

Surface Analysis Techniques Training

 **MIMOS Berhad**, Technology Park Malaysia
2 - 3 July 2019

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, well-being of this region is essential in order to obtain a pre-required condition for those materials to be applied 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, in-sight of these regions need to be exposed. This course is outlined to introduce basic principles of surface science, which serve as an essential foundation to explain the operation concepts and applications of several important surface analysis techniques. Know-how of interpreting the analysis data is also briefly explained in this "easy-to-follow" and "easy-to-understand" training course. With these and the support of brief but sufficient theories of fundamental, skill of selecting a relevant and appropriate technique with respect to its practical engineering usage will be covered. Ultimate goal for this course is to increase level of knowledge in making a correct technical decision to solve surface related issues and transform knowledge into applications.



Claimable under HRDF
Scheme-SBL

COURSE OUTCOMES

Upon completion, the participants would be able to:

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

WHO SHOULD ATTEND

- Technicians, engineers, and researchers
- Decision makers, policy makers, and managers

BENEFITS TO PARTICIPANTS

- Enhancement of technical knowledge.
- Selection of appropriate analysis techniques for problem solving.
- Improvement in decision-making process for analysis technique selection based on:
 - Technical justify concept.
 - Technical guidelines.
- Reduction of wastage (time and money) by making a correct technical decision.

PRE-REQUISITE

Basic technical background or working experience in a science or engineering discipline.

COURSE METHODOLOGY

This course is conducted in a seminar room. Each participant will receive a set of course materials.

DAY 1

- Introduction
- Fundamental of Surface Sciences
- Electron Beam Techniques:
 - Electron Microscopy (EM)
 - Energy Dispersive X-ray (EDX)
 - Auger Electron Spectroscopy (AES)
 - Electron Energy Loss Spectroscopy (EELS)

DAY 2

- Ion Beam Techniques:
 - Secondary Ion Mass Spectroscopy (SIMS)
- X-Ray Techniques:
 - X-Ray Fluorescence (XRF)
 - X-Ray Photoelectron Spectroscopy (XPS)
 - X-ray Diffraction (XRD)
- Comparison of Various Surface Analysis Techniques
- Selection of Surface Analysis Techniques – A General Rule

INSTRUCTOR PROFILE



As a passionate researcher, educator, trainer, consultant, and Professional Engineer of material science and engineering for more than twenty years, **Kuan Yew CHEONG** received B. Eng (1st Hons.) (1997) and M.Sc. (2001) both in Materials Engineering from Universiti Sains Malaysia (USM), Malaysia, and Ph.D (2004) in Microelectronic Engineering from Griffith University, Australia. Before joining USM, Malaysia, in late 2004 as a Lecturer, he attached to Korea Electrotechnology Research Institute (KERI), Korea, as a Commissioned Senior Scientist. He also gained a few years industry experience working as a Project Engineer and Quality Engineer just after completion of his undergraduate study. Since 2014, he is serving as a full Professor and leading the Electronic Materials Research Group at the School of Materials and Mineral Resources Engineering, USM, Malaysia. Prof. Cheong is also serving as an External Examiner for Wawasan Open University, Malaysia, and INTI International College Penang, Malaysia as well as was an Adjunct Associate Professor at Multimedia University, Malaysia (2012), Visiting Lecturer at Universiti Malaysia Perlis (UniMAP), Malaysia, Visiting Professor at National Taiwan University (2018) and MIMOS Semiconductor Sdn Bhd (2018).

Solving environmental and energy related issue through the development of advanced oxide in two-dimensional nanostructures based on wide bandgap semiconductor substrates is the main research interest of Prof. Cheong. He has edited two book entitled "Two-Dimensional Nanostructures for Energy Related Applications" (CRC Press/ Taylor & Francis Group), 2017, and "Emerging Materials for Energy Conversion and Storage" (Elsevier), 2018. In-line

with this research direction, he is also exploring the potential of utilizing natural organic materials to produce “all-natural” electronic devices in near future with the aim of solving issue of electronic waste that has significant impact on environmental and health. His research outputs (<http://www.researcherid.com/rid/B-8318-2009>) have been published in 185 high impact-factor journals, 6 reputable book chapters, and 1 Malaysian Patent (MY-153033-A). Frequently he serves as a reviewer/examiner/assessor for international research grants, postgraduate theses, academic promotion, text books, reference books, and journals.

Prof. Cheong has been engaged with Elsevier as a regular author and reviewer since the being of his research career. Officially, he has being appointed as an Editorial Advisory Board Member of “Materials Science in Semiconductor Processing” on mid of August, 2011. Working with then the Editor-in-Chief, Prof Hepp (ex-NASA scientist), he was invited to guest edit two Volumes of Special Topical Issues on “Wide Bandgap Materials and Devices” (Vol. 29, January 2015, pp. 1 – 386) and “Advanced Oxide in Electronics” (Vol. 16, Issue 5, October 2013, pp. 1171 – 1364) with Prof. Mariana A. Fraga (Brazil) and Prof. A. Paskaleva (Poland), respectively. In March 2015, with the recommendation by Prof. Hepp, he was given a new responsibility to serve as an Editor for this journal, until now.

As a registered Professional Engineer with Practising Certificate (PEPC) (Material Engineering discipline) under the Board of Engineers, Malaysia, a “Top Research Scientists Malaysia (TRSM) 2013” [Academy of Sciences Malaysia (ASM)], a Certified Professional Trainer registered with the Ministry of Human Resource, Malaysia, and a Certified Member of Steinbeis Transfer Centre Network (Steinbeis Malaysia Foundation), Prof. Cheong is actively involving in professional, industrial, and community activities. Up to date, more than 250 technical training courses have been delivered to various local and multinational industries and trained more than 3,000 engineers and researchers worldwide. Since 2014, he has served as a technical consultant to MIMOS Semiconductor Sdn. Bhd., Malaysia, focusing on issues related to failure analysis of electronic materials both wafer and package levels. As an experience solution finder for various industries, he has developed an “Octagonal Relationship of Engineering Material for Problem Solving” technique that is able to successfully resolve many industrial cases. Recently, he is appointed as a Technical Advisor for NTG Innovation Pte. Ltd., Singapore, specialize in scalable eco hybrid water and wastewater treatment systems and it is associated to Togun’s group of companies.

Currently, Prof. Cheong is a Fellow of The Institution of Engineers Malaysia (IEM), Senior Member of Institute of Electrical, Electronic Engineers (IEEE), member of Materials Research Society (USA), committee member of IEEE Electronic Packaging Society (EPS), Malaysia Section, a Principle Interviewer for Professional Interview of The Institution of Engineers, Malaysia (IEM) and Evaluation Panel of Engineering Program Accreditation under Engineering Accreditation Council, Malaysia. He was the past Chairman (2009 – 2011) and Advisor (2011 – 2012) of Electronic Engineering Technical Division, IEM, a past Council Member of IEM (2009 – 2012), past Region Vice-President of Thin Film Society (2012) (<http://www.thinfilms.sg/>), and past Vice-Chairman of IEEE, Component, Package, and Manufacturing Technology (CPMT) Society, Malaysia Section.

REGISTRATION FORM Surface Analysis Techniques Training

MIMOS @ Technology Park Malaysia 2 - 3 July 2019 (early bird 30 April 2019)

Please complete this form and fax or email to us

COURSE FEE	Fee per participant	Fee inclusive SST	 HRDF Malaysia <i>Claimable under HRDF Scheme-SBL</i>
☐ Standard Registration	RM2,500.00	RM2,650.00	
☐ Early Bird Registration	RM2,300.00	RM2,438.00	
☐ Group Discount	RM2,100.00	RM2,226.00	
☐ Universities & Colleges	RM2,000.00	RM2,120.00	

No	PARTICIPANT DETAILS	CONTACT INFORMATION	MEAL PREFERENCE
1	Name: Designation:	Email: Mobile No.:	☐ Vegetarian ☐ Non-Vegetarian
2	Name: Designation:	Email: Mobile No.:	☐ Vegetarian ☐ Non-Vegetarian
3	Name: Designation:	Email: Mobile No.:	☐ Vegetarian ☐ Non-Vegetarian
4	Name: Designation:	Email: Mobile No.:	☐ Vegetarian ☐ Non-Vegetarian
5	Name: Designation:	Email: Mobile No.:	☐ Vegetarian ☐ Non-Vegetarian

Organisation :

Postal Address :

Tel : Fax :

Contact Person : Position :

Email :

AUTHORISATION

I understand and agree to MIMOS Berhad terms and conditions
(Signatory must be authorised to sign on behalf of the Organisation)

Signature and Company Stamp:

Name of the Authorised Person :

Position : Date :

Terms & Conditions:

1. Upon received of this registration form (MIMOS), we will invoice to the contact-person for payment processing.
2. Payment is required within 30 days upon receipt of the invoice. All payment must be received 7 working days prior to the training date. The fee shall include luncheon, coffee/tea breaks and training materials.
3. Cancellation or postponement - Any cancellation must be made in writing and to reach us no later than 10 working days prior to the training date. If written notice is received in less than 10 working days, 100% of total fees is chargeable. A substitute delegate with similar background and competencies, is always welcome at no additional charge.
4. Our instructor(s) and topics are confirmed at the time of this print. However, circumstances beyond the control of the organizers' may occur and MIMOS Berhad reserves the rights to alter or modify the advertised speakers/ topics if necessary.

To register & more information:

Business Development (MSSB), MIMOS Berhad

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