

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 temperatures 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.

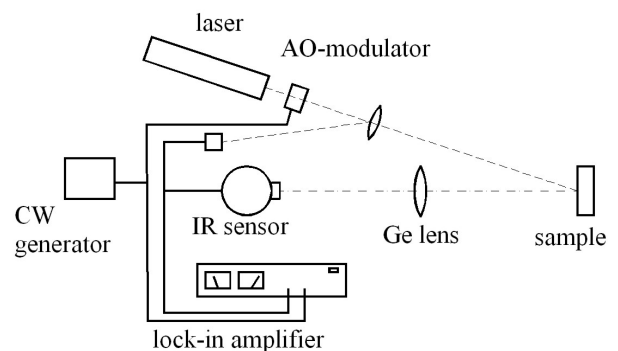
Areas of application

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

Stages of development

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Prototype



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Licensing contact

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