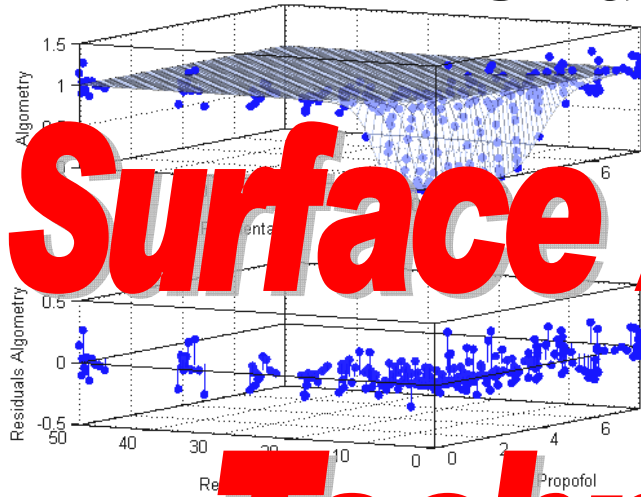




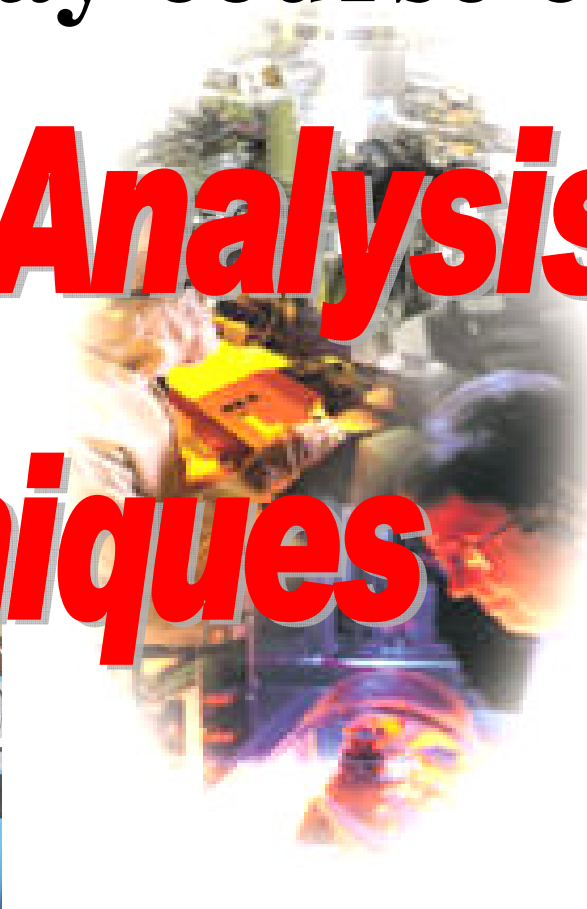
PUSAT PENGAJIAN KEJURUTERAAN BAHAN & SUMBER MINERAL  
SCHOOL OF MATERIALS & MINERAL RESOURCES ENGINEERING

UNIVERSITI SAINS MALAYSIA

# 3-day course on



# Surface Analysis Techniques



## WHO SHOULD ATTEND?...

Managers, Engineers and Technicians that involve in Surface Analysis Techniques and those who apply this technique in their company / organisation.

**Dates** : 28 – 30 September 2010 OR  
13 – 15 December 2010

**Time** : 9am – 5pm

**Venue** : Auditorium 1, Kompleks Eureka,  
Universiti Sains Malaysia,  
Penang.

**Limited to  
15  
participants  
per session!**

In collaboration with:



(wholly own by Universiti Sains Malaysia)

**HRDF Claimable\***

**\*Subject to HRDF Approval**

## INTRODUCTION

The characteristic of surface and near-surface regions of materials can be characterised by various surface analysis techniques. Applications of many engineering materials are determined by the surface and near-surface structures. Therefore, the well being of this region is essential in order to obtain a pre-required condition for those materials aiming for a specific application. Typically, failure of engineering products may be traced back to surface/near-surface contamination or surface reconstruction. In order to obtain more information related to the failure, a clearer picture needs to be captured in this region. This course is outlined to introduce the participants on the basic principle of these and several other surface analysis techniques. Selection of the relevant techniques with respect to their practical usage is being emphasized. The operation principle and technique to analyse data being gathered from those techniques are also be discussed.

## COURSE OBJECTIVES

Upon the completion of this course, participants will be able to:

- i. List down common techniques used for surface analysis.
- ii. Explain operation principles of those techniques.
- iii. State advantages and limitations of a given analysis technique.
- iv. Systematically identify and justify useful analytical technique for problem solving.

## REGISTRATION FEE

**RM980.00**

(Covers course material, refreshment including lunch and Certificate of Attendance.)

**Group discounts – RM882.00 per participant (group minimum of 3 participants from the same organisation)**

## ENQUIRIES

Technical Details:

Associate Professor Dr. Ir. Cheong Kuan Yew  
School of Materials & Mineral Resources  
Engineering, Universiti Sains Malaysia.  
04-653 3888 EXT 5259  
cheong@eng.usm.my

Registration and others:

Khairol Anuar Hazir Mohammed  
USAINS Holding Sdn Bhd  
04-653 4372 / 012-286 9048  
khairol@usainsgroup.com /  
khairol\_usains@yahoo.com

## COURSE CO-ORDINATOR

### ASSOCIATE PROFESSOR DR. IR. CHEONG KUAN YEW



Kuan Yew Cheong was born in Ipoh, Perak (1972) and received the B. Eng (1<sup>st</sup> Hons.) and M.Sc. in Materials Engineering from Universiti Sains Malaysia (USM), Malaysia in 1997 and 2001 respectively. He obtained his Ph.D. degree from the School of Microelectronic Engineering, Griffith University, Australia in 2004. He worked from 1997 to 1999 as a project engineer and a quality assurance engineer in a project management company and a semiconductor-device manufacturing factory in Malaysia. Then, he joined the School of Materials and Mineral Resources Engineering, USM, Malaysia as a Fellow under the academic staff training scheme. In 2005, he has awarded a Certificate of Teaching and Learning from USM and now he is serving as an Associate Professor at the same School. He is teaching courses of electronic materials, semiconductor fabrication technology, and quality control and management for more than 5 years at under- and post-graduate levels. Dr. Cheong's main research area is on semiconductor device fabrication, electronic packaging, and characterization. The outcomes of his research have been published in more than 60 high-impact-factor journals and 3 book chapters. Due to his expertise in wide-bandgap semiconductor-based device fabrication technology, he has been invited several times as a Visiting Scientist to Korea Electrotechnology Research Institute (KERI), Korea. He is one of the few Professional Engineers in Material Engineering discipline who is registered under Board of Engineers, Malaysia.

Outside university, he is very active in professional and community activities. He is a member of Materials Research Society (USA), senior member of American Society for Quality (ASQ), and a corporate member of Institute of Physics (UK). Since 2005, he has been elected as one of the Ex-comms of the Institute of Electrical, Electronic Engineers (IEEE) – Component, Package, and Manufacturing Technology (CPMT) Society and Electron Device Society (EDS), Malaysia Chapter. In addition, he is also the Vice Chairman of the electronic engineering technical division (eETD) under The Institution of Engineers Malaysia (IEM) since 2009. Recently, he has been appointed as a Council Member of IEM and a Standing Committee on Qualification/Admission and Examination/Training. For the past years, he has involved in organizing a number of local and international conferences and being invited to chair a few technical sessions in those conferences. He is also closely working with Industry through university-industry linkage program and he is delivering technical training courses for local and multinational electronics industries for the past 5 years.

# **SURFACE ANALYSIS TECHNIQUES**

## **PROGRAM SCHEDULE**

### **DAY 1 :**

1. Introduction
2. Fundamental of Surface Sciences
3. Logical Sequence of Practical Surface Analytical Problem Solving
4. Electron Beam Techniques:
  - a. Scanning Electron Microscopy (SEM)
  - b. Auger Electron Spectroscopy (AES)

### **DAY 2 :**

5. Ion Beam Techniques:
  - a. Secondary Ion Mass Spectroscopy (SIMS)
  - b. Rutherford Backscattering Spectrometry (RBS)
6. X-Ray Techniques:
  - a. X-Ray Fluorescence (XRF)
  - b. X-Ray Photoelectron Spectroscopy (XPS)
  - c. X-Ray Diffraction (XRD)
7. Scanning Probe Microscopy:
  - a. Atomic Force Microscopy (AFM)

### **DAY 3 :**

8. Optical Techniques:
  - a. Fourier Transform Infrared Spectroscopy (FTIR)
  - b. Raman Spectroscopy
9. Comparison of Various Surface Analysis Techniques
10. Selection of Surface Analysis Techniques – A General Rule

#### **Disclaimer**

The Organizer reserves the right to reschedule or cancel any part of its published programme or venue due to unforeseen circumstances and will not accept liability for costs incurred by participants or their organizations for the cancellation of travel arrangements and/or accommodation reservations as a result of the course being cancelled or postponed. Advance notice will be given if there is such changes or cancellation.

## REGISTRATION FORM

### SURFACE ANALYSIS TECHNIQUES

PROGRAM	DATE	CHOICE
<b>Surface Analysis Techniques</b>	28 – 30 September 2010	
	13 – 15 December 2010	

\* Please tick (✓) where appropriate

**Fax or send registration form to : USAINS Holding Sdn. Bhd., Ground Floor, Kompleks CUREKA, Universiti Sains Malaysia, 11800 USM PENANG. Fax : 04-657 2210**

*Please register the following name/names: (Please use separate sheet, if required)*

Item	Participants Name <i>(Please print clearly or attach business card)</i>	Position & Email
*1.		
2.		
3.		
4.		
<b>Industry Sector:</b>		
<b>Company:</b>		
<b>Address:</b>		
<b>Postcode:</b>		
<b>*Primary Person:</b>		<b>*Mobile Phone:</b>
<b>*Telephone No.:</b>	<b>*Fax No.:</b>	<b>*E-mail:</b>

#### Mode of Payment

I enclose <input type="checkbox"/> Crossed Cheque <input type="checkbox"/> Bank Draft <input type="checkbox"/> Money Order <input type="checkbox"/> LO/PO	Number	Bank	No. of Participants:		
				Early Birds:	
				Group Discount:	
				Total Sum:	<b>RM</b>
	Payment must be made payable to ' <b>USAINS HOLDING SDN. BHD.</b> '.				

1. **Bank Transfer** [Please fax your Bank-in Slip (Print your name & details on the slip)].

Payee Name: **USAINS Holding Sdn. Bhd.**  
 Details: **SURFACE ANALYSIS TECHNIQUES**  
 Name of Bank: **CIMB Bank Berhad (USM Branch), Universiti Sains Malaysia, 11800 USM Penang.**  
 Account Number: **0709-0006708-05-7**

2. A **Local Order (LO)** or **Purchase Order (PO)** must be presented before the event.

The Organizer reserves the right to refrain a registered participant from taking part in the event if no proof of payment can be presented. This only applies to registered participants who have NOT paid the registration fee PRIOR to the event date.

3. **Cancellation / Substitution**

A full refund less administration fee of RM50.00 will be given for cancellation received not later than 5 days before the course. No refund will be made after this period. However, substitute participants are welcomed at no extra charge provided written notice of at **least 5 days** before the event is given to the Organizer.