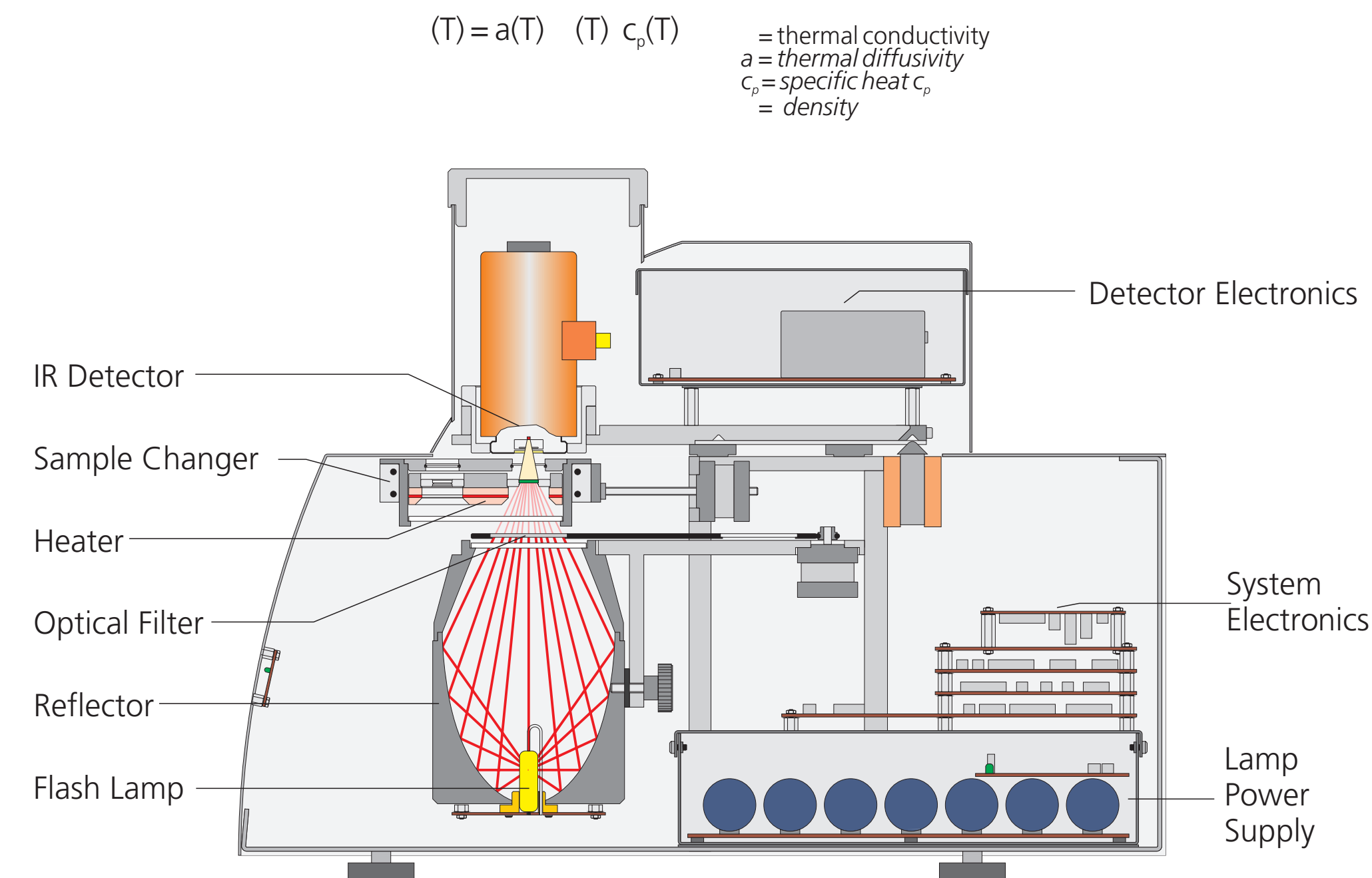


# Leading Thermal Analysis.

# LFA 447 NanoFlash™

## Method

The flash technique is one of the most widely used methods for the determination of the thermal diffusivity and thermal conductivity of solids all over the world. Using this method, the front side of a plane-parallel sample with a well defined thickness is heated by a short light or laser pulse. The resulting temperature rise on the back surface is measured versus time using an infrared detector. Analyzing the measured detector signal with appropriate mathematical models yields information on thermal diffusivity and the specific heat of a material. Together with the density of the material the thermal conductivity can be determined. Additionally, analysis of multi-layer systems or the measurement of liquids is possible by the flash method. The flash method is a standardized technique (ASTM E 1461 or DIN EN 821).



## Features

- Accurate pulse length correction
- Heat-loss corrections, all literature models are integrated
- Non-linear regression for Cowan fit
- Improved Cape-Lehmann model through consideration of multi-dimensional heat loss and non-linear regression
- Radiation correction for semi-transparent samples
- 2- or 3-layer systems: analysis by means of non-linear regression and consideration of heat loss
- Determination of contact resistance in multi-layer systems
- Model wizard for selecting the optimum evaluation model
- Determination of specific heat by means of a comparative method and standard samples
- Integrated database

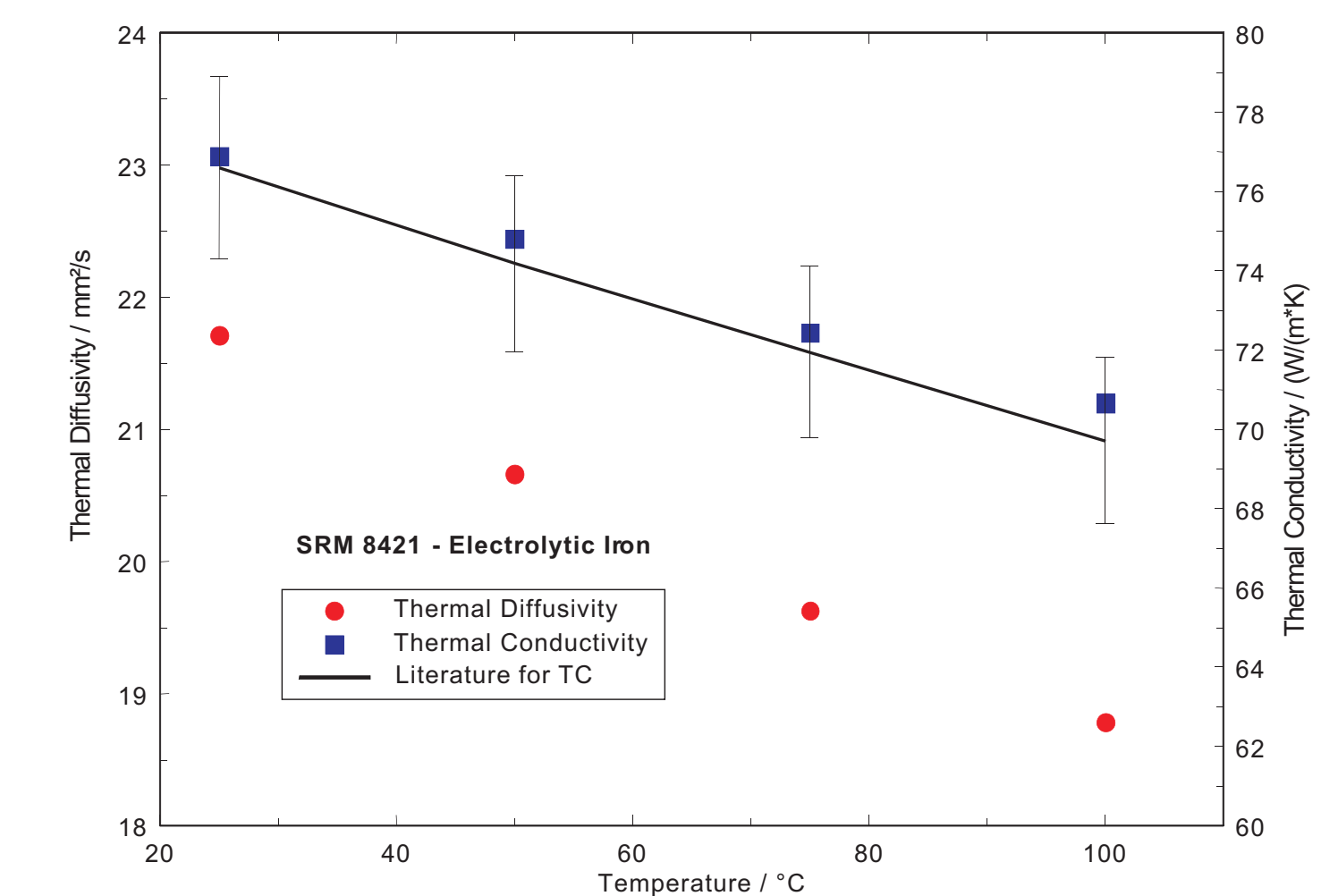


LFA 447 NanoFlash™

The LFA 447 NanoFlash™ is equipped with a furnace capable of operation from room temperature to 300°C. The system is equipped with a software-controlled automatic sample changer allowing measurement of up to 4 samples at the same time. The temperature rise on the back face of the sample is measured using an In-Sb detector. Data acquisition and evaluation are accomplished using a comprehensive 32-bit MS-Windows software package. Various analysis models are integrated in the software. The data can be corrected for finite pulse and heat loss effects (radial and facial).

## Application

An example of the direct measurement of thermal conductivity with the LFA 447 NanoFlash™ on a thermal conductivity standard (SRM 8421 electrolytic iron) is presented here. The calibration of the system was carried out using a stainless steel standard. It can clearly be seen that the measured thermal conductivity is within the range of the literature values. (The literature values are presented together with the stated uncertainty level.)



## Specifications

- Temperature range: RT ... 300°C
- Xenon-Flash-Lamp 10 J/pulse, (adjustable power)
- Contactless measurement of temperature rise with IR detector
- Measuring range: 0.01 mm²/s ... 1000 mm²/s (thermal diffusivity)
- Measuring range: 0.1 W/mK ... 2000 W/mK (thermal conductivity)
- Sample dimensions: 10 mm ... 25.4 mm diameter (also 8x8 mm and 10x10 mm, square) 0.1 mm ... 6 mm thickness
- Sample support for 2 samples
- Sample support for 4 samples
- Sample holder: metal
- Sample holder for liquids: aluminum / platinum
- Atmospheres: air, static
- MTX Scanning device for 50 mm x 50 mm samples (RT), local resolution 0.1 mm