



**5 SEPTEMBER**

THURSDAY

**03 - 05**

PM

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**COVER FOR 2 TOPICS**

# WEBINAR

- 1. TALK ON UNLOCKING THE MYSTERIES:  
FAILURE ANALYSIS OF METALLIC MATERIALS**
- 2. TALK ON FAILURE ANALYSIS ON POLYMER  
AND COMPOSITE MATERIALS**

*Co-Organised by: Material Engineering Technical Division (MaTD), IEM,  
Institute of Materials, Malaysia (IMM) & SIRIM Berhad*



**Dr. Hanis Ayuni  
Mohd Yusof**



**Ir. Zarina Rasmin**

*BEM Approved CPD: 2 Hours  
CPD Ref.No.: IEM24/HQ/336/T (w)*

**Registration fee**  
**Student Member: Free**  
**IEM Member: RM15.00**  
**Non-Member: RM70.00**

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# SYNOPSIS

The Material Engineering Technical Division (MaTD) will organise two insightful webinars focusing on the materials industry in Malaysia. These webinars aim to enhance the understanding and application of failure analysis in different material types, offering valuable knowledge for professionals in the field.

The two topics are as follows:

## **1. Talk on Unlocking the Mysteries: Failure Analysis of Metallic Materials**

Understanding the importance of metallurgical failure analysis is crucial for various industries and applications. It is a vital process that enhances safety, quality, and reliability while providing significant cost savings. By understanding and addressing the causes of material failures, organizations can improve their products and processes, ensuring long-term success and sustainability.

This webinar will guide you through the steps of metallurgical failure analysis, including the equipment used, the data obtained, and how the results are utilized to identify the root cause of metal failures. By the end of this webinar, you will have a solid foundation in metallurgical failure analysis, the confidence to handle failure-related issues effectively, and the knowledge to collaborate with metallurgical labs on a failure analysis.

## **2. Talk on Failure Analysis on Polymer And Composite Materials**

The webinar on "Failure Analysis of Polymer and Composite Materials" will provide an in-depth exploration into the mechanisms, testing methods, and preventive strategies associated with the failure of these materials. The session is designed for professionals and researchers in materials science, engineering, and related fields, aiming to enhance their understanding of how and why polymer and composite materials fail under various conditions.

Key Topics Covered:

1. Introduction to Failure Analysis
2. Definition and importance of failure analysis
3. Overview of polymer and composite materials, including their applications and advantages
4. Common types of failures observed in polymers and composites (e.g., mechanical, thermal, environmental)
5. Mechanisms of Failure
6. Analytical Techniques for Failure Analysis
  - Microscopy: Use of Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) to examine fracture surfaces and microstructures
  - Spectroscopy: Application of Fourier Transform Infrared Spectroscopy (FTIR) and Raman Spectroscopy for identifying chemical changes and contaminants
  - Thermal Analysis: Techniques such as Differential Scanning Calorimetry (DSC) and Thermogravimetric Analysis (TGA) for assessing thermal stability and composition
  - Mechanical Testing: Methods like tensile, compression, and impact testing to evaluate material performance under different loading conditions
7. Case Studies and Practical Example

# SPEAKERS BIODATA

**Dr. Hanis Ayuni Mohd Yusof** is Senior Testing Engineer and Consultant (Metallurgist) at SIRIM QAS International Sdn. Bhd., with over a decade of experience in the field of metallurgy and materials characterisation. Her extensive knowledge and expertise have made her a valuable assets in the areas of failure analysis and root cause investigations. She has collaborated with numerous companies, providing expert consultation on failure analysis and root cause analysis investigations.

Dr. Hanis Ayuni pursued her passion for materials engineering by enrolling at the University of Malaya, where she earned both her Bachelor's degree in Engineering (B.Eng) and her Master's degree in Engineering Science (M.Eng.Sc). Her academic excellence and dedication to her field led her to further her studies at the prestigious University of Oxford, where she obtained her PhD. in Materials.

Dr. Hanis Ayuni holds several professional qualifications, which further underscore her expertise and commitment to her field:

1. Board of Engineers Malaysia (BEM) Graduate Engineer
2. Institute of Materials Malaysia (IMM)
3. Oil & Gas Safety Passport (OGSP)
4. Authorised Entrant and Standby Person for Confined Space (AESP)

Outside her professional endeavours, Dr. Hanis Ayuni is dedicated to continuous learning and professional developments. She participates in conferences and workshops, sharing her knowledge and staying updated with the advancements in materials science and engineering.

**Ir. Zarina binti Rasmin**, P. Eng, MIEM, is a seasoned professional with 28 years of experience in plastics and composite materials. She is currently employed as a Principal Testing Engineer at SIRIM QAS International Sdn. Bhd., located in Shah Alam, Malaysia. Her career at SIRIM began as a Researcher in the Plastics Technology Group in 1995, and she has progressed through various roles, including Consultant and Senior Consultant, before her current position. Her expertise encompasses thermal and spectroscopic analysis, failure and contamination analysis, and mechanical and physical testing of materials. She handles over 20 projects annually, each lasting between one to three weeks.

Ir. Zarina holds a Master's degree in Manufacturing System Engineering from the University of Warwick, UK (1994) and a Bachelor's degree in Chemical Engineering from the University of Manchester Institute of Science and Technology, UK (1992-1993). Professionally, she is a registered Professional Engineer with the Board of Engineers Malaysia (BEM) and a Corporate Member of the Institution of Engineers Malaysia (IEM). Additionally, she is a member of the Institute of Materials Malaysia (IMM).