



REASON

Workpackage: WP5

Event acronym: TUL_ATMT

Task 5.2

course

Advanced thermal measurement techniques

29-30 June 2003, Łódź, Poland

We would like to invite you to a two-day course on the subject of thermographic and p-n junction thermal measurement techniques. The course will be organised in connection with the 10th International Conference “Mixed Design of Integrated Circuits and Systems MIXDES”, which will be held in Łódź on 26-28 of June 2003.

The course will consist of 8 hours of lectures explaining the participants the theory and techniques of thermal measurements and 8 hours of laboratory giving the opportunity to apply the acquired knowledge in practice.

The course is open to everyone, however, please note that the number of participants is limited to 8 persons. The course is free of charge for all the REASON and MIXDES participants, for other persons the fee is 10 €.

For news and updates please visit <http://www.reason.mixdes.org>

Preliminary course programme

Day 1. (June 29th)

Thermal measurements – theory and modern techniques.

9.00 – 13.00 Lectures I.

1. Current thermal measurement techniques – advantages, disadvantages and suitability for different applications.
2. Thermographic measurements:
 - a) Principles of thermographic measurements:
 - Basics of heat transfer.

- Infrared measurements in theory.
- Types and construction of radiation sensors and thermographic cameras.
- Typical fields of application.

3. Performing correct thermographic measurements:

- a) Preparation of the object of examination.
- b) Preventing measurement errors.

13.00 – 14.30 Lunch break.

14.30 – 18.30 Lectures II.

4. Postprocessing of the thermograms:

- a) Emissivity correction.
- b) Extracting information.

5. P-N junction as a temperature sensor:

- a) Principles.
- b) Fields of application.

Day 2. (June 30th)

Thermal measurements – practical exercises.

9.00 – 13.00 Laboratory I.

1. Thermographic measurements:

- a) Introduction to the Inframetrics SC1000 thermographic camera and additional equipment.
- b) Illustration of possible measurement errors:
 - Influence of emissivity factor.
 - Problems with reflections.
 - Effects of limited spatial resolution.
 - Results of measurement noise.
- c) Calculation of an RC thermal model parameters.

13.00 – 14.30 Lunch break.

14.30 – 18.30 Laboratory II.

2. P-N junction measurements:

- a) Measurements of a sample integrated circuit.
- b) Comparison with thermographic measurements results.
- c) Calculation of thermal resistance.

3. Using the postprocessing programs.