-pressure and reactive gas environments (up to 150 bar)
- Ideal for sorption, gas-solid interaction, and advanced material research

Gravimetric
Sorption Analysis

GSA Overview

Measurable Properties

- Adsorption and desorption capacity
- Sorption isotherms
- Diffusion coefficients
- Permeability and storage capacity
- Gas-solid interaction strength

Our integrated solutions offer the possibility to control the pressure, temperature and gas dosing independently of each other using the supplied software.
We offer two different load cells, a mechanical microbalance and a magnetic levitation balance. The magnetic levitation balance offers a unique, hermetically sealed measuring cell for highly reactive gases.

Instrument Overview

GSA L81

- -150 °C up to 1600 °C
- Pressure range up to 15 bar
- Ideal for routine material screening

GSA L84

- -150 °C up to 1800 °C
- Higher measurement sensitivity
- For advanced material research

GSA L87

- -170 °C up to 1800 °C
- High pressure and reactive gas capability
- Maximum precision for gas/solid interaction studies

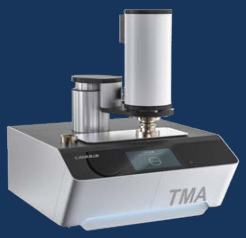
Thermomechanical **Analysis**

Measurable Properties

- Coefficient of thermal expansion (CTE)
- Dimensional stability
- Elastic and viscoelastic deformation
- Glass transition
- Softening and transition temperatures
- Creep behavior under load

All TMA devices operate in accordance with the following national and international standards:
ASTM E831, E1545, ISO 11359 (Part 1-3), DIN EN ISO 11359

Instrument Overview



TMA L71

- RT up to 1000 °C
- High-resolution expansion and deformation measurement
- Robust platform for routine QC and material characterization

TMA L72

- RT up to 1600 °C
- Force control and measurement sensitivity
- For high temperature research

TMA Overview


Dilat


Overview
Dilatometry
ometry

Dilatometry

Measurable Properties

- CTE
- Linear thermal expansion
- Sintering temperature
- Phase transformations
- Softening points
- Decomposition temperatures
- Glass transition temperatures

All **Dilatometers** comply with international standards such as **ASTM E228, D696, DIN 51045, DIN EN 821** and guarantee reproducible, standard compliant results.

Instrument Overview

DIL L73
Laser

- -180 °C up to 1000 °C
- Vacuum, inert, reducing or oxidizing atmospheres for universal material testing
  Resolution: up to 0.3 nm

DIL L75 HP

- RT up to 1800 °C
- Vacuum: 10E^{-4} mbar
- Optional pressure controllable gas mixing system (MFC´s)

DIL L75/L76
Horizontal

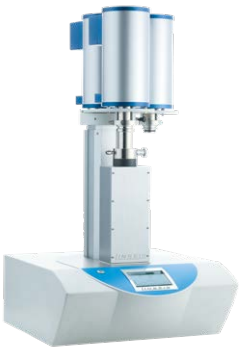
- -180 °C up to 2800 °C
- Push rod technology
- Versatile system for routine, research and development applications

DIL L74 OD/HM

- -100 °C up to 2000 °C
- Contact angle measuring with vacuum-tight sample chamber
- For fragile, soft or irregular samples

DIL L75
Vertical

- -263 °C up to 2800 °C
- Optional cryo extension under vacuum or controlled atmospheres
- Multiple furnace configuration



DIL L75
Quattro

- -180 °C up to 2800 °C
- Sample length up to 50 mm
- Sample diameter up to 7 mm
- Multiple furnace configuration

DIL L78
RITA

- -150 °C up to 1600 °C
- Quenching and deformation dilatometer
- For simulation of industrial thermal processes

DIL Overview

The following table shall give an orientation concerning our dilatometers and their capabilities.
For more detailed information please contact our product and application specialists.

Devices	DIL L75 Horizontal	DIL L75 Vertical	DIL L75 HP	DIL L75 Quattro
Info	Precision dilatometer for standard Applications	Vertical precision dilatometer for high and low temperature applications	High pressure process simulation dilatometer	High throughput four sample dilatometer
Measurement				
Coefficient of thermal expansion (CTE)				
Defined atmospheres				
High temperature range				
Multiple sample measurement				
Deformation/Quenching				
Contactless measurement				
Calculated DTA				
Relative density				
Temperature range	-180 °C up to 2800 °C	-263 °C up to 2800 °C	RT up to 1800 °C	-180 °C up to 2800 °C
Price	$$	$$	$$$	$$

 Measurement is possible

 Measurement is probably possible

 Measurement is not possible

	DIL L73 Laser	DIL L74 HM	DIL L74 OD	DIL L76 Horizontal	DIL L78
	Ultra high resolution dilato-meter	Heating microscope for contact free shape detec-tion	Optical non contact dilatometer	Horizontal standard pushrod dilatometer	Rapid heating, quenching and deformation dilatometer
	🙂	😐	🙂	🙂	😐
	🙂	🙂	🙂	☹️	🙂
	😐	😐	😐	☹️	😐
	☹️	☹️	☹️	☹️	☹️
	☹️	☹️	☹️	☹️	🙂
	😐	🙂	🙂	☹️	☹️
	☹️	🙂	😐	☹️	☹️
	🙂	🙂	😐	😐	😐
	-180 °C up to 1000 °C	-100 °C up to 500 °C	-100 °C up to 500 °C	RT up to 1600 °C	-150 °C up to 1600 °C
	$$$	$$	$$	$	$$$

Overview
Electrical Properties

Overview
Thermal Conductivity

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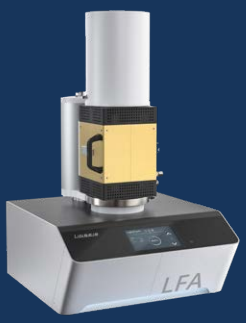
Thermal **Conductivity**

Measurable Properties

- Thermal conductivity (λ)
- Thermal diffusivity (α)
- Specific heat capacity (Cp)
- Thermal effusivity
- Thermal resisitivity

The thermal conductivity is determined internationally according to established standards such as **ISO 22007, ASTM E1461** depending on the measurement method used. In particular, the laser flash method according to **ISO 22007-4** and **ASTM E1461** is considered the globally recognized standard for the precise determination of the thermal diffusivity and derived thermal conductivity of solids over a wide temperature range.

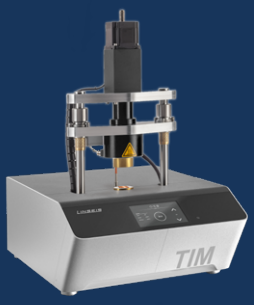
Instrument Overview



LFA L51

LFA L52

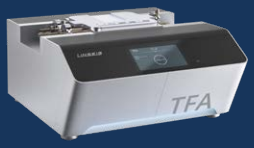
THB L56
Basic/Advanced



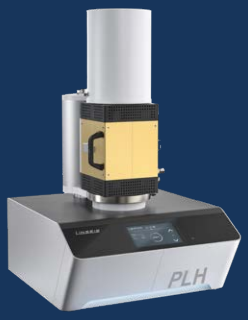
TIM L58
Basic/Advanced

HFM L57
200/300/600

TF-LFA L54



TFA L59



PLH L53

LZT L33

Wiki Thermal Conductivity

The following table shall give an orientation concerning measurement devices and their capabilities. For more detailed information please contact our product and application specialists.

Devices	LFA	TIM	THB
Info	Most universal tool	For thermal interface materials	For fast and easy measurement
Measurement			
Thermal Conductivity			
Thermal Diffusivity			
Specific Heat Capacity			
Thermal Resistivity			
Defined Pressure on Sample			
Atmosphere			
Temperature range	-125°C to 2800°C	-30°C to 450°C	-150°C to 700°C
Price	$$ -$$$	$$	$
Sample Type			
Solid			
Liquid			
Powder			
Paste			
Pad			
Thin films			

 Measurement is possible

 Measurement is probably possible

 Measurement is not possible

HFM	TFA	TF-LFA	PLH
For insulating materials	Full analysis of thin films	For nm to µm films	For µm to mm films
🙂	🙂	🙂	🙁
🙁	😐	🙂	🙂
🙁	🙂	🙂	🙁
🙂	🙁	🙁	🙁
🙂	🙁	🙁	🙁
🙁	🙂	🙂	🙂
-35°C to 90°C	-160°C to 280°C	-100°C to 500°C	RT to 300°C
$$	$$$	$$$	$$
🙂	😐	😐	🙂
🙁	🙁	🙁	🙁
😐	🙁	🙁	🙁
🙁	🙁	🙁	🙁
🙁	🙁	🙁	🙁
🙁	🙂	🙂	🙂

Electrical **Properties**

Wiki Thermoelectric materials

Measurable Properties

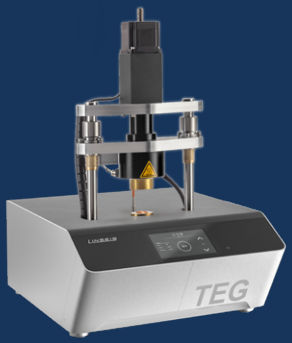
- Thermal conductivity (λ)
- Thermal diffusivity (α)
- Seebeck coefficient
- Electrical resistivity
- Hall constant
- ZT characterization

Instrument Overview

LSR L31

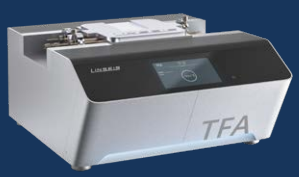
LSR L32

HCS L36
Basic/Advanced/Ultimate



TEG L34

LZT L33



TFA L59

The following table shall give an orientation concerning measurement devices and their capabilities. For more detailed information please contact our product and application specialists.

Devices	LSR	LZT	HCS	TFA	TEG
Info	Most universal tool	Combination of LSR + LFA	Determination of Hall properties	Full analysis of thin films	For thermal inter-face materials
Measurement					
Seebeck coefficient	☺	☺	☺	☺	☺
Electrical Resistivity	☺	☺	☺	☺	☺
Hall constant and mobility, charge carrier concentration	☹	☹	☺	☺	☹
Thermal Diffusivity	☹	☹	☹	☹	☹
Thermal Conductivity	☹ *	☹	☹	☺	☺
Complete ZT characterization	☺	☹	☹	☺	😐
Temperature range	-160°C to 1500°C	-100°C to 1100°C	-160°C to 600°C	-160°C to 280°C	-30°C to 300°C
Price	$$	$$$	$	$$$	$$
Sample Type					
Solid	☺	☺	😐	😐	☺
Thin films	☺	☺ **	☺	☺	😐

* Calculated thermal conductivity from the Harman method for direct ZT measurement. The Harman method is only applicable for good thermoelectric samples from -100°C to +300°C.

** Seebeck and resistivity of thin films can be measured, but the Harman method is only applicable to solids, not thin films.

☺ Measurement is possible 😐 Measurement is probably possible ☹ Measurement is not possible

LINSEIS

pushing boundaries

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