

## A method and system for measuring thermal diffusivity



### Description

A new method for measuring thermal diffusivity is proposed. This new method allows thermal diffusivity measurement of a bulk material in reflection without the need of preparing a separate sample with two parallel faces to perform the measurement in transmission.

The concept of the method is the following: the sample is heated by a modulated laser beam on a spot of predefined diameter. The modulation frequency is varied while a detector measures the modulated temperature on the heated spot.

Since only one surface of the sample must be accessible, the measurement can be performed directly on a component surface without taking it apart. Unlike for other methods

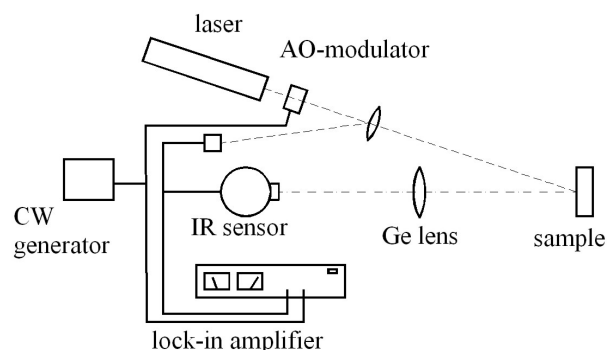
- which either requires a sample to be prepared apart from the bulk material or the experimental setup to be moved
- there is here no need of any mechanical displacement, everything remains into position and only the modulated frequency of the laser beam is varied.

### Innovative aspects and main advantages

- Non-destructive method of thermal diffusivity measurement.
- The method does not require samples to be taken from the bulk material and therefore can be performed directly on a component surface.
- Both heating and radiative temperature are measured on the same side of the sample.
- No elements of the measuring system need to be moved during experimentation.
- High signal to noise ratio compared to other methods of thermal diffusivity measurement.

### Areas of application

- Measurement of thermal diffusivity
- Material industry (ceramic, metals, ...)



### Stages of development

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Prototype

### Scientific contact

Fareydoun Lakestani  
Joint research Centre, IHCP  
European Commission  
Tel: (+39) 0332785377  
Email address: Fareydoun.lakestani@jrc.it

### Licensing contact

Olivier Eulaerts  
DG JRC  
European Commission  
B-1049 Brussels, Belgium  
Tel: (+32)2/2988048  
Email address: olivier.eulaerts@ec.europa.eu

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