



UNIVERSITI
MALAYA

FAKULTI KEJURUTERAAN
Faculty of Engineering

enginitorium

the Research office, Faculty of Engineering, Universiti Malaysia

The official bulletin of

Welcome to our special issue
spotlighting the research
achievements of our faculty!

This edition shares inspiring
stories to motivate more
researchers to strive for
greatness in their own work.

July 2025

SPECIAL ISSUE

OUR PATH TO EXCELLENCE

ITEX 2025: Muhammad Imran Bin Ramli
UM 3-Minute Thesis
Top Publications in High-Indexed Journals

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BREATHING NEW LIFE INTO REHABILITATION: MY JOURNEY WITH SINGING THERAPY FOR SPINAL CORD INJURY AT ITEX2025

Dr. Muhammad Imran Ramli

Winning the Gold Medal Award at ITEX2025 was more than just a personal achievement — it was a recognition of the tireless effort my team and I invested in reshaping how we approach respiratory rehabilitation for individuals with spinal cord injury (SCI). As I stood at our exhibition booth, sharing our findings with fellow researchers, clinicians, and innovators, I felt a deep sense of pride and purpose. Our work, titled "Measurement of Respiratory Muscle Performance During Singing Using Muscle Vibration Sensor in People with Spinal Cord Injury," has come to life.

At the core of this research lies the use of muscle vibration sensors—an advanced biomedical electronic tool designed to detect subtle muscle activity during singing, offering real-time data on respiratory muscle performance. Through the application of sensor technology and electronic data capture, our research contributes to the growing field of assistive and rehabilitative electronics, bridging clinical needs with engineering innovation.



My journey with this project began with a simple, yet powerful question: Can singing, an activity so deeply human, be used to restore something as fundamental as breathing in people with SCI? Traditional respiratory therapies often struggle to engage patients, especially when the goal is to improve both function and quality of life. I believe that if we could make rehabilitation enjoyable, we could also make it more effective.



We recruited individuals living with spinal cord injuries and guided them through a 12-week singing training program. Prior to and following the intervention, we recorded respiratory parameters like maximal inspiratory pressure (MIP), maximal expiratory pressure (MEP), and forced vital capacity (FVC). These are not just numbers; they represent life — the ability to breathe deeply, speak clearly, and live fully.



Standing among inventors from all disciplines at ITEX2025, I shared how this research isn't just about respiratory health — it's about restoring confidence, improving mental well-being, and redefining what rehabilitation can look like. I also proudly acknowledged the collaboration of my incredible co-researchers — Assoc Prof Ir. Dr. Nur Azah Hamzaid, Assoc Prof Dr. Juliana Usman, Prof. Dr Julia Patrik Engkasan, Prof. Dr Nazirah Hasnan, Wong En Qi, and Edelen See — and the support of SLAB (Skim Latihan Akademik Bumiputera), which funded our work.

This award has inspired me to push forward. As I packed up our booth at the end of ITEX2025, I plan to extend the study with a larger cohort and more controlled variables, aiming to develop clinical guidelines that can be adopted in rehabilitation centres.

DR. MUHAMMAD IMRAN BIN RAMLI
Department of Biomedical Engineering
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ENGINEERING MINDS TAKE THE STAGE: 3MT 2025 FACULTY-LEVEL COMPETITION A RESOUNDING SUCCESS

The Faculty of Engineering recently held its annual 3-Minute Thesis (3MT) 2025 Faculty-Level Competition, bringing together some of our most promising postgraduate researchers for a fast-paced and intellectually engaging challenge. Tasked with presenting their thesis in just three minutes, participants showcased not only their research expertise but also their ability to communicate ideas effectively to a broad audience.

This year's event featured a wide range of topics, each demonstrating real-world relevance and creative problem-solving. The panel of judges had the difficult task of selecting winners from a pool of articulate and insightful presenters.



We commend all the participants for their remarkable effort and ability to communicate their research in impactful ways. Each presentation reflected the depth of inquiry and commitment to problem-solving that defines our postgraduate community.



Topic: “Assessment of Self-Healing Ability of Microalgae in Cement Mortar Cracks By Using Microbially Induced Calcium Carbonate Precipitation (MICP) Technique”

Pierce presented an innovative approach to sustainable construction materials, exploring how biological processes could be used to enhance durability in cement structures.



Topic: “Adaptive Assembly Guidance System for High-Mix Low-Volume Manufacturing”

Gan impressed the audience with a novel solution aimed at improving efficiency and adaptability in modern manufacturing environments where product variety is high and volumes are low.

Topic: “Cycloidal Drives – The Future of Mobility”

Isha introduced a compact, efficient drive mechanism with potential applications in next-generation mobility and precision robotics.



Our appreciation also goes out to the academic staff, judges, and attendees who made the event vibrant and encouraging. Events like this affirm the Faculty's ongoing commitment to cultivating researchers who are not only experts in their field but also skilled communicators and future thought leaders.

As we celebrate this successful edition of 3MT, we look forward to supporting our winner in the upcoming university-level competition — and to seeing even more bold, brilliant ideas in the years to come.

PUBLISHED IN THE TOP 10% WoS INDEXED JOURNALS

PROF. IR. DR. HAZLIE BIN MOKHLIS

*IEEE Transactions on Industrial
Electronics*

IR. DR. CHEW BEE TENG

Applied Thermal Engineering

DR. CHUAH CHONG YANG

Separation and Purification Technology

**ASSOC. PROF. IR. DR. ONN CHIU CHUEN,
PROF. IR. DR. TAN CHOU YONG**

Construction and Building Materials

**ASSOC. PROF. DR. NORAZURA BINTI
MUHAMAD BUNNORI, PROF. IR. DR.
RAMESH SINGH A/L KULDIP SINGH,
PROF. IR. DR. TAN CHOU YONG**

Ceramics International

**DR. MOHD NASHRUL BIN MOHD
ZUBIR, ASSOC. PROF. DR. MOHD
RIDHA BIN MUHAMAD @ MOHD
ATA'ILLAH, PROF. DR. KAZI MD. SALIM
NEWAZ**

Separation and Purification Technology

**PROF. IR. DR. UBAGARAM JOHNSON ALENGARAM,
ASSOC. PROF. DR. NORAZURA MUHAMAD BUNNORI,
DR. MUHAMMAD SHAZRIL IDRIS BIN IBRAHIM**

Construction and Building Materials



PUBLISHED IN THE TOP 10% WoS INDEXED JOURNALS

ASSOC. PROF. IR. TS. DR. LAI KHIN WEE

IEEE Transactions on Fuzzy Systems

**DR. MOHAMMED ABDO HASHEM
ALI, DR. KHOO SHIN YEE**

Construction and Building Materials

**DR. KHOO SHIN YEE, ASSOC.
PROF. IR. DR. ONG ZHI CHAO,
DR. SIOW PEI YI**

Reliability Engineering & System Safety

**PROF. IR. DR. ANG BEE CHIN, DR.
FARINA BINTI MUHAMAD**

Industrial Crops and Products

**PROF. IR. DR. UBAGARAM JOHNSON
ALENGARAM, ASSOC. PROF. DR.
NORAZURA BINTI MUHAMAD
BUNNORI, DR. MUHAMMAD SHAZRIL
IDRIS BIN IBRAHIM**

Journal of Building Engineering

**DR. MUHAMAD FAZLY BIN
ABDUL PATAH,
PROF. DR. WAN MOHD ASHRI
BIN WAN DAUD**

Renewable & Sustainable Energy
Reviews

ASSOC. PROF. IR. TS. DR. LAI KHIN WEE

Pattern Recognition

MEET DR. CHANTHIRIGA A/P RAMASINDARUM

ChM. Dr. Chanthiriga A/P Ramasindarum, also known as Dr. Chanthi, currently serves as a Senior Research Officer at the Centre of Advanced Materials, Faculty of Engineering, Universiti Malaya. She is a multidisciplinary researcher with expertise spanning advanced materials, applied chemistry, catalysis, and structured research management. Her research interests include nanoparticles, biomaterials, advanced materials, and materials characterization techniques.



Dr. Chanthi holds a Bachelor of Science (Hons.) in Applied Chemistry from Universiti Malaya (2003), and a Master of Science in Advanced Materials (2008), where her work focused on the synthesis and characterization of catalytic materials. In 2004, she completed a six-month R&D training program at the Institute of Technology, Chemical University of Polytechnic, Valencia, Spain, specializing in synthesis of ITQ-2 catalyst and characterization. She subsequently earned her PhD in Dental Materials from Universiti Malaya. Her doctoral research, in collaboration with a local industry partner, aimed to enhance the performance of the Silverfil™

dental product through the incorporation of nano-sized silver particles demonstrating the potential of nanotechnology in improving dental restorative materials. Currently, at the Faculty of Engineering, she is involved in a strategic research project focused on the recovery of rare-earth elements (REEs) from electronic waste, contributing to national initiatives on sustainable materials recovery and the circular economy.



Dr. Chanthi served at the Faculty of Pharmacy, Universiti Malaya under the Deputy Dean (Research and Innovation) from 2003 to April 2025, where she played a pivotal role in research management-supporting research planning, grant administration, and academic collaboration. In her capacity as Corporate Relations Officer, she managed external engagement activities and program coordination through the faculty's External Linkage Unit.

She also served as the technical lead for the Fourier Transform Infrared Spectroscopy (FTIR) and Differential Scanning Calorimetry (DSC) instruments, providing comprehensive user training, technical support, and maintenance to ensure optimal operation and effective utilization of these core analytical facilities. In this role, she actively trained postgraduate and mobility students, and was involved in supervising final-year student projects, contributing to both technical competency development and academic research training.



Dr. Chanthi served the Health and Well-Being Research Cluster at the Research Management & Innovation Complex from 2021 till 2023; where she was responsible for managing institution-wide grant-related activities, including both pre-award and post-award processes. In this role, she provided providing essential support to researchers across various disciplines.

Earlier in her career, she dedicated over a decade at the Biomaterials Laboratory, Faculty of Dentistry, contributing extensively to research in dental and biomedical materials. Between 2003 to 2009, she worked as a Researcher at COMBICAT Universiti Malaya (now known as NANOCEN), specializing in catalyst synthesis and catalytic reaction studies.



Beyond her technical and research responsibilities, Dr. Chanthi is actively engaged in academic and professional associations. She served as Treasurer of the Persatuan Alumni India Universiti Malaya (PANI UM) for 2 terms (2020–2026) and holds elected membership in both the

Malaysian Institute of Chemistry (IKM) and the Persatuan Pegawai Penyelidik Universiti Malaysia. Dr. Chanthi is also a skilled EndNote trainer with a proven track record, having conducted over a dozen workshops for academic staff, postgraduate students, and researchers. In addition, she is a certified Accreditation Assessor for calibration and testing under the Laboratory Accreditation Scheme (SAMM), appointed by the Department of Standards Malaysia, with her current term extending until 31 December 2027.

DR. CHANTHIRIGA A/P RAMASINDARUM
Centre of Advanced Materials
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POWERING HEALTH THROUGH ENGINEERING

Ooi Chin Eng

Back in 2009, I walked out of Universiti Malaya with a degree in Biomedical Engineering (BME) and a head full of possibilities. Those years gave me the systems-level mindset that would become crucial in real-world device development. That foundation became my launchpad into the medical device industry, where I've since worn many hats—from Process and Product Engineering to Quality and Manufacturing—working on both Class II and Class III medical devices.



In UM, I developed core competencies in electronics, circuit design, and control systems alongside strong fundamentals in physics and mathematics. These skills have proven critical in navigating the complex design requirements of regulated environments. Whether working on embedded systems in medical hardware or troubleshooting automation processes on the production floor, I constantly draw on the principles I first learned in my undergraduate years.

Beyond core engineering, I learned the importance of Power of Documentation, data integrity, and compliance. Regulatory frameworks like FDA, ISO, and MDR not only shape product design and testing, but also require a deep understanding of system traceability and risk analysis—areas where engineering precision meets regulatory clarity.

Courses in biomaterials and physiology taught me to design electronic systems that interface effectively with the human body, while my exposure to CAD design, programming, and group-based projects aligned well with today's Industry 4.0 landscape. The rise of automation, data-driven manufacturing, and smart systems has made digital literacy and integration a vital part of everyday engineering.

Looking back, building a strong foundation in both hardware and software was essential to my journey. To students and lecturers, I encourage you to focus on those fundamentals and seek hands-on experience through internships, research, or lab work. Communication and teamwork are equally important, especially in multidisciplinary environments. With the rapid growth of smart systems and automation, staying curious, adaptable, and open to lifelong learning will be key to succeeding in the evolving biomedical and electronics fields.

OOI CHIN ENG

Senior Engineer, ResMed (Singapore)
UM Engineering Alumni Association

UNIVERSITI
MALAYA

ICoSEM2025

International Conference on
the Science and Engineering
of Materials

Conference Date
**26th - 27th
November, 2025**

Conference Venue
**Armada Hotel,
Petaling Jaya,
Malaysia**



PUBLICATION OPPORTUNITY

Selected papers will be considered for publication in indexed journals
Materials Science and Engineering Technology (ISI)
& **Malaysian Journal of Science (Scopus)**

Plenary Speakers



Prof. Neil Cameron

Monash University

Title: Porous Materials as Scaffolds for
Tissue Engineering



Prof. Cheong Kuan Yew

Universiti Sains Malaysia

Title: Embracing Challenges of
Megatrend with Bio-Organic Based
Resistive Switching Memory



Assoc. Prof. Ir. Dr. Najmiddin

Universiti Teknologi MARA

Title: Oil and Gas Pipeline Corrosion
Issue, Monitoring and Mitigation

Registration Fee

Early bird by 30 July 2025

	Local	International
Student	RM1000	USD460
Non-Student	RM1300	USD530

Regular by 30 July 2025

	Local	International
Student	RM1200	USD500
Non-Student	RM1500	USD570

Important Dates

30 July 2025	31st July 2025	22nd August 2025	26-27 November 2025
●	●	●	●
Early bird registration	Abstract Submission	Regular registration & full paper submission	Conference date



<https://umevent.um.edu.my/ICoSEM2025>

Co-organizer



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CALL FOR PAPERS

ICoSEM2025

International Conference on
the Science and Engineering
of Materials



UNIVERSITI
MALAYA



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& **Malaysian Journal of Science (Scopus)**



TOPICS

- Advanced Manufacturing
- Advanced Metal & Alloys
- Biomaterials
- Ceramic and Composite Materials
- Coating Technology and Surface Engineering
- Construction Materials
- Electronic, Magnetic and Optical Materials
- Environmentally Sustainable Materials and Processing
- Joining and Welding Technologies
- Machining Process
- Manufacturing and Materials Engineering Education
- Materials Degradation (Corrosion, Wear) and Failure Analysis
- Materials for Energy Storage, Conversion and Renewable Energy
- Materials Processing and Related Issue in Manufacturing
- Mechanical Behaviour of Materials, Applied Mechanics & Design
- Modeling and Simulation in Materials Engineering
- Modeling of Manufacturing Processes and Operations
- Nanomaterials and Nanotechnology
- Polymer and Soft Materials

REGISTRATION FEES

Early Bird Registration

Student (Local)	RM1000
Non-Student (Local)	RM1300
Student (International)	USD460
Non-student (Internation)	USD530

Normal Registration

Student (Local)	RM1200
Non-Student (Local)	RM1500
Student (International)	USD500
Non-student (Internation)	USD570

IMPORTANT DATES

1. 30 JULY, 2025
Early Bird Registration
2. 31 JULY, 2025
Abstract Submission
3. 22 AUGUST, 2025
**Regular Registration
Full Paper Submission**
4. 26-27 NOVEMBER, 2025
Conference Date

Co-organizer



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Taiwan-Malaysia Overseas Science
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MANIPAL UNIVERSITY
JAIPUR



Main Organizer:
Center of Advanced Material, Universiti Malaya (CAM, UM)

Co-Organizer:
Material Engineering Technical Division (MaTD), IEM

Physical Event

One-Day Workshop on Corrosion

BEM Approved CPD: 6 Hours **CPD Ref No.: IEM25/HQ/111/W**

Date : ~~7 May 2025 (Wednesday)~~ **rescheduled to**
18 August 2025 (Monday)

Time : 8.00 am - 5.00 pm

Venue : Universiti Malaya
The Cube, Level 2, Faculty of Engineering,

Speakers : Ir. Dr Azzura Ismail
: Dr. Nazatul Liana Sukiman
: Ir. Dr. Lee Chee Hong

Closing Date : 11 August 2025

REGISTRATION FEE'S (subject to 8% SST)

	Note (UM Students, UM Staff, Non-UM Students, and Non-UM Staff – Please email the secretariat for registration)
IEM Student Members/Student UM	100.00
IEM Graduate Members/ UM Staff/ non-UM student	150.00
IEM Corporate Members/Non UM staff	250.00
Non-IEM Members (Non of the Above)	550.00

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CALL FOR SUBMISSIONS

Want to be a part of the next issue?
Enginitium is a quarterly bulletin by the
Research Office aiming to celebrate
research achievements in Faculty of
Engineering and inspire fellow
researchers.

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