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MATERIALS MIND

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Institute of Materials, Malaysia

HIGHLIGHTS

- IMM Thermal Insulation Standard
- Transforming Plastic Waste into Functional 3D-printed Products
- Samarium Doped Ceria: A Key Player in Solid Oxide Fuel Cell (SOFC)

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Doc No: IMM-CD-301| Rev No: 01 | Date: 7-Aug-2020

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The Institute of Materials, Malaysia (IMM) which promotes honourable practice and professional ethics, and encourages education and skills in materials science, technology and engineering shall carry out its activities and services as a certification body with integrity and credibility.

IMM and its personnel are required to be totally committed to quality, and adopt a culture of impartiality and continuous improvement, and be responsible to uphold this policy and the related procedures established by IMM and in accordance with the requirements of ISO/IEC 17024.

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IMM is fully committed to ensure a safe environment and the health and safety of all personnel involved in IMM's activities and services so as to prevent accidents and loss/damage to assets or property.

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Dato' Dr. Ir. Ts. Haji Mohd Abdul Karim Abdullah,
President,
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21st March 2022

NOTICE FOR RENEWAL OF ANNUAL MEMBERSHIP AND SUBSCRIPTION FEES 2023

APPLICATION FOR RENEWAL OF MEMBERSHIP						
PARTICULARS OF MEMBER (*update where necessary*)						
PERSONAL INFORMATION						
FULL NAME	:					
TITLE	:		IC/PASSPORT NO.	:		
DATE OF BIRTH	:		AGE	:		
CORRESPONDENCE ADDRESS	:					
MOBILE PHONE NO.	:		HOUSE PHONE NO.	:		
EMAIL ADDRESS	:					
IMM MEMBERSHIP NO.	:					
CURRENT JOB INFORMATION						
NAME OF COMPANY	:					
DESIGNATION/POSITION	:					
ADDRESS OF COMPANY	:					
OFFICE PHONE NO.	:		OFFICE FAX NO.	:		

MEMBERSHIP SUBSCRIPTION AND PAYMENT					
GRADE (Thick the appropriate box)		SUBSCRIPTION PERIOD			
	Fellow (F.I.M.M)		1-year		
	Professional (M.I.M.M)		More than 1-year, please state	:	years
	Associate (A.M.I.M.M)		Amount paid	:	
	Company				
	Ordinary				

MEMBERSHIP ANNUAL SUBSCRIPTION FEES SCHEDULE					
Description	**Amount (RM)**				
	Fellow (F.I.M.M.)	**Professional** (M.I.M.M.)	**Associate** (A.M.I.M.M.)	**Company**	**Ordinary**
Annual Subscription	150.00	100.00	80.00	200.00	40.00

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Account Name	:	Institute of Materials, Malaysia
Account	:	8009055156
Bank	:	CIMB
Swift Code	:	CIBBMYKL

SUBMISSION OF DOCUMENTS

Send your completed form together with the proof of payment either via email to **secretariatoffice.imm@gmail.com** or WhatsApp to **018- 9113480** or send by courier/post to:

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Suite 1006, Block A, Kelana Centre Point
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47301 Petaling Jaya, Selangor

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https://www.iomm.org.my/membership-renewal/

Doc No: IMM-CF-316 | Rev No: 2 | Date: 13 Aug 2022

INSTITUTE OF MATERIALS, MALAYSIA

CONTINUING PROFESSIONAL DEVELOPMENT REPORT

NAME: ..... **YEAR:**.....
IMM MEMBERSHIP NO:..... **CERTIFICATION NO:**.....
IMM CERTIFICATION:.....

CONTINUING PROFESSIONAL DEVELOPMENT (CPD) LOG
(Supporting documents to be submitted wherever applicable)

Date or Period	Professional Development Activity Code & Description	Role	No. of Activity Hours	Weightage	No. of CPD Points
				TOTAL	

Professional Development Activity Code	Professional Development Activity Scope	Weightage Factor
A	Attending Online or Physical Training Courses/Workshops	4
B	Online or Physical Course Trainer/Facilitator/Examiner/ConferencePresenter	3
C	Attend Online or Physical Seminar/Conference/Webinar	2
D	Paper Author Main Author (max 30 hours/year)Co-author (max 10 hours/year)	2
E	Attend Online or Physical Committee Meeting	1
F	Fieldwork (max claimable 480 hours per year) **	0.1

** 1. Need to submit an endorsement from the superior/supervisor as evidence.
2. Calculated based on the assumption that the minimum project duration of 3 months and 8 hoursper day for 20 days.
3. The minimum number of CPD Points accumulated for 5 consecutive years shall be 100 points.

CPD Points per year : **10 points minimum.**
CPD Points per 5 year for re-certification : **100 points.**

Year						Total CPD Points
CPD Points						

I hereby declare that the information and particulars provided by me in this form is true and correct.

....
(Signature) (Date)

COVER STORY

IMM Thermal Insulation Standard

Written by: Danny Tan (IMM Insulation Co-Chair)

IMM Insulation Committee has developed its own Malaysian Thermal Insulation Standard in combination with the best of several renowned International Insulation Standards (JIP 33 & ASTM C-1696-20) to suit Malaysian's environments and requirements.

The IMM Thermal Insulation Standard covered topics such as: -

a) General requirements of industrial insulation.
b) Design philosophy for hot and cold insulation.
c) Insulation materials specification.
d) External covering
e) Installation details for hot and cold insulation
f) Inspection and maintenance of existing insulation systems

One of the key objectives of developing IMM's Thermal Insulation Standard is to encourage more stakeholders such as design professionals, mechanical and process engineers and contractors, facility owners from all industries, power plants and manufacturing to adopt our Malaysian Insulation Standard.

The other key objective is to develop and promote a series of Insulation Installations courses (Thermal Insulation Practitioner Level 1 to Level 2) based on Malaysian Insulation Standard.

Figure 1: *Steel pipes with good insulation*

COVER STORY

These insulation practitioner courses are designed for both industrial and commercial markets, utilizing mechanical insulation systems for piping and equipment in both hot and cold environments.

In the respective courses, the background of the IMM Thermal Insulation Standard will be explained, as well as to have a closer look at basic skills of thermal insulation in industries, and everything directly or indirectly related to thermal insulation will be addressed.

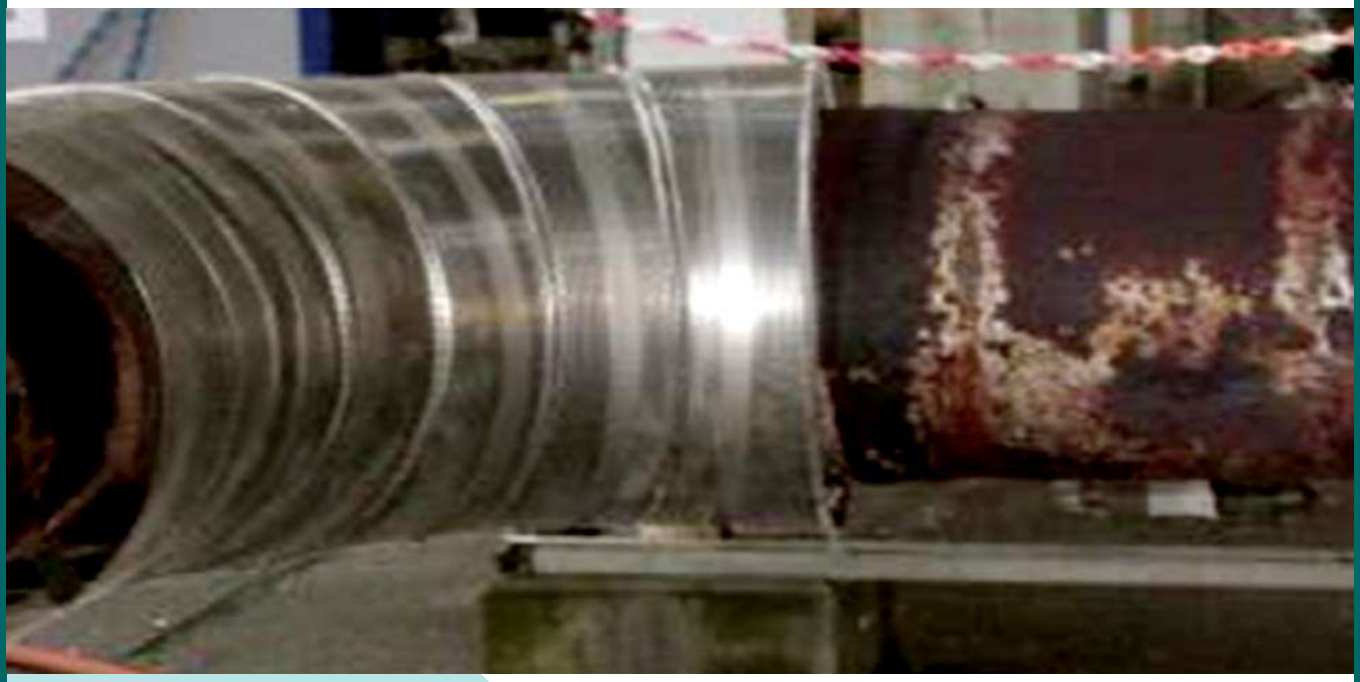

Figure 2: *Steel pipes with bad insulation*

The basic of corrosion under insulation (CUI) and QA/QC will be reviewed in detail under Thermal Insulation Practitioner Level 2. Emphasis will be on the correct and best practices of correct installation according to issues like inspection and maintenance of existing insulation systems, energy savings and reduction of emission will be reviewed in detail too.

Emphasis will be placed on practical techniques and field installations, including metal fabrication of insulation, which will be conducted in workshop. Additional focus will be given to installation techniques on pipes, elbows, reducers, valves, flanges, strainers, and items with various configurations. These techniques will be taught and trained by experienced field personnel in the workshop as well.

Quality control will be a key aspect of these Thermal Insulation Practitioner Courses. The IMM Insulation Task Force Committee will be responsible for providing the examination questions and answers based on the IMM Thermal Insulation Standard. The Approved Training Body (ATBs) will provide the classroom training and practical workshop sessions.

TECHNICAL TRAINING
AND CERTIFICATION PROGRAM

CERTIFIED THERMAL INSULATION PRACTITIONER LEVEL 1

Focus on providing an overview of industrial insulation and assisting supervisors, engineers, and managers in understanding how insulation works. Insulation works refers to the activities of applying insulation materials to piping or other process equipment to control and maintain temperature and prevent heat loss, such as the application of mineral wool, perlite, or calcium silicate, as well as the application of cladding for protection against contact damage or weather.

Course Objectives

1. To train and upgrade individuals in thermal insulation materials applications as well as the trade of sheet metal shop fabrication plus field installations.
2. To understand the thermal insulation design, installation, QA/QC, HSE, repair and maintenance.

Course Content

- Insulation specifications
- Insulation materials
- Hot & cold insulation
- Corrosion under insulation (CUI)
- Measurement
- QA&QC and inspection
- Insulation installation
- (8) Cladding (metal & non-metal)
- Health, safety & environment

Who Should Apply

This course is suitable for those who wish to understand the thermal insulation for industries, prevention of corrosion under insulation (CUI), QA/QC & inspection, theoretical background & developments.

Pre-requisites

- No previous working experience required.

Certificate

- IMM Certified Thermal Insulation Practitioner Level 1

Course Duration

5 days (3 days Theory + 1.5 day Practical Workshop + 0.5 day exam)

Eligible for

MBOT LEMBAGA TEKNOLOGIS MALAYSIA
CPD Points

HRD CORP CLAIMABLE

MTE
Materials Technology Education Sdn Bhd

15-2, Pusat Dagangan Shah Alam, Lot 13, Persiaran Damai, Seksyen 11, 40100 Shah Alam, Selangor, MALAYSIA
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Email: info@mte.com.my | ikmal@mte.com.my | iqram@mte.com.my

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TECHNICAL TRAINING
AND CERTIFICATION PROGRAM

CERTIFIED THERMAL INSULATION PRACTITIONER LEVEL 2

The certified course is meant for training and upgrading individuals in thermal insulation materials applications as well as the trade of sheet metal shop fabrication plus field installations.

Course Objectives

It aims to provide participants with the knowledge and skills to carry out insulation works efficiently and effectively with the clear understanding of the following:

(1) Types of thermal insulation and sheet metal materials specified by the vendors and clients in insulation specifications.

(2) Equipment and piping systems components commonly seen in the oil and gas industries.

(3) Tools and aids usage during the preparation and field installation of thermal insulation materials.

(4) Sheet metal equipment and tools used during the layouts, cutting, fabrication and field installation works.

(5) Standard insulation calculation

Who Should Apply

This program is intended for technicians, supervisors, engineers, or anyone who passed IMM Certified Thermal Insulation Practitioner Level 1 and is interested to upgrade his/her knowledge in the usage and technique of thermal insulation and sheet metal application.

Pre-requisites

IMM Certified Thermal Insulation Practitioner Level 1 or minimum One (1) year working related experiences.

Certificate

IMM Certified Thermal Insulation Practitioner Level 2

Course Duration

6 days (3 days Theory + 2.5 days @ Workshop Practical + 0.5-day Exam)

Course Content

1. Introduction to insulating and sheet metal trade
2. Equipment and piping system components in the petrochemical, oil & gas, and energy industries
3. Types of thermal insulation materials for hot, cold, and dual temperature services
4. Types of sheet metal materials
5. Equipment and tools used in the insulating and sheet metal trade
6. Basic safety for insulating and sheet metal trade
7. Plan and isometric piping drawings
8. Pattern layout/fabrication/field installation
   - Pipe and elbow
   - Equal and unequal branch and header
   - Concentric and eccentric reducer
   - Valve
   - Flange
   - Strainer
   - Elbow Trunnion

Eligible for

CPD Points

HRD CORP CLAIMABLE

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13-2, Pusat Dagangan Shah Alam, Lot 13, Persiaran Damai, Seksyen 11, 40100 Shah Alam, Selangor, MALAYSIA

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Technical Article

Transforming Plastic Waste into Functional 3D-printed Products

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Additive manufacturing (AM), also known as three-dimensional (3D) printing technology, involves creating 3D objects by depositing materials layer by layer on top of another layer. This technology allows users to fabricate objects with complex geometries while minimizing material wastage compared to traditional fabrication methods. Among a variety of AM technologies, fused filament fabrication (FFF) is the most popular choice for 3D printing technology used by hobbyists, engineers, and researchers. This is because the equipment is inexpensive and offers a wide range of materials choices, such as poly(lactic) acid (PLA), acrylonitrile butadiene styrene (ABS), polyethylene terephthalate (PETG), polycarbonate (PC), and nylon. All these materials are the most used thermoplastic polymers in the FFF process due to their low melting points, and ease of operation, as well as their printed objects with good dimension accuracy. As the popularity of FFF printing continues to increase, the demand for the raw materials used in 3D printing will also increase. This raises concerns about the sustainability of the raw materials in the 3D printing industry. Moreover, various policymakers are promoting the use of more sustainable materials, for example using recyclable materials instead of materials relying on fossil sources. Recycled plastic materials are among the potential materials for FFF printing. In this regard, many researchers are currently focused on the utilization of plastic waste in 3D printing. Various types of plastic waste have been reported in several papers, with researchers using this plastic waste to fabricate filament and then 3D print the final product directly.

The recycling rate of plastic waste remains low because pre-consumer plastic waste, such as rejected parts and scraps from manufacturers, is preferable to recycle as compared to post-consumer plastic. This is because pre-consumer plastics are more easily collected from manufacturers in bulk with minimal sorting, making the recycling process more efficient. Due to this reason, most of the post-consumer plastics are sent to landfills rather than the recycling centers. According to the report by Ferrari et al. [3], plastics constitute a significant portion of municipal solid waste, with production increasing from 1.3 billion tons in 1990 to 3.8 billion tons after 25 years. Approximately 80% of synthetic polymers originate from packaging, containers, and textile fiber production. The massive amount of post-used plastic waste has a serious impact on the environment if not close to the loop of material. Given the abundance of plastic waste, converting them into 3D printing filament can be economically feasible. This is because the selling price of the filament can be ten times higher than plastic resin at the same weight.

Additionally, according to a report claimed by Stina Inc. [4], the total energy consumed during the production of recycled plastic resin is much lower than that required to produce virgin plastic resin. Thus, recycling plastic waste into recycled plastic resin offers significant energy savings. Furthermore, the amount of carbon dioxide released in the production of recycled plastic resin is lower than that in virgin plastic resin production. Therefore, greenhouse gases such as carbon dioxide can be reduced [4]. These are also benefits associated with transforming plastic waste into usable products via the 3D printing process. The application of transforming plastic waste into directly usable products using 3D printing reported by researchers will be discussed in the following sections.

Post-consumer polypropylene used in 3D printing

Post-consumer polypropylene (PP) is typically sourced from food and beverage packaging. The utilization of this post-consumer PP can yield environmental benefits, such as reducing PP waste, given that a significant portion of plastic waste originates from post-consumer PP. In a study conducted by Tan et al. [1], research was undertaken using recycled materials, including post-consumer PP and disposable chopsticks, as fillers to fabricate filament. The authors claimed that this filament not only be used for prototyping but also for direct-used products such as face shield frames, drill guides, and other non-bearing products.

Household plastic waste used in 3D printing

A report from Dreambot [5] revealed that the Tokyo Olympics utilized 98 3D-printed podiums, which were created from 24.5 tons of donated plastic waste sourced from the Japanese public. This waste primarily consisted of household plastics, including 400,000 plastic bottles of washing powder, and was collected from more than 2,000 locations in Japan, including schools, stores, offices, and oceans. These 3D-printed podiums will serve as displays and will be repurposed after the Tokyo 2020 Olympic Games, demonstrating their sustainability.

Marine plastic waste used in 3D printing

Based on the report by Cañado et al. [6], there were 370 million tons of plastic produced in 2019 and estimated that 12.7 million tons of plastic end up in the ocean annually. Furthermore, the presence of plastic waste in the sea results from the dumping of plastics from landfills and several aquatic human activities, for example, fishing, ultimately leading to marine pollution. To mitigate marine pollution and reduce plastic waste in the ocean,

researchers have been working on reusing marine plastic waste in 3D printing.

Maldonado-García et al. [7] was focused on 3D printing by using ocean plastic waste mixed with low-cost, sustainable carbon from agro-industrial waste to form complex-shaped prototypes via FFF. Ferrari et al. [3] also conducted research on 3D printing using plastic waste from the seaside. Ferrari and co-authors reprocessed and recycled PET bottles collected from the seaside for use in 3D printing.

Styrofoam used in 3D printing

A report from Ng et al. [8] stated that styrofoam, also known as expanded polystyrene, was produced at approximately 17 million tons worldwide in the year 2025. If the generation of styrofoam waste remains at the current rate by the end of 2050, it might reach 360 million tons of styrofoam waste. This is due to the low recycling rate of styrofoam. Therefore, there are a few papers that have reported research on styrofoam waste in 3D printing [8-11]. The researchers transformed the Styrofoam into a 3D printing filament and used it in the 3D printing process to produce sample prototypes, which were also applied in non-load-bearing applications.

Conclusion

Transforming plastic waste or recycling plastic waste into 3D printing filament and usable 3D printed parts allows for more effective utilization of plastic waste than simply discarding it, thereby reducing environmental impacts. Additionally, by reusing discarded plastic or plastic waste, the process contributes to waste reduction, mitigates landfill usage, and minimizes the need for new plastic production. This approach also has the potential to raise awareness about recycling, sustainability, and the environmental impact of plastic.

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STUDENT EDITORIAL

Samarium Doped Ceria: A Key Player in Solid Oxide Fuel Cell (SOFC)

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Introduction

Utilizing materials with high oxygen ion conductivity is essential for energy conversion, energy storage, and catalytic processes. Due to their remarkable ability to efficiently convert chemical energy into electrical energy through electrochemical processes, solid oxide fuel cells (SOFCs) have garnered significant attention as a potential source for the generation of electrical power. Conventional SOFCs that employ yttria-stabilized zirconia (YSZ) as an electrolyte material typically operating at approximately 1000°C [1–3]. However, operating at such high temperatures causes material deterioration as well as additional technological and economic challenges. As a result, new electrolyte materials for SOFCs that function at lower temperatures are required. In this context, ceria-based materials (Figure 1) offer considerable potential as electrolytes for low-temperature SOFCs [4–7].

Figure 1: *Samarium-Doped Ceria (SDC) Powder [12]*

In numerous fields, including chemistry, physics, material science, and biology, rare earth metal oxides are essential. Since they have such a wide range of uses, including as UV absorbers and blockers, SOFCs, optics, antibacterial agents, gas sensors, and three-way catalysts for automotive emission control, ceria nanoparticles have attracted a great deal of attention in the most cutting-edge research. Ceria, commonly known as cerium oxide (CeO_2), is a versatile material recognized for its strong oxygen ion conductivity and great temperature stability. The oxygen vacancies formed by doping rare earth cations into the ceria lattice greatly boost the ionic conductivity of ceria. The ionic conductivity of doped ceria at 750°C is comparable to that of YSZ at 1000°C [8]. Sm^{3+}, Dy^{3+}, and Gd^{3+} are among the dopants that are effective in increasing ionic conductivity [9,10]. Doping ceria with samarium ions results in the transformation into samarium doped ceria (SDC), a solid electrolyte material exhibiting heightened ionic conductivity. This enhanced conductivity is crucial for SOFCs as it facilitates the effective transport of oxygen ions between the cathode and anode.

Properties of SDC

SDC has numerous important features that are critical for improving SOFCs technology. First and foremost, it possesses elevated oxygen ion conductivity, an important factor in enhancing SOFCs performance. This property facilitates the efficient movement of oxygen ions between the cathode and anode, thereby assisting the electrochemical processes that generate electricity [3,11].

Ceria nanoparticles have a great deal of potential as antibacterial agents against bacteria. The antibacterial potential of ceria oxide (CeO_2) is also increased by an oxygen vacancy in the crystal lattice. Different mechanisms are used by the antibacterial activity of metal/metal oxide nanoparticles to interact with microbial cells. Furthermore, SDC with a cubic fluorite crystal structure (Figure 2) has exceptional thermal stability, allowing it to endure the high working temperatures necessary for SOFCs, which generally range from 800°C to 1000°C. This intrinsic stability enables SOFCs' long-term dependability and longevity, which is critical for practical applications. Furthermore, SDC's compatibility with multiple electrolyte configurations adds to its versatility, allowing it to be used as both a thick electrolyte material and an electrolyte-supported cell, allowing it to accommodate a wide range of SOFC designs.

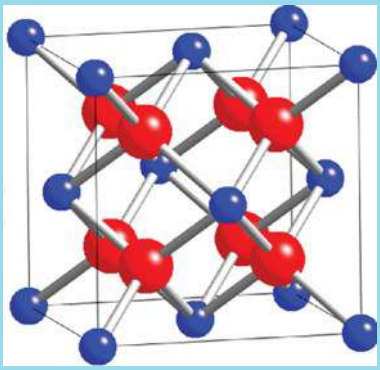

Figure 2: *Schematic of a cubic fluorite structure of SDC [13]*

Applications of SDC in SOFCs Technology

A SOFCs is an electrochemical device that directly converts chemical energy from a fuel into electrical energy, resulting in high electrical efficiency. The SOFCs comprises three primary components: the anode, electrolyte, and cathode. The electrolyte serves to connect the anode and cathode, closing the circuit by transporting negatively charged oxygen ions. The anode undergoes electrochemical oxidation of the fuel, while the cathode undergoes electrochemical reduction of the oxidant (O_2 from the air). The electrolyte's high conductivity is essential for lowering ohmic resistances within the cell. SDC serves multiple crucial roles in SOFCs technology. To begin with, it is commonly employed as an electrolyte material in SOFCs,

establishing a reliable ionic conduction pathway for oxygen ions between the cathode and anode. Given the critical role this function plays in achieving high cell performance, SDC stands as an indispensable component in the design of efficient SOFCs [9,10].

Furthermore, as a mixed ionic-electronic conductor (MIEC), SDC allows for the simultaneous movement of oxygen ions and electrons within the cell. This distinct characteristic improves electrode kinetics and overall cell efficiency, further enhancing the performance of SOFCs. SDC also functions as an electrolyte support structure in certain SOFC setups. In this role, it offers mechanical support to the cell while keeping its ionic conductivity, hence contributing to the structural integrity and performance of the SOFCs system [3,9,12].

Benefits of SDC in SOFCs Technology

SDC offers several notable advantages that enhance the performance and viability of SOFCs. Initially, its strong ionic conductivity and mixed-conduction capabilities play a pivotal role in elevating the overall efficiency of SOFCs. These features allow for efficient transit of oxygen ions and electrons inside the cell, resulting in better power production for a given fuel input. This increased efficiency is a substantial benefit, making SOFCs with SDC electrolytes appealing for a variety of energy-generating applications.

Furthermore, SDC helps SOFCs fuel flexibility. SOFCs that use SDC electrolytes may run on a variety of fuels, including hydrogen, natural gas, and even biofuels. This versatility makes them adaptable energy conversion devices suited for a wide range of energy sources, contributing to their potential for meeting a wide range of energy demands. Higher oxygen ion conductivity, fewer interfacial losses with cathode and anode, extended stack lifetime, and cheaper overall cost are benefits of employing doped ceria as a material for SOFCs. Finally, the durability of SDC is noteworthy. Because of its thermal stability and resistance to chemical degradation, SOFCs have prolonged operating lifespans, reducing maintenance needs and enhancing the overall reliability of these clean energy systems [2,6,11].

Challenges and Future Prospects

While SDC provides considerable benefits in SOFCs technology, challenges persist in addressing issues like reducing manufacturing costs and improving electrode performance. Elevated temperatures can lead to the coarsening of the electro-catalyst nickel in the anode, inducing thermal stress on the cell structure, which may result in physical flaws and potentially drive-up manufacturing costs. Researchers are continuing to investigate different SDC compositions and manufacturing procedures to solve these difficulties and improve SOFCs efficiency and cost-effectiveness [1,11].

Conclusion

SDC plays a critical role in advancing SOFCs technology. The connectivity improves as the SDC content grows. More channels will be made available for the conduction of oxygen ions in the electrode once the SDC particles are linked. Because of its strong ionic conductivity, thermal stability, and compatibility with diverse cell layouts, it is an important material for increasing SOFCs performance and expanding their applications. SDC-based SOFCs are positioned to contribute to a sustainable and clean energy future as research and development activities continue.

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IMM TRAINING AND CERTIFICATION PROGRAM OVERVIEW

The Institute of Materials, Malaysia (IMM) offers engineering & technical professionals and practitioners a range of Certification Schemes and technical training courses to meet the requirements of the oil & gas, refining, petrochemical, transport, construction and other industries. Our programs have been developed together with the industry, academia and relevant stakeholders to ensure that the technical training and certification provided meet the relevant industry standards and requirements.

PROGRAM: COATING

IMM Certification Schemes and Courses	Technical Training Courses (Non-certification)
• Certified Protective Coating Technician (Blaster and/or Painter) Level 1 and Level 2 • Certified IMM-B1/B2 Assistant Blaster & Painter • Certified Coating Inspector Level 1 • Certified Coating Inspector Level 2 • Certified Blasting and Painting Supervisor • Certified Thermal Spray Coating Applicator • Certified Coating Quality Control Technician	• Refresher Course of Certified Protective Coating Technician (Blaster and/or Painter) Level 1 and Level 2 • Refresher Course of Certified Coating Inspector • Basic Knowledge on Corrosion Protection for Technicians and Engineers • Corrosion Control by Protective Coating • Basic Corrosion & Coating Course

PROGRAM: COATING FINGERPRINTING

IMM Certification Schemes and Courses	Technical Training Courses (Non-certification)
• Certified Coating Fingerprint Quality Controller Level 1 • Certified Coating Fingerprint Quality Controller Level 2 • Certified Coating Fingerprint Trainer	• Coating Fingerprint Foundation Course • Refresher Course of Certified Coating Fingerprint Quality Controller Level 1/Level 2

PROGRAM: CORROSION

IMM Certification Schemes and Courses	Technical Training Courses (Non-certification)
• Certified Corrosion Monitoring Practitioner Level 1 • Certified Corrosion Monitoring Practitioner Level 2 • Certified Corrosion Monitoring Practitioner Level 3 • Certified Cathodic Protection Practitioner Level 1 • Certified Cathodic Protection Practitioner Level 2 • Certified Cathodic Protection Practitioner Level 3 • Certified Cathodic Protection Engineer	• Corrosion Control by Cathodic Protection

PROGRAM: VIBRATION

IMM Certification Schemes and Courses	Technical Training Courses (Non-certification)
• Certified Vibration Practitioner Category 1 • Certified Vibration Practitioner Category 2 • Certified Vibration Specialist Category 3 • Certified Vibration Specialist Category 4	-

PROGRAM: MECHANICAL JOINT INTEGRITY (MJI)

IMM Certification Schemes and Courses	Technical Training Courses (Non-certification)
• Certified Technician in Mechanical Joint Integrity (MJI) for Flange Bolted Connection • Certified Technician in Mechanical Joint Integrity (MJI) for Small Bore – Piping, Tubing, Valves	• Mechanical Joint Integrity • Pressure Safety Valve • Small Bore Tubing

PROGRAM: THERMAL INSULATION

IMM Certification Schemes and Courses	Technical Training Courses (Non-certification)
• Certified Thermal Insulation Installer	• Introduction to Thermal Insulation

PROGRAM: WELDING

IMM Certification Schemes and Courses	Technical Training Courses (Non-certification)
• Certified Welding Inspector • IMM-JWES Certified Associate Welding Engineer • IMM-JWES Certified Welding Engineer • IMM-JWES Certified Senior Welding Engineer	• Repair Welding of Pressure Equipment in Refineries & Chemical Plants • Welding & Joining Technology for Non-Welding Personnel • Steel Technology for Non-Technical Personnel

MISCELLANEOUS MATERIALS SCIENCE AND TECHNOLOGY (NON-CERTIFICATION) COURSES

Technical Training Courses	Technical Training Courses
• Materials Selection & Corrosion • Metallurgical Failure Investigation • Basic Course on Operation of Mobile Air Compressor • Competent Mobile Industrial Compressor Operator • Competent Mobile Industrial Equipment Inspector • Practical Approach to Inspection and Maintenance of Steam Turbine	• Practical Approach to Precision Alignment Methods • Practical Approach to Precision Balancing Methods • Reciprocating Compressors: Operations, Maintenance, Inspection and Troubleshooting • Troubleshooting Techniques for Rotating Equipment • Valve Operations, Maintenance and Inspection Including Flange Breaking

Note: A certifcate of attendance will be issued to all participants of non-certifcation professional development training courses while candidates who pass the assessment/examination of IMM-certification schemes will be certified with the issue of IMM competency certificate and IMM certification ID card in addition to the certificate of attendance.

More information on training and certification is available on IMM's website at www.iomm.org.my.

For further enquiries:

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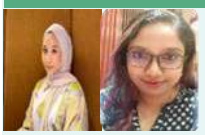
INSTITUTE OF MATERIALS, MALAYSIA
Suite 1006, Level 10, Block A, Kelana Centre Point, No. 3 Jalan SS 7/19,
47301 Petaling Jaya, Selangor.

10th Sabah Oil, Gas & Energy Conference and Exhibition 2023



Prepared by: Nur Syafika Azis, IMM Secretariat
Reviewed by: Aberamy Dayalam, Assistant Manager of IMM Secretariat

Date: 8th – 9th June 2023
Venue: Sabah International Convention Centre, Kota Kinabalu, Sabah
Organiser: Midas Events Management

The theme for the 10th Sabah Oil, Gas & Energy Conference and Exhibition (SOGCE) was "Energy Security and Sustainability in Oil, Gas and Energy in Sabah". The event was graced by Chief Minister, Datuk Seri Panglima Haji Hajiji Noor.

The conference was a showcase of high-impact paper presentations and plenary sessions by experts from the oil, gas, and energy industry. The conference was represented by both local and international organisations, with a total of 35 speakers, including moderators.

The Institute of Materials, Malaysia (IMM) had the opportunity to become one of the exhibitors at the 10th SOGCE and IMM booth was located at booth no. 249, Level 1, Hall 2, Sabah International Convention Centre.

IMM exhibited co-jointly with Material Technology Education Sdn. Bhd. (MTE) (Associate Training Partner), Standard and Industrial Research Institute of Malaysia (SIRIM) and Eurofins NM Laboratory Sdn. Bhd. (3rd Party Lab).

We attracted and engaged more than 100 visitors by promoting IMM certification programs such as coating, coating fingerprinting etc., conferences organised by IMM, IMM memberships and etc. IMM participation was met with an enthusiastic response from the visitors. The Coating Inspector and Protective Coating Technician are the two most popular IMM Certification Programs that were highly enquired by visitors at the SOGCE 2022 and received few inquiries on the Welding Certification Program.

Figure 1: IMM booth.

Figure 2: From left – Ms. Nur Ashikin Arif and Ms. Zuraidah Idris from SIRIM Kuala Lumpur, Ms. Ainur Afini Puaze and Ms. Syafika Azis from IMM & Mr. Herric Evans Gabu Jusilin from SIRIM Kota Kinabalu.

Figure 3: From left - Ms. Ainur Afini Puaze and Ms. Syafika Azis from IMM & Mr. Azlizul Aizat from MTE.

Figure 4: Session with a visitor at IMM booth.

The Artistry of Pewter: A Journey through Royal Selangor

Prepared by: Ts. Ng Chan Wah, Tunku Abdul Rahman University of Management & Technology (TAR UMT) – IMM Student Chapter Advisors
Reviewed by: Ts. Ong Thai Kiat, Tunku Abdul Rahman University of Management & Technology (TAR UMT) – Polymer Committee Chairperson

Date: 28th June 2023
Venue: Royal Selangor

On 28th June 2023, 32 fellow students as part of the Tunku Abdul Rahman University of Management and Technology (TAR UMT - IMM Student Chapter) visited the world-renowned Royal Selangor. Royal Selangor was founded in 1885 and it is the world's foremost name in quality pewter.

The expedition was organized by the TAR UMT - IMM Student Chapter with the promise of an immersive experience at the School of Hard Knocks. The objective of this visit is to provide participants with a practical and hands-on understanding of bowl-making from skilled artisans and uncover the fascinating world of pewter craftsmanship. The journey commenced at the Royal Selangor Visitor Centre, where the participants were greeted warmly by the knowledgeable staff, whose enthusiasm was infectious. They led participants into the world of pewter and explained its cultural importance and historical relevance. This informative introduction provided participants with a valuable opportunity to gain an appreciation for the heritage and significance of pewter.

The pinnacle of the visit was undoubtedly the School of Hard Knocks workshop. Equipped with aprons, and a sheet of pewter, the participants were poised to create their very own pewter bowl. Under the expert guidance of skilled craftsmen, they embarked on a journey into the world of pewter bowl making. The process was intricate and involved multiple steps, including shaping and decorating. Each phase required precision and attention to detail, and the artisans patiently walked us through every stage. The joy of transforming a plain sheet of pewter into a beautifully designed bowl was a testament to the artistry involved in pewter craftsmanship.

What made this experience truly extraordinary was the sense of accomplishment the participants felt as they completed their bowls. It was a tangible reminder of the dedication and skill required for every piece of Royal Selangor pewter, deepening our appreciation for this time-honoured craft. The workshop finished at 11 a.m. and all participants took a break at a café located within the Royal Selangor Visitor Centre. This fruitful trip was officially ended at 12 p.m.

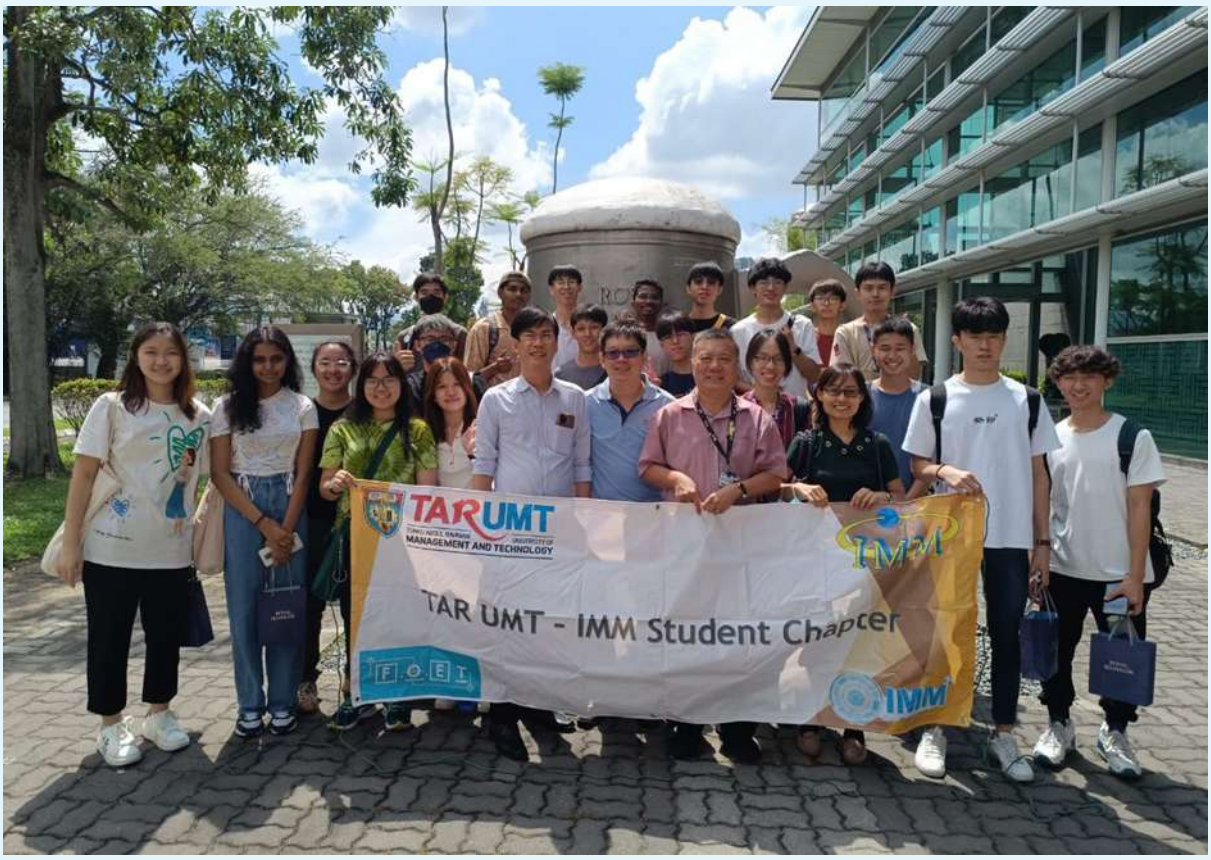


Figure 1: *A group photo at the main entrance of Royal Selangor.*

Conference on Materials Failure Investigation 2023 and Announcement on New IMM Skill Standard on Materials Failure Investigation Practitioner

Prepared & Reviewed by: Dr. Yoga Sugama Salim, Cetim Asia Pacific, IMM Corrosion Committee.

Date : 23rd August 2023
Venue: Dorsett Grand Subang Hotel, Malaysia

On 23rd August 2023, the IMM Corrosion Committee and the IMM Education Committee jointly organized the "IMM One Day Conference on Materials Failure Investigation" at Dorsett Grand Subang Hotel, Malaysia. This event was in conjunction with the "International Conference on X-rays & Related Techniques in Research & Industry 2023" (ICXRI-2023) by the Universiti Teknologi Malaysia (UTM).

The aim of this conference was to gather plant operators, industry practitioners, research scientists, and educators to share their technology knowledge and experiences in the failure investigation of materials. Many case studies related to materials failure investigation were presented and discussed during the event. The presenters came from all the value chain of materials failure investigation such as university (UTM), research institute (Malaysia Rubber Board (MRB)), manufacturing companies (Aspen Aerogels, International Paint), independent 3rd-party companies who are involved in the failure investigation (CETIM-MATCOR, Elements), as well as the owners of assets themselves (Petronas GTS, Petronas Carigali, Petronas Chemicals Fertilizer Kedah, Malaysia Refining Company).

Introduction and development progress of IMM Skill Standard for Materials Failure Investigation Practitioner were announced. This first-in-the-world Skill Standard, which is expected to be ready by the first quarter of 2024, can be adopted by industries worldwide (i.e., oil & gas, petrochemicals, marine, power utility, semiconductor, nuclear) where materials failure investigation is concerned. A panel discussion was moderated and the exchanges between the participants and speakers were initiated. The topic of the discussion touched base on

(1) the confidentiality issue in materials failure investigation cases,
(2) the lack of skill control over the appointment of Materials Failure Investigation Practitioners, and
(3) the readiness/willingness of the industry to adopt the upcoming IMM Skill Standard for Materials Failure Investigation Practitioner.

Figure 1: *A group photo of participants and presenters.*

Seminar on "Plastic Industry Transformation: Aligning with Environmental, Social and Governance Goals for A Better Future"

Prepared by: Dr. Lee Yap Chen, Tunku Abdul Rahman University of Management and Technology.
Edited by: Wong Wing Kiong, General Manager of IMM Secretariat.
Reviewed by: Ts. Ong Thai Kiat, Tunku Abdul Rahman University of Management and Technology, Polymer Committee Chairperson.

In collaboration with TAR UMT TUNKU ABDUL RAHMAN UNIVERSITY OF MANAGEMENT AND TECHNOLOGY

Tunku Abdul Rahman University College Engineering Alumni Association (TEAA)
拉曼理工大学工程系校友会

Date: 24th August 2023
Venue: DK 1, TAR UMT, KL Main Campus
Time: 1.00 pm - 3.00 pm

The plastics industry is facing significant environmental challenges, including plastic pollution, high carbon footprints, generation of excessive waste and energy consumption. Despite ongoing efforts, the development of comprehensive and effective solutions to tackle these challenges is still an ongoing process. As society recognizes the importance of addressing these issues, the IMM Polymer committee, in collaboration with the Faculty of Engineering and Technology (FOET) at Tunku Abdul Rahman University of Management and Technology (TAR UMT) and the Tunku Abdul Rahman University of Management and Technology Engineering Alumni Association (TEAA), organized a seminar with the theme "Plastic Industry Transformation: Aligning with Environmental, Social and Governance (ESG) Goals for A Better Future". This event was held on 24th August 2023, from 1 p.m. to 3 p.m. at DK 1, TAR UMT, KL main campus and is specifically created for FOET and TAR UMT students.

Figure 1: *ESG seminar organized by IMM in collaboration with TAR UMT and TEAA.*

Figure 2: *A total of 70 participants attended the seminar at DK 1, TAR UMT, KL main campus.*

The primary objective of this seminar was to provide engineering students with a comprehensive understanding of ESG goals within the plastic industry. To provide valuable insights, an esteemed guest speaker, Mr. Ben Teo Gee Lian, Managing Director of Topflow Engineering Sdn. Bhd., was invited as shown in Figure 1. Mr. Ben Teo won the JCI Malaysia Ten Outstanding Young Malaysians Award (TOYM) in 2021. During his presentation, Mr. Ben Teo explored the concepts and practical application of ESG principles within the contemporary plastic industry. He also discussed the environmental challenges that have arisen in the plastic industry and offered ESG-focused solutions aimed at mitigating these issues.

Figure 3: *A group photo of Mr. Ben Teo and participants.*

The seminar received a passionate response from the academic staffs and students, with a total of 70 participants attending the seminar as shown in Figure 2. A Q&A session was held after the seminar to answer all the questions from the participants. Before the seminar ended, a group photo was taken as illustrated in Figure 3. A token of appreciation was presented to the speaker by IMM Deputy President, Ts. Dr. Chew

Figure 4: *A token of appreciation presented to Mr. Ben Teo by IMM Deputy President, Ts. Dr. Chew Khoon Hee.*

NEW IMM PROFESSIONAL MEMBERS

DR. TEOW SIOW HWA

Age: 39 years old
Organization: University Malaysia Sabah
Position: Senior Lecturer
Working experience(s):
• 2 years as a Postdoctoral at University Malaysia Sabah
• 1 year 5 months as Assistant Professor at Kyushu Institute of Technology (Kyutech), Japan
• 2 years as a Postdoctoral Researcher at University Putra Malaysia
• 3 months as a Special Graduate Research Assistant at University Putra Malaysia
• 4 months as a Research Assistant at University Putra Malaysia
• 5 years as a Teaching Assistant at University Putra Malaysia
Qualification(s):
• PhD in Heterogeneous Catalysis [University Putra Malaysia]
Professional membership(s):
• Member (MRSC, The Royal Society Chemistry UK)
• Member (MBOT)
• Member (IKM)

MR. CASSIDY ANAK MORRIS

Age: 49 years old
Organization: Jabatan Kerja Raya Sarawak
Position: Deputy Director (Infrastructure)
Working experience(s):
• 1 month as a Head of Asset at JKR Headquarters
• 2 years 6 months as a Head of Project at JKR Headquarters
• 3 years as a Regional Manager at Central Regional Office, JKR Sarawak
• 6 year as a Divisional Engineer Sri Aman at JKR Sri Aman
• 3 year as a Saratok District Engineer at JKR Bentong
• 1 year 5 months as a Civil Engineer at JKR Samarahan
• 10 days as a Civil Engineer at JKR Headquarters
Qualification(s):
• PhD in Business Administration [Universiti Teknologi MARA] – Awaiting Final Result
• Master in Business Administration [Universiti Teknologi MARA]
Professional membership(s):
• Member (ACPE) – ACPE-06413/MY
• Member (TAM) – M4814
• Member (IEM) – 118175
• Member (MBOT) – GT21110304
• Member (BEM) – 30917A

6th Regional Conference on Materials Technology and Exhibition 2023

Prepared & Reviewed by: Ir. Assoc. Prof. Dr. Edwin Jong Nyon Tchan, IMM Miri Regional Chapter Chairperson.

Date : 22nd September 2023
Venue: Eastwood Valley Country and Golf Club in Miri, Sarawak

The Sixth Regional Conference on Materials Technology and Exhibition 2023 (6-RMTCE 2023) was jointly organized by the IMM-Miri Regional Chapter and the IMM-Welding Committees and was held on 22nd September 2023 at the Eastwood Valley Country and Golf Club in Miri, Sarawak, from 7.30 a.m. to 5.00 p.m. Overall, the 6-RMTCE 2023 successfully attracted over 120 registered delegates with varying international backgrounds, including asset owners, operators, maintenance contractors and sponsors and exhibitors from both abroad and Malaysia, mainly from the Oil and Gas (O&G) industry, including industrial professionals, subject matter experts and practitioners in the fields of Materials and Corrosion Engineering, Welding and Inspection Technology, Asset Integrity Management and Health, Safety, and Environment (HSE) as shown in Figures 1 to 4. The conference title, 6-RMTCE indicates the 6th time in Miri had organized this category of materials technology conference. For information, the last materials technology conference of a similar nature in Miri was held in May 2018. Persuant, due to the prolonged COVID-19 pandemic lockdowns, the next conference was finally held in September 2023.

Figure 1: *Delegates arrived at the registration desk as early as 7.00 a.m. to register for the 6-RMTCE conference and exhibition.*

Figure 2: *The innovative backdrop of 6-RMTCE at the main conference hall.*

Figure 3: *A view of the delegates listening attentively at the conference hall during the conference.*

Figure 4: *A view of the conference group photo showing all participants and delegates attending the official 6-RMTCE opening ceremony in the conference hall.*

Miri has been a resort city since 2005, and an O&G hub with Shell International operating in this region for more than a century since 1910. Many O&G operators in the country have onshore refineries and offshore platform facilities that have been in service for several decades and are still operating continually beyond their original design life. Operators may be required to continue operating these aging assets contractually for another 20 to 30 years or beyond. This becomes a challenging task as long overdue degradation issues vary in different types of components, especially those pressurized, non-pressurized, and structural facilities, arising from in-service fatigue, corrosion/erosion, stress corrosion cracking, and even direct exposure to tropical marine environments and UV radiation attacks.

In response to this challenge, the IMM Miri Regional Chapter and IMM-Welding Committees have mutually agreed to continually organize the RMTCE in Miri as a platform for sharing of hands-on experiences and knowledge relating to issues in materials & corrosion, welding technology, inspection techniques, HSE, and management of asset integrity in the effort to sustain these aging facilities and thus to enable safe production environment for our future generations.

With the conference theme, “Materials Technologies for a Sustainable Future”, the organizing chairman, Ir. Dr. Edwin Jong gave his welcoming speech with the prime objective of this materials technology conference is to gather all the subject matter experts from various fields together with all asset operators, maintenance contractors and owners to share their asset integrity and maintenance issues, and challenges encountered with their potential solutions (Figure 5).

The joint conference organizing committees were also honoured to have the presence of the esteemed keynote O&G speaker, Mr. Danny Murshidi of Deepwater Sabah Asset, Sabah Shell Petroleum Co. Ltd. on the theme topic related to "Upstream Oil & Gas Emission Reduction Challenges & Sustainable Solutions" during his keynote speech (Figure 6). Together with another 12 technical paper presentations covering a wide range of various technical issues related to materials & corrosion, welding technology, inspection techniques, HSE, and asset integrity management. Immediately after each technical presentation, a duration of 5 minutes was allocated for Q&A from delegates for clarification and sharing/ exchanging their working experiences with the presenters as illustrated in Figure 7.

Figure 5: *Welcoming speech from the joint organizing chairman, Ir. Dr. Edwin Jong*

Figure 6: *Keynote Speech by Mr. Danny Murshidi of Deepwater Sabah Asset, Sabah Shell Petroleum Co. Ltd.*

Figure 7: *The 5-minute Q&A sessions.*

Figure 8: *Presentation of IMM souvenir to the keynote speaker, Mr. Danny after his speech.*

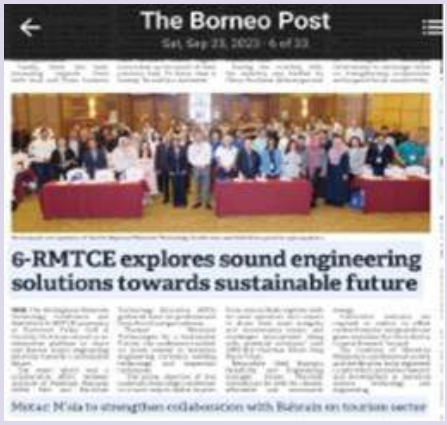


Figure 9: *An example of one local newspaper cutting reporting on the 6-RMTCE conference opening ceremony.*

Strictly following the pre-planned conference program, each nominated session chairman/chairperson was invited to present the IMM Certificates of Appreciation to all conference sponsors and presenters. Figure 10 shows a scene of one of the sponsor's exhibition tables with delegates who are interested in their advanced materials for offshore applications.

Figures 11 and 12 show photos of the presentation of the IMM Certificates of Appreciation to all conference sponsors and technical presenters by each nominated session chairman/chairperson.

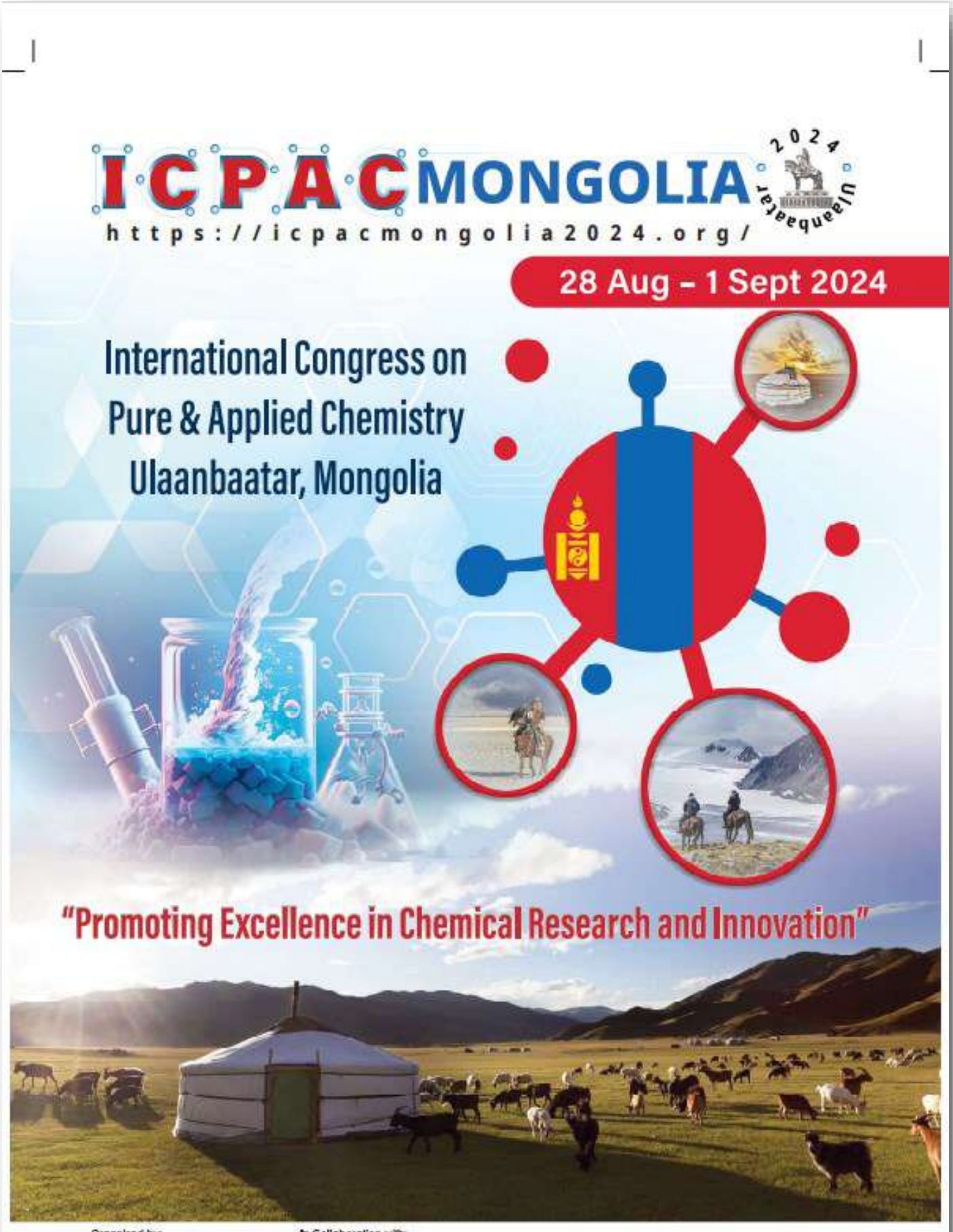
Figure 10: *Exhibitors explain their innovation of advanced materials to the conference delegates.*

Figure 11: *Presentation of certificate of appreciation to one of the conference sponsors.*

From the participants' feedback, this conference and exhibition have indeed provided them with an effective platform for international networking and exchanging technical ideas, hands-on knowledge, and information on developments and advanced innovations in the fields of materials & corrosion engineering, welding technology, inspection techniques, particularly eco-friendly and long-term sustainable solutions in structures, advance materials and manufacturing, and the environment, and resources. This 6-RMTCE 2023 has also served to create linkages and cooperation amongst asset owners and operators within the O&G industry, and recommend innovative solutions for materials technology, and the energy industries from all sectors. In developing countries such as Malaysia, materials technology as well as the energy sectors play an important role in national development, and the dissemination of cutting-edge technology and research is important for creating improvements for a sustainable future.

Last but not least, this one-day 6-RMTCE 2023 Conference was successfully completed at 5.00 p.m. Before the conference was adjourned, the master of ceremony, Ir. Dr. Christine Yeo, representing the chairman of the IMM-Welding Committee, Dr. Bernard Sim, delivered her conference closing speech and expressed her gratitude to all conference sponsors, delegates, MTE Management & members as the event organizers for setting up the conference framework and running the entire conference program and timekeeping as well as to the indefatigable efforts and assistance from IMM-Curtin Student Chapter.

Figure 12: *Presentation of certificates of appreciation to conference presenters by Session Chairpersons.*


ICPAC MONGOLIA
2024 Ulaanbaatar
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28 Aug – 1 Sept 2024
International Congress on
Pure & Applied Chemistry
Ulaanbaatar, Mongolia
"Promoting Excellence in Chemical Research and Innovation"
Organized by:
Institut Kimia Malaysia
In Collaboration with:
FIST
Foundation for Interaction between Science & Technology, Japan
Mongolian Chemical Society
ACC
Asia Chem Corporation, Japan

Memorandum of Understanding between the Institution of Engineers, Malaysia and Institute of Materials, Malaysia

Prepared and edited by: Aberamy Dayalam, Assistant Manager of IMM Secretariat

Date: 8th September 2023
Venue: Kuala Lumpur Convention Centre

A memorandum of Understanding (MoU) between Institution of Engineers, Malaysia (IEM) and Institute of Materials, Malaysia (IMM) exchange ceremony was held during the IEM Convention on 8th September 2023 at Exhibition Hall 2, Kuala Lumpur Convention Centre.

The collaboration between IEM and IMM sets forth the general principles, which both institutions propose to exchange information and knowledge in order to promote the art and science of engineering to the public.

The MoU was signed earlier before the exchange ceremony by the President of IEM, Ir. Prof. Dr. Norlida Buniyamin witnessed by the Honorary Secretary of IEM, Ir. Prof. Dr. Zuhaina Zakaria. On the other hand, the President of IMM, Dato' Dr. Ir. Ts. Haji Mohd Abdul Karim Abdullah who represented IMM signed the MoU and was witnessed by the Honorary Secretary of IMM, late Prof. Ts. ChM. Dr. Melissa Chan Chin Han.

Figure 1: *An exchange of MoU between IEM and IMM.*

Figure 2: *A memento from IEM to IMM.*

Figure 3: *Representatives from IMM Council Members. From left, Ir. Ts. Noor Hisham Yahaya, Ir. Ong Hock Guan, Assoc. Prof. Ts. Dr. Tay Chia Chay and Ts. Brian Lim Siong Chung.*

Figure 4: *A group photo after the signing ceremony.*

Inside the World of Can Manufacturing: A Field Trip to Kian Joo Can Factory

Prepared by: Kendrick Foo Lok Tim, Tunku Abdul Rahman University of Management &Technology (TAR UMT) – IMM Student Chapter Secretary
Reviewed by: Ts. Ong Thai Kiat, Tunku Abdul Rahman University of Management & Technology (TAR UMT) – Polymer Committee Chairperson

Date : 22nd November 2022
Venue: Kian Joo Can Factory (KJCF), Batu Caves, Selangor

On 2nd November 2022, 3 lecturers and 29 student members from Tunku Abdul Rahman University of Management & Technology (TAR UMT) - IMM Student Chapter embarked on an educational tour to Kian Joo Can Factory (KJCF), located in Batu Caves, Selangor. KJCF is a leading can manufacturer in Malaysia. The primary objective of this educational tour was to provide participants with an enriching and insightful experience that would enhance their understanding of their current field of study in engineering.

At 8:30 a.m., all students and lecturers assembled at the Yum-yum Cafeteria at TAR UMT After attendance was taken, all participants boarded the college bus marking the commencement of the journey to the factory. The participants arrived at KJCF at 9:00 a.m. and were welcomed with open arms by the KJCF HR team. Mr. Ang, the general manager of KJCF introduced the company and delivered a welcoming speech. Following this introduction, Mr. Allan, the safety officer conducted a safety briefing to ensure everyone was aware of the safety protocols and guidelines.

The factory tour commenced with a visit to Plant 1 guided by Mr. Chew, the production manager. Plant 1 consists of 8 colour printing and conventional printing of tin/metal cans machines. Each machine component and operation in Plant 1 was introduced and explained clearly by the senior staff members on site. The printing process involves several steps, where it begins with obtaining reference images or artwork from the client.

Figure 1: *A group photo of participants (TAR UMT - IMM Student Chapter).*

Figure 2: *Welcoming speech by Mr. Ang (KJCF general manager).*

This artwork is then adjusted to suit the design of the can. Subsequently, a colour separation process is carried out on the artwork to break it down into individual layers of single-color templates. Subsequently, a digital proof and a metal proof were sent to the client for reference and confirmation. If the client is satisfied with both the digital and metal proof, the next step involves transforming each of the colour layers from the artwork into a master plate. These master plates serve as references for the printing machines, guiding them on the precise amount of ink to apply to the sheet metal during the printing process. This meticulous process ensures the accurate reproduction of the desired design on the tin/metal cans.

Afterward, participants visited the engineering department. The experienced engineer introduced their advanced Internet of Things (IoT) system to all participants. The IoT system implemented in KJCF consists of a 24-hour live system that constantly monitors and oversees the automation processes within the factory. KJCF is also actively developing a new machine-learning system that is able to provide predictive analysis.

Lastly, participants visited the coating and curing department. Here, a curing process was used to ensure the adherence of the printing to each metal sheet. This curing method utilized ultraviolet (UV) light, which plays a crucial role in setting the ink and ensuring it adheres firmly to the metal surface.

Figure 3: *Safety briefing by KJCF safety officer.*

Figure 4: *A group photo with the KJCF Team.*

IMM AUTHORIZED TRAINING BODY (ATB)/ AUTHORIZ
PARTNER (ATP) FOR IMM C

AUTHORISED TRAINING BODIES (ATBs)

(Offer IMM Certification Training Programs and Courses)

ATBs	Training Programs & Courses
	Coating
Seacademy Sdn. Bhd. (Sarawak) **Topfields Borneo Sdn. Bhd.** (Sarawak) **Sabah Skills & Technology Centre** (Sabah) **SRC Global Resources Sdn. Bhd.** (Peninsular Malaysia) **Advance Multiskills Training Centre Sdn. Bhd.** [Excludes courses marked with *] (Sarawak)	Certified Assistant Blaster & Painter Level 1 & Level 2 Certified Protective Coating Technician (Blaster and/or Painter) Level 1 & Level 2 Certified Blasting and Painting Supervisor Certified Coating Inspector Level 1 & Level 2 Certified Quality Control Technician* Certified Thermal Spray Coating Applicator* Basic Knowledge on Corrosion Protection for Technicians and Engineers* Corrosion Control by Protective Paints* Corrosion Control by Protective Coating*
	Mechanical Joint Integrity
Sabah Skills & Technology Center (Sabah) **SRC Global Resources Sdn. Bhd.** (Peninsular Malaysia)	Certified Mechanical Joint Integrity for Small-bore Piping, Tubing and Valves Certified Mechanical Joint Integrity for Flange Bolted Connections
	Thermit Welding
Prasarana Malaysia Berhad (Malaysia)	Certified Thermit Welding Practitioner (Level 1) Certified Thermit Welding Senior Practitioner (Level 2)

Note: The respective coverage area is indicated in brackets.

AUTHORISED TESTING CENTRE (ATC)

(Offers IMM Examination and Assessments)

ATC: JOTAC Academy Sdn. Bhd.
(Peninsular Malaysia)

Certification Examination/Assessments

- Certified Protective Coating Technician (Blaster and/or Painter) Level 1 & Level 2
- Certified Coating Inspector Level 1 & Level 2
- Certified Corrosion Monitoring Practitioner Level 1
- Certified Cathodic Protection Practitioner Level 1

ZED TESTING CENTRE (ATC)/ AUTHORIZED TRAINING COURSES & CERTIFICATION

ASSOCIATE TRAINING PARTNER (ATP)

(Offers IMM Certification Training Programs and Courses)

ATP: Materials Technology Education Sdn Bhd
(Malaysia and Overseas)

IMM Training Programs & Courses

Coating

- Certified Protective Coating Technician (Blaster and/or Painter) Level 1 & Level 2
- Refresher Course for Certified Protective Coating Technician (Blaster and/or Painter) Level 1 and Level 2
- Certified Assistant Blaster & Painter Level 1 & Level 2
- Certified Blasting and Painting Supervisor
- Certified Coating Inspector Level 1 & Level 2
- Refresher Course for Certified Coating Inspector Level 1 and Level 2
- Certified Coating Quality Control Technician
- Certified Thermal Spray Coating Applicator
- Basic Knowledge on Corrosion Protection for Technicians and Engineers
- Corrosion Control by Protective Paints
- Corrosion Control by Protective Coating

Coating Fingerprinting

- Coating Fingerprint Foundation Course
- Certified Coating Fingerprint Quality Controller Level 1
- Certified Coating Fingerprint Quality Controller Level 2
- Refresher Course of Certified Coating Fingerprint Quality Controller Level 1/Level 2

Train-the-Trainer

- Certified Trainer

Corrosion

- Certified Corrosion Monitoring Practitioner Level 1
- Certified Corrosion Monitoring Practitioner Level 2
- Certified Corrosion Monitoring Practitioner Level 3
- Certified Cathodic Protection Practitioner Level 1
- Certified Cathodic Protection Practitioner Level 2
- Certified Cathodic Protection Practitioner Level 3
- Certified Cathodic Protection Engineer
- Corrosion Control by Cathodic Protection

Thermal Insulation

- Introduction to Thermal Insulation
- Certified Thermal Insulation Installer

Vibration

- Certified Vibration Practitioner Category 1
- Certified Vibration Practitioner Category 2
- Certified Vibration Specialist Category 3
- Certified Vibration Specialist Category 4

Welding

- Certified Welding Inspector
- Repair Welding of Pressure Equipment in Refineries & Chemical Plants
- Welding & Joining Technology for Non-Welding Personnel
- Steel Technology for Non-Technical Personnel

IMM-JWES Courses

- Certified Associate Welding Engineer (AWE)
- Certified Welding Engineer (WE)
- Certified Senior Welding Engineer (SWE)

Mechanical Joint Integrity

- Certified Mechanical Joint Integrity for Small-bore Piping, Tubing and Valves
- Certified Mechanical Joint Integrity for Flange Bolted Connections
- Valve Operations, Maintenance & Inspection Including Flange Breaking

Loss of Primary Containment

- Mechanical Joint Integrity
- Pressure Safety Valve
- Small Bore Tubing

Rotating Equipment

- Competent Mobile Industrial Compressor Operator
- Competent Mobile Industrial Equipment Inspector
- Inspection & Maintenance of Pumps
- Practical Approach to Inspection and Maintenance of Stream Turbine
- Practical Approach to Precision Alignment Methods
- Practical Approach to Precision Balancing Methods
- Reciprocating Compressors: Operations, Maintenance, Inspection & Troubleshooting
- Troubleshooting Techniques for Rotating Equipment

Other Materials Courses

- Materials Selection & Corrosion
- Metallurgical Failure Investigation
- Basic Course on Operation of Mobile Air Compressor


IUPAC2025
KUALA LUMPUR, MALAYSIA
53rd IUPAC General Assembly (53GA)
11 - 15th July 2025
50th World Chemistry Congress (50WCC)
13 - 18th July 2025
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Kuala Lumpur, Malaysia
INSTITUT KIMIA MALAYSIA
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https://iupac2025.org
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We welcome you to enchanting Malaysia!

INSTITUTE OF MATERIALS, MALAYSIA

Updated on 30th December 2022

Institute of Materials, Malaysia (IMM) is a non-profit professional society that promotes honourable practice, professional ethics and encourages education in materials science, technology and engineering. Engineers, academicians, technicians, skilled workers and professionals are amongst its members exceeding 6800.

Registered with the Registrar of Societies on 6th November 1987, the Malaysian Materials Science & Technology Society (MMS) changed its name to the Institute of Materials, Malaysia (IMM) on 16th June 1997. The objectives of IMM include the training and development of individuals and companies in Malaysia to attain professional recognition in various fields of materials science, technology and engineering.

IMM is administered by a council of 30 members, with volunteers leading more than 15 materials committees and more than 4 regional chapters, and supported by a secretariat with full time staff.

IMM Vision

To be internationally recognised leading institution in Materials Science and Technology.

IMM Mission

(1) To be the technical authority on material science and technology
(2) To develop an enhance competency and skills for all categories and practitioner
(3) To become an internationally recognized certifying body
(4) To be the forum for industry and academia collaboration
(5) To positively contribute to society and quality of life

The IMM membership is categorised into 6 different grades and open to anyone above the age of 17 years - individuals and companies keen in developing and contributing towards the growth of materials science, technology and engineering in Malaysia.

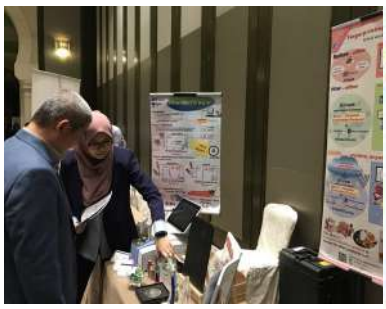
Over the years, IMM have conducted courses on coatings, coatings fingerprinting, corrosion, welding, vibration etc in support of the oil and gas industry in Malaysia. Over 750 Coatings Inspectors have been trained and certified as well as more than 3300 Blasters & Painters, Supervisors, Corrosion Technician and Vibration Practitioners. Its certification programmes are recognized by PETRONAS and all oil & gas operators. Since January 2011, more than 80 Associate Welding Engineers, more than 90 Welding Engineers, more than 30 Senior Welding Engineers and more than 45 Coating Fingerprint Quality Controllers were trained and certified.

IMM has also organised 10 International Materials Technology conferences (IMTCE) on a biennial basis, and numerous technical seminars, educational programmes, technical visits, and materials awareness programmes since 1988.

Public courses, such as Microbiologically Influenced Corrosion (MIC) and Welding Technology for Non-Welding Personnel, are being offered occasionally. Training on materials awareness has also been conducted in public listed companies.

The courses and programmes are being organised by Authorized Training Body/Bodies and Authorized Event Organizer/Organizers.

Collaborations with the Asian Welding Federation, Sabah Skills Technology Centre (SSTC), and local universities continue to be part of IMM's vision and long term mission to educate, train and serve the materials fraternity.



GENERAL INFORMATION ON MEMBERSHIP

The IMM Membership is open to all individuals and companies in developing the contribution of Materials science, technology and engineering towards industrial growth in Malaysia. The technology of materials is advancing day-to-day throughout the world. Membership to the IMM will enable networking and exchange of knowledge from a very wide variety of specialised areas of expertise. Please feel free to download or print a copy of the application form together with the IMM regulations. If you have any doubt, please do not hesitate to contact our secretariat through the phone; +603-76611591 or email to secretariat@iomm.org.my

Annual subscriptions shall be payable in advance on 1st January of each year. Those admitted into the IMM between 1st July and 31st December in any year shall pay only half the annual subscription. Seniors (above 55 years old) get 50% discount off their annual subscriptions.

We have an online application for membership for selected grades. Membership application forms in document format can be accessed from www.iomm.org.my.

IMM SECRETARIAT
Suite 1006, Level 10, Block A, Kelana Centre Point,
No. 3 Jalan SS 7/19,
47301 Petaling Jaya, Selangor

IMM MEMBERSHIP BENEFITS

(1) IMM activities offer members to interact and network with representative from the industry, academia and government related to the Materials profession.

(2) Members will gain knowledge on career opportunities for their children, friends etc as IMM offers certification courses in skilled trades *e.g.* Welding, Painting, Inspection, Corrosion *etc*.

(3) IMM-JWES Welding Engineer Certification program leading to a Welding Engineer Certification which offers great employment opportunities in the oil & gas, heavy industry, marine and energy sectors.

(4) IMM publications – quarterly magazine plus annual conferences offer presenters an opportunity for their technical research or industry-academia papers to be published in ISI- and Scopus-index journals.

(5) IMM organizes many free technical events for members to acquire new knowledge and networking opportunities. Participants to these events will also receive Certificate of Attendance for their Continuing Professional Development records.

IMM MEMBERSHIP FEES SCHEDULE AS PER BELOW:

Description	Amount			
	Entrance Fee	Processing Fee	Transfer Fee	Annual Subscription
Fellow (F.I.M.M)	-	RM 300.00	RM 10.00	RM 150.00
Professional (M.I.M.M)	-	RM 150.00	RM 10.00	RM 100.00
Associate (A.M.I.M.M)	-	RM 150.00	RM 10.00	RM 80.00
Company	RM 50.00	-	-	RM 200.00
Ordinary	RM 20.00	-	-	RM 40.00
Student	RM 10.00	-	-	RM 10.00
Ordinary/ Company for affiliates	RM 40.00/ RM 50.00	-	-	NIL

INSTITUTE OF MATERIALS, MALAYSIA

Updated on 30th December 2022

REGULATIONS GOVERNING ADMISSION AND TRANSFER OF MEMBER GRADES

The Council shall establish a Membership Committee which will be responsible for these Regulations and for review of applications for new membership and transfer to other grades (upgrades). The Membership Committee shall recommend for Council approval for admission and transfer of membership. All grades of memberships are awarded at the discretion of the Council and may be withheld or withdrawn in the event of conduct likely to prejudice the standing of the Institute. Every member shall receive a membership certificate.

Every application for membership, individual or company, shall be proposed and seconded according to these regulations and shall be forwarded to the IMM Secretariat who on behalf of the Honorary Secretary will process for consideration and approval of the Membership Committee before tabling for Council's endorsement. The Council may at its discretion reject any application without assigning any reason thereof. The Council may use its discretion to exempt the need for proposer and seconder for Student, Ordinary and Company membership.

Each company on admission as a member shall be entitled to nominate one representative to exercise all rights of membership. Only representatives of Company membership, as well as Fellows (F.I.M.M.). Professional Members (M.I.M.M.) and Ordinary members shall have the right to vote and to hold office in IMM.

Only Malaysian Citizens can become Ordinary Members, Associate Members (A.M.I.M.M.), Professional Members (M.I.M.M.) and Fellow Members (F.I.M.M.) with voting rights. Foreigners can have membership to similar grades but shall have no voting rights.

MEMBERSHIP GRADE & REQUIREMENT

Honorary Fellow (Hon. F.I.M.M.)

The Council shall have the power to elect Honorary Fellows who shall be persons of eminence in science or industry. The election shall be based on a majority vote within the Council. Honorary fellows shall enjoy such privileges as may from time to time be determined by the Council.

Fellow (F.I.M.M.)

A person at least 35 years of age with approved academic qualifications, training and 8 years relevant responsible experience who has made significant contributions to the science and practice of profession of Materials Science and Engineering or has given distinguished service to industry or education.

Professional Member (M.I.M.M.)

A person at least 25 years of age, with approved academic qualifications and training, having at least 3 years responsible experience in Materials Science and Engineering, or a person at least 40 years of age, with at least 15 years of experience with practical responsibility, as demonstrated by thesis/dissertation or report and interview.

Associate Member (A.M.I.M.M.)

A person at least 25 years of age, who possesses an interest in Materials Science and Engineering but have not acquired the necessary experience or obtained the qualification, governing entry to Member grade. An Associate Member, on obtaining the necessary qualifications, may apply for transfer to Member grade.

Company Member

Any company that is involved or has interest in Materials Science and Engineering will be qualified to join as a company member.

Ordinary Member

Any Malaysian Citizen and above the age of 18 years engaged in activities related to research, development and applications in Materials Science and Engineering shall qualify for Ordinary Membership. Only Ordinary Members who meet the necessary minimum requirements may apply for transfer to membership grades of Fellow, Member and Associate Member and may use the abbreviated titles upon transfer.

Student Member

A student member shall be a person not under 17 years of age who at the time of application satisfies the Council that he has received a good general education and is studying subjects related to Materials Science or Engineering. A student member shall transfer to the grade of Ordinary Member after graduation provided he or she is suitably qualified and as soon as he or she is earning a full-time salary. A Student shall not become member of the IMM without the prior approval of the Vice-Chancellor or Head of Department of the university or relevant authority concerned.

1-Day IMM Corrosion Conference 2022 – Holistic Corrosion Prevention & Management

Offshore Technology Conference Asia (OTC Asia) 2022

Materials Lecture Competition 2022 (MLC 2022)

FREE Ordinary Membership for Affiliates:

The Institute of Materials, Malaysia will recognize members of various professional institutions and societies for membership at "Ordinary Grade" without any annual subscriptions. Such members shall submit to IMM proof of their current membership of the respective institutions together with their application.

Members of the following institutions and societies are eligible to apply for affiliate membership:

1.American Welding Society
2.Asian Welding Federation
3.Board of Architects Malaysia
4.Board of Engineers, Malaysia
5.Engineering Institutes under the Engineering Council of UK
6.Geological Society of Malaysia
7.Institut Kimia Malaysia
8.Institute of Corrosion UK
9.Institute of Materials Singapore
10.Institute of Physics Malaysia
11.Institution of Engineers, Malaysia
12.Jabatan Minerals & Geoscience
13.Malaysian Medical Association
14.Malaysian Nurses Association
15.Malaysian Society for Non-Destructive Testing
16.Malaysian Welding & Joining Society
17.Persatuan Arkitek Malaysia
18.Plastics & Rubber Institute of Malaysia
19.Singapore Welding Society
20.Society of Petroleum Engineers
21.The Welding Institute UK

FREE Company Membership for Affiliates:

The Institute of Materials, Malaysia will recognize various professional institutions and associations for membership at "Company Grade" without any annual subscriptions.

Companies registered with the following Trade Associations are recognized for Affiliate Company Memberships:

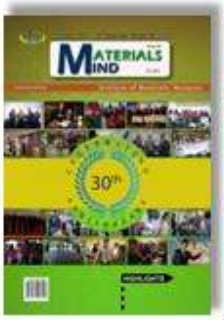
1.Federation of Malaysian Manufacturers (FMM)
2.Malaysian Offshore Contractors Association (MOCA)
3.Malaysian Oil & Gas Engineering Council (MOGEC)
4.Malaysian Oil & Gas Services Council (MOGSC)

The companies shall submit to IMM proof of their current membership at the respective trade associations together with their application.

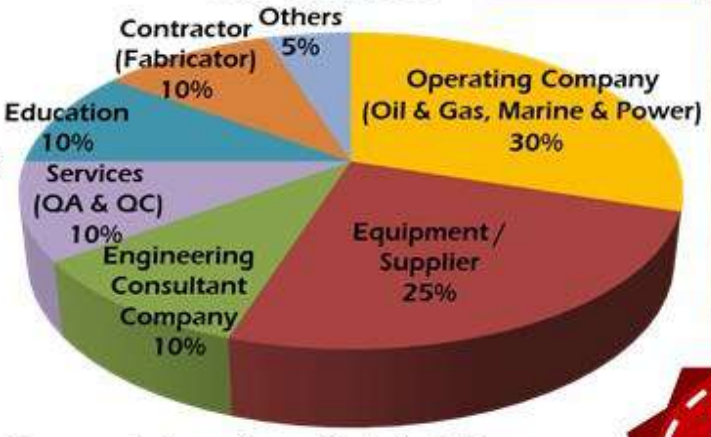
NOTE: The above provisions for affiliate membership for individuals and companies was approved by the IMM Council in accordance with the powers vested in the Council as per Clause 6.1.3 of the IMM Constitution and was subsequently endorsed by members at its 21st Annual General Meeting held on 19th March 2011.

MATERIALS MIND

Quarterly Magazine of Institute of Materials, Malaysia



Our Readers



General Information

Frequency: Quarterly Magazine
Format: Print & Online Editions
Reader: ~ 8000
ISSN: 2289-9030

Magazine Content

Event & Activity Reports, Conference Information, Technical Papers, Information on IMM, IMM Course Details, Advertorial, IMM Supporting Events and many more…..

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www.iomm.org.my
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Institute of Materials Malaysia

MATERIALS MIND

Invitation to Advertise in Materials Mind, published by Institute of Materials, Malaysia for in Print and Online

Please tick your preferred date, write the year and preferred code for advertisement.

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- Image quality should be at least 150 pixel per inch.
- Artwork prepared by the customer.

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Cancellation

10-day notice before the advertisement date, otherwise deposit will be forfeited.

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Account Name: **Institute of Materials, Malaysia**
Account No: **8009055156**
Swift Code: **CIBBMYKL**
Bank Name: **CIMB BANK Berhad**
Country: **Malaysia**

Cheque can be sent to
Suite 1006, Level 10, Block A, Kelana Center Point (Lobby A), No. 3 Jalan SS 7/19, Kelana Jaya, 47301 Petaling Jaya, Selangor
via post/mail or direct bank-in.

2) Payment can also be made by IBG, GIRO or Cash Deposit Machine (CDM) as follows:

Account Name: **Institute of Materials, Malaysia**
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Please email your bank-in slip as your payment proof to **secretariat@iomm.org.my**


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