

REGISTRATION FEE

Fee: RM700.00 per participant (inclusive of lecture notes, course materials, lunches, diner and refreshments). Certificate of Attendance will be awarded to participants who have successfully completed the course.

ACCOMMODATION

In-campus university accommodation is available at the following places:

1. University House (RM100/night)
2. UTM 2-Room Apartment (RM70 - RM80/night)

Note: Accommodation at nearby hotels can also be arranged upon request. All reservations should be made via the secretariat.



REGISTRATION FORM

7TH SHORT COURSE ON ADVANCED METALLOGRAPHY & MICROSTRUCTURAL ANALYSIS 2006

Name: _____ Designation: _____

Organisation: _____ Address: _____

Tel: _____ Fax: _____ E-mail: _____

Attend as: Electronics participant (27 - 28 June, 2006)
 Non-Electronics participant (28 - 29 June, 2006)

Accommodation Yes University House No
UTM Apartment

PAYMENT

I enclose herewith a cheque/money order/bank draft RM _____ for the registration fee, payable to "Bendahari UTM"

Signature: _____ Date: _____

Note: Photocopies of this reply form are acceptable

FURTHER INFORMATION

Enquiries should be directed to:

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Faculty of Mechanical Engineering
Universiti Teknologi Malaysia
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Please visit our website at:
http://www.fkm.utm.my/~material_lab



7th SHORT COURSE ON ADVANCED METALLOGRAPHY & MICROSTRUCTURAL ANALYSIS 2006

Theme: Sample Preparation and Analysis for Electronics
& Non-Electronics Industries

27th - 29th June, 2006

Faculty of Mechanical Engineering
Universiti Teknologi Malaysia, Skudai, Johor



Jointly Organised by:

Materials Science Lab
Faculty of Mechanical Engineering
UTM

CLMO Technology
Sdn. Bhd.

CLMO
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## INTRODUCTION

This will be the seventh in a highly acclaimed series of short courses on Advanced Metallography and Microstructural Analysis, embracing both theoretical and practical aspects of sample preparation and techniques of materials characterisation. Metallography is a characterisation technique that looks at the composition and structure of materials. It provides information about the various phases, grain size and defects in the structure. The ability of the metallurgist and materials engineer to explore microstructures on finer scale has increased and is becoming easier with the advancement of computers and digital photography.

Sample preparation, however, remains one of the key factors to achieving the desired results from microstructure analysis and quantification. Whether to validate electrical contacts between circuit boards and individual components, detect cracks, analyse grain structure or intermetallics formed at the solder joints, metallography of solders joints and failure modes of electronic packaging is also a necessary routine in the electronic industry. Thus, for the first time in these series of short courses, the principles of sample preparation and metallography of intermetallics using optical and electron microscopy will also be introduced in addition to the non-electronics applications. The course includes lectures, workshops and practical laboratory work.

## OBJECTIVES

The objective of this short course is to provide participants with various steps involved in the sample preparation and equipment and tools used to perform microstructure analysis. Participants are encouraged to bring their samples from their companies or institutions to use in the hands-on-laboratory work. This will assist in relating the comprehensive course material to each participant's specific applications.

Successful completion of the two day course will ensure that each participant will leave with a better understanding of the techniques and tools used to perform routine sample preparation and microstructure analysis.

## WHO SHOULD ATTEND

This course is designed for engineers, scientists, lecturers, R&D personnel, technicians, and laboratory assistants. It is also designed for those who work in electronics or non-electronics industries. The participants are not required to have basic knowledge in materials science and engineering to attend this short course.

## COURSE LECTURERS

**Mr. Rene Hoeg:** Graduated with specialization in Metallurgy and Design from Copenhagen Technical University in 1973. He has more than 30 years work experience and a Founder of Danish Society of Materialography. He is also a Co-Founder of the Norwegian and Polish Society of Materialography

**Assoc. Prof. Dr. Ali Ourdjini:** Associate Professor from Materials Engineering department, FKM, with more than 11 year teaching experience and 5 years research experience in solder metallurgy.

**Dr. Astuty Amrin:** Lecturer from Materials Engineering department, FKM, with more than 11 year teaching experience with specialization in Corrosion Engineering.

## ORGANISING COMMITTEE

### Patron:

Professor Dr. Md. Nor bin Musa  
Dean Faculty of Mechanical Engineering  
Universiti Teknologi Malaysia

### Advisors:

- (i) Professor Ir. Dr. Azhar bin Dato' Ab Aziz  
Deputy Dean (Development),  
Faculty of Mechanical Engineering, UTM
- (ii) Professor Dr. Esah Hamzah  
Deputy Dean (Academic),  
Faculty of Mechanical Engineering, UTM

### Chairperson:

Dr. Astuty Amrin

### Co-Chairperson:

Mr. H. S. Ong (CLMO Technology Sdn. Bhd.)

### Deputy Chairperson:

Assoc. Prof. Dr. Ali Ourdjini

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Amri b. Muhamad  
Md Yani b. Kasiren  
Malik Sulieman  
Zamzuree Aripin (CLMO Technology Sdn. Bhd.)



## COURSE PROGRAMME

Venue : Seminar Room (C23-105)

Faculty of Mechanical Engineering, Universiti Teknologi Malaysia

### 27<sup>th</sup> June 2006 (Tuesday) - DAY 1 (Electronics)

- 8.00 - 8.30 am : Registration
- 8.30 - 9.45 am : Lecture 1 : An overview on Electronics Materials : Dr. Ali Ourdjini
- 9.45 - 10.00 am : Tea Break
- 10.00 - 11.15 am : Lecture 2 : Electron Microscopy (SEM + FESEM): Dr. Astuty Amrin
- 11.45 - 1.00 pm : Workshop 1 : *Sample Preparation*
- 1.00 - 2.15 pm : Lunch
- 2.15 - 4.30 pm : Workshop 1 : *Sample Preparation (cont)*
- 4.30 - 5.00 pm : Practical 1
- 5.00 - 5.15 pm : Refreshments

### 28<sup>th</sup> June 2006 (Wednesday) - DAY 2 (Electronics and Non-Electronics)

- 8.00 - 8.30 am : Registration
- 8.30 - 9.00 am : Opening Ceremony and tea break
- 9.00- 10.00 am : Lecture A : Sample Preparation 1 : Mr. Rene Hoeg
- 10.00 - 10.15 am : Tea Break
- 10.00 - 11.15 am : Lecture B : Sample Preparation 2 : Mr. Rene Hoeg
- 11.15 - 1.00 pm : Workshop A : (Non-Electronics)  
Practical 2 (Electronics)
- 1.00 - 2.15 pm : Lunch
- 2.15 - 4.45 pm : Practical A : (Non-Electronics)  
Workshop 2 : *SEM/ FESEM* (Electronics)
- 4.45 - 5.00 pm : Certificate Presentation (Electronics)
- 5.00 - 5.15 pm : Refreshments

### 8.00 - 10.00pm: SHORT COURSE DINNER

### 29<sup>th</sup> June 2006 (Thursday) - DAY 3 (Non-Electronics)

- 8.00 - 8.30 am : Lecturer C : Etching/Image Analysis  
: Mr. Rene Hoeg
- 10.00 - 10.15 am : Tea Break
- 10.15 - 1.00 pm : Practical B
- 1.00 - 2.15 pm : Lunch
- 2.15 - 4.30 am : Practical C : *SEM/ FESEM*
- 4.30 - 5.00 pm : Closing Remarks and Certificate Presentation
- 5.00 - 5.15 pm : Refreshments and End

