



# WORLD FORUM FOR WOMEN IN SCIENCE, MALAYSIA 2022

in conjunction with

THE 7<sup>TH</sup> INTERNATIONAL CONFERENCE FOR WOMEN  
IN SCIENCE WITHOUT BORDERS

WORKSHOP ON ENTREPRENEURSHIP

## PROGRAMME BOOK



Building a Gender Inclusive Sustainable Future  
Through Science, Technology and Innovation



**UPM**  
UNIVERSITI PUTRA MALAYSIA  
BERILMU BERBAKTI



[www.wiswb.upm.edu.my](http://www.wiswb.upm.edu.my)



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**World Forum for Women in Science, Malaysia 2022** is an opportunity to highlight the role of science in building a sustainable future for all through science, technology, and innovation. The forum, which is organized in conjunction with the **7<sup>th</sup> International Conference for Women in Science Without Borders** and **Workshop on Entrepreneurship**, targets scientists, students, practitioners, industrialists, journalists, and policy makers, among other key stakeholders in Science, Technology, Engineering and Mathematics (STEM). Participants are drawn from across Malaysia and other parts of the world. As basic science drives innovation and development, the discussions will endeavor to highlight gender equity in STEM as a driver for sustainable development.

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# FOREWORD

## The Officiator of the World Forum for Women in Science, Malaysia 2022

First and foremost, I would like to express my deepest gratitude to Allah the Almighty for giving us the chance for conducting the World Forum for Women in Science 2022 (WFWS2022), which is organized in conjunction with the 7<sup>th</sup> International Conference for Women in Science Without Borders (WISWB), Malaysia 2022. It is a great privilege and pleasure for me to welcome all the WISWB 2022 participants. I wish to congratulate the Faculty of Science, UPM for putting this event together, in promoting the “partnership, leadership and entrepreneurship” in cultivating exciting interdisciplinary research in the science field.

As one of the research universities in Malaysia, UPM is implementing an active approach in finding ways to improve imaginative work that contributes towards the advancement of the country throughout a significant expansion of time. Despite the post COVID-19 situation, we are exceptionally pleased to see the Faculty of Science UPM who has shown tireless commitment in continuing our mission to promote UPM at the international level through the coordination of this event.

We are confident that this event will be a fantastic virtual meeting platform for interdisciplinary enthusiastic researchers to share and exchange ground-breaking thoughts with one another, which thusly prompting productive thoughts and making successful joint efforts later on.

The theme “Building a Gender Inclusive Sustainable Future through Science, Technology, and Innovation” is in line with our strategic plan to strengthen UPM as a center of excellence in research and innovation internationally even during the era of the post COVID- 19 pandemic that hit the world.

To all of the participants, we sincerely hope that this congress will serve as a platform to create and strengthen collaborative ties internationally and locally. Finally, it is my fervent hope that the scientific discussion will be mutually beneficial to all. I wish all participants to have a wonderful conference in WISWB 2022.

Thank you.

**Prof. Dato’ Dr. Mohd. Roslan Sulaiman**

Vice Chancellor

Universiti Putra Malaysia

Malaysia



# FOREWORD

## The Patron of the World Forum for Women in Science, Malaysia 2022

On behalf of the Academy of Sciences Malaysia, I am delighted to extend a warm welcome to all participants of the World Forum for Women in Science 2022 (WFWS2022), which is organized in conjunction with the 7<sup>th</sup> International Conference for Women in Science Without Borders (WISWB), Malaysia 2022. This event is realized through the collaborative effort of the Faculty of Science, Universiti Putra Malaysia, Academy of Sciences Malaysia, and the Women in Science Without Borders Initiative (WISWB). This initiative aims to provide a platform for researchers and experts at national, regional, and international levels for academic deliberations and to share scholastic thought, as well as discuss current issues on interdisciplinary sciences and innovations with the experts, particularly with the distinguished speakers and panelists from all over the world.



Collaboration and teamwork among academia, industrial experts, and citizen scientists have always been crucial in pushing scientific research and discoveries to new frontiers. This partnership has become more critical in recent years as we are faced with emerging challenges at an unprecedented pace, such as the threat of emerging pandemic diseases, rapid loss of biodiversity in endangered habitats, and climate changes. We need to work hard and fast together to find solutions to these challenges. Time is the deciding factor for success in solving these problems, and the key to accelerating the work of scientists is cooperation across the boundaries of genders, disciplines, and nations.

I believe that this conference will be able to inspire women in academia and gear them toward more diverse views on multidisciplinary sciences research. Not just that, this event may improve skills in promoting research and enhancing presentation skills, especially for the young ones. I likewise trust that this conference and forum will be a platform that unites us, especially the enthusiastic experts and researchers, in enhancing interdisciplinary collaboration, further fostering new ideas, networking, and generating distinctive points of view in research.

Finally, I take this opportunity to congratulate the organizing committee for their tireless effort and dedication in making this conference a success and a memorable event. I wish all the WISWB 2022 and WFWS 2022 participants a remarkable experience during this conference.

Thank you.

**Prof. Emerita Datuk Dr. Asma Ismail**

President, Academy of Sciences Malaysia

Science, Technology and Innovation Advisor to the Nation & the Prime Minister

# FOREWORD

## Founding Honorary Chair of World Forum for Women in Science & Women in Science Without Borders

It is my great pleasure as a founding chair to be here with you now at the World Forum for Women in Science, Malaysia 2022, the dream which becomes true. Years ago, during discussions with friends, I was dreaming to have initiative with activities and annual meeting which may gather scientists both females and males on multidisciplinary bases with stakeholders from all walks of life including policy makers, industry, public, youth and others to work and discuss together taking science as template and language for communication and cooperation for the sake of sustainable development and humanity worldwide. This dream transformed into Women in Science Without Borders (WISWB) initiative and its related diverse activities including the annual world forum for women in science which now we are witnessing its seventh version in Malaysia.



WISWB initiative was founded in 2017 in Egypt as gender inclusive initiative with a slogan (science for sustainable development) and now it distributes over 70 countries to connect people and the world with science across all borders for inclusion of all partners and stakeholders to work together and move forward to attain sustainable development goals including gender equality (SDG5) for the sake of humanity. World forum for women in science was held twice in Egypt, once in Brazil, South Africa, Kenya and we had special event held in Duhok in Iraq which was dedicated to refugee and at-risk scholars and scientists. Via WISWB, we confirm the role of science, scientific international relations, and science diplomacy in solving the critical problems with common and global concerns.

WISWB activities from the beginning were supported by big international organizations, industry and stakeholders as International Science Council (ISC), United Nations' bodies (UN), The World Academy of Sciences (UNESCO-TWAS), IAP (Inter-Academy Partnership), Global Young Academy (GYA), national science academies, media, non-governmental organizations (NGOs) and others. That dream would not happen without the support of all friends and collaborators.

Accordingly, and for our current event in Malaysia, I would like to thank, recognize and acknowledge the efforts of University of Putra Malaysia (UPM) in partnership of the Academy of Science Malaysia to organize that great event. Also, I would like to thank the patrons of the Prof. Emerita Datuk Dr. Asma Ismail, the President of Academy of Sciences Malaysia, Prof. Dato' Dr. Mohd Roslan Sulaiman, the Vice Chancellor of UPM and the Chairperson of WFWS, Malaysia 2022 my dear friend and colleague Prof. Dr. Mohd Basyaruddin Abdul Rahman and his team and colleagues from the organizing committee. I would like also to thank guests, participants, and the audience. Thank you all.

The theme of the current forum is “Building A Gender Inclusive Sustainable Future Through Science, Technology and Innovation,” so, the forum continues to champion the Global Agenda 2030 on Sustainable Development Goals to highlight the role of science in building a sustainable future for all through science, technology, and innovation. The Forum brings together scientists, students, practitioners, industrialists, journalists, and policy makers, among other key stakeholders in Science, Technology, Engineering and Mathematics (STEM).

In conclusion, I hope that our activities and members will be change making agents at their places, countries and regions and I hope one day our activities will reach everyone interested in science everywhere in the world where one of my dreams to make science for all to build and develop societies with science. By the way, It is my pleasure to invite you all to our upcoming world forum for women in science 2023 which will be held in Rome in Italy.

Finally, I may repeat my previous statement – we as scientists are responsible more than before for the continuation and development of humanity where the challenges are huge and serious, and we should face them bravely and effectively together where I may repeat the say of Stephen Hawking that scientists have become the bearers of the torch of discovery in our quest for knowledge.

Thank you.

**Prof. Dr. Amal Amin**

Founding Honorary Chair  
World Forum for Women in Science &  
Women in Science Without Borders

# FOREWORD

## The Chairperson of the World Forum for Women in Science, Malaysia 2022 & 7<sup>th</sup> International Conference for Women in Science Without Borders

With great pleasure, I extend a warm welcome to all participants of the World Forum for Women in Science, Malaysia 2022 (WFWIS2022), in conjunction with the 7<sup>th</sup> International Conference for Women in Science Without Borders (WISWB2022). I believe the WISWB2022 has long become a great academic tradition to advance exploration and innovation in fundamental, applied, and social sciences. This initiative aims to promote interdisciplinary scientific partnerships by encouraging the inclusion of both males and females equally in the development of societies with science towards achieving sustainable development goals.

The theme “Building a Gender Inclusive Sustainable Future through Science, Technology, and Innovation” was chosen with high hopes that the WISWB2022 will help uniting and partnering global researchers in academia and industry to share common problems and ideas in solving worldwide problems. With the participation of more than 200 beautiful minds, this extravaganza event not just comprises of interactive forum by renown leaders (WFWIS2022) and multidisciplinary natural to social sciences conference (WISWB2022) but also a workshop on research entrepreneurship by experienced coaches.

I would like to congratulate the Faculty of Science, UPM, in collaboration with Akademi Sains Malaysia (ASM) and Women in Science Without Borders Initiative (WISWB) and Mustafa Science and Technology Foundation (MSTF) on making this virtual engagement a triumph. I would also like to praise the concerted efforts by working committee members and everyone involved in the unfathomable group effort endeavours to make this event a reality and a success. My deepest gratitude also goes to all panellists, speakers, researchers, academics, and delegates who are willing to share their experiences and research findings for the benefit of all. I hope this event will provide invaluable opportunities for sharing scientific thought and gaining new knowledge for everyone involved.

Thank you.

**Prof. ChM. Dr. Mohd Basyaruddin Abdul Rahman, FASc, FRSC, FIAAM**

Dean

Faculty of Science

Universiti Putra Malaysia

Malaysia





# ORGANISING COMMITTEE

## Patron

Prof. Dato' Dr. Mohd Roslan Sulaiman  
(Vice Chancellor, Universiti Putra Malaysia)

## Patron

Prof. Emerita Datuk Dr. Asma Ismail  
(President, Academy of Sciences Malaysia)

## Founding Honorary Chair of World Forum for Women in Science & Women in Science Without Borders

Prof. Dr. Amal Amin

## Chairperson of World Forum for Women in Science, Malaysia 2022 & the 7<sup>th</sup> International Conference for Women in Science Without Borders

Prof. ChM. Dr. Mohd Basyaruddin Abdul Rahman

## Co-Chair 1 (Forum)

Prof. Dato' Dr. Rashila Ramli

## Members (Forum)

Prof. Dr. Cheong Sok Ching  
Assoc. Prof. Dr. Normi Mohd Yahaya

## Co-Chair 2 (Conference)

Prof. Dr. Adem Kilicman

## Co-Chair 3 (Workshop)

Prof. Dr. Janet Lim Hong Ngee

## Member (Workshop)

Assoc. Prof. Dr. Wan Norhayati Wan Othman

## Secretary

Dr. Wan Mohd Syazwan Wan Solahudin

## Treasurers

Assoc. Prof. ChM. Dr. Jaafar Abdullah  
Dr. Norizah Abd. Rahman

### **Website & Publicity**

Assoc. Prof. Dr. Norazak Senu (Head)  
Dr. Muhammad Khairul Adib  
Ahmad Faisal Abdul Ghafar

### **Technical & Logistic**

Dr. Mohd Amiruddin Abd. Rahman (Head)  
Dr. Mohd Hafiz Mohd Zaid  
Dr. Noor Azrizal Abdul Wahid  
Khairul Hafiz Mohammad

### **Scientific**

Prof. Dr. Norihan Md Ariffin (Head)  
Prof. Dr. Halimah Mohamed Kamari  
Prof. Dr. Japar Sidik Bujang  
Prof. Dr. Leong Wah June  
Prof. Dr. Yap Chee Kong  
Prof. Dr. Zulkarnain Zainal  
Assoc. Prof. Dr. Geetha Annavi  
Assoc. Prof. ChM. Dr. Haslina Ahmad  
Dr. Nor Kamilah Sa'at

### **Secretariat**

Assoc. Prof. Dr. Geetha Annavi (Head)  
Ts. Dr. Muhammad Kashfi Shabdin  
Dr. Shahrizim Zulkifly  
Dr. Wan Mohd Syazwan Wan Solahudin  
Norzaina Darus

### **Academy of Science Malaysia Committee Members**

Dharshene Rajayah (Head)  
Abdul Rahim Ismail  
Nurul Farhana Mohd Farizah  
Wan Norfatin Munirah Wan Yusoff  
Vinotheni Rajendran  
Najib Mohd Idris  
Muhammad Effandie Nordin  
Saiful Suhairi Suarni  
Miriam Hairun

# PROGRAMME SCHEDULE

## Day 1 | Tuesday, 13<sup>th</sup> September 2022 | Malaysia Time (GMT+8)

Time	Agenda																												
09.00 – 09.30	Registration for World Forum and International Conference																												
09.30 – 10.00	<b>Welcome Speech &amp; Opening Ceremony</b> <ul style="list-style-type: none"> <li> <b>Prof. ChM. Dr. Mohd Basyaruddin</b>                      Chairperson of World Forum for Women in Science, Malaysia 2022 and the 7<sup>th</sup> International Conference for Women in Science Without Borders                 </li> <li> <b>Prof. Dr. Amal Amin</b>                      Founding Honorary Chair of World Forum for Women in Science and Women in Science Without Borders                 </li> <li> <b>Prof. Dato’ Dr. Mohd Roslan Sulaiman</b>                      Vice Chancellor of Universiti Putra Malaysia                 </li> </ul>																												
10.00 – 10.45	<b>Keynote 1: Aerosols and HoPE-for Health of People and Earth</b> <b>Speaker: Prof. Dr. Chia C. Wang</b>																												
10.45 – 11.30	<b>Keynote 2: Gender Issues and the Philippine STEM Pipeline</b> <b>Speaker: Prof. Dr. Gladys Nivera</b>																												
11.30 – 11.45	Break																												
11.45 – 13.15	<b>Parallel Session I</b> <table border="1"> <thead> <tr> <th>Session IA</th> <th>Session IB</th> <th>Session IC</th> <th>Session ID</th> </tr> </thead> <tbody> <tr> <td>FAS-O-01</td> <td>ET-O-01</td> <td>MSS-O-01</td> <td>ES-O-01</td> </tr> <tr> <td>FAS-O-02</td> <td>ET-O-03</td> <td>MSS-O-02</td> <td>SS-O-01</td> </tr> <tr> <td>FAS-O-03</td> <td>ET-O-04</td> <td>MSS-O-03</td> <td>SS-O-02</td> </tr> <tr> <td>FAS-O-04</td> <td>ET-O-05</td> <td>MSS-O-04</td> <td>SS-O-03</td> </tr> <tr> <td>FAS-O-05</td> <td>ET-O-06</td> <td>MSS-O-05</td> <td>SS-O-04</td> </tr> <tr> <td>FAS-O-06</td> <td></td> <td>MSS-O-06</td> <td></td> </tr> </tbody> </table>	Session IA	Session IB	Session IC	Session ID	FAS-O-01	ET-O-01	MSS-O-01	ES-O-01	FAS-O-02	ET-O-03	MSS-O-02	SS-O-01	FAS-O-03	ET-O-04	MSS-O-03	SS-O-02	FAS-O-04	ET-O-05	MSS-O-04	SS-O-03	FAS-O-05	ET-O-06	MSS-O-05	SS-O-04	FAS-O-06		MSS-O-06	
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FAS-O-06		MSS-O-06																											
13.15 – 14.00	Break																												
14.00 – 14.45	<b>Poster Presentation</b> <table border="1"> <thead> <tr> <th>Session 1</th> <th>Session 2</th> </tr> </thead> <tbody> <tr> <td>FAS-P-01, FAS-P-02, FAS-P-03, FAS-P-04, FAS-P-05, FAS-P-06</td> <td>FAS-P-07, FAS-P-08, FAS-P-09, OT-P-01, OT-P-02</td> </tr> </tbody> </table>	Session 1	Session 2	FAS-P-01, FAS-P-02, FAS-P-03, FAS-P-04, FAS-P-05, FAS-P-06	FAS-P-07, FAS-P-08, FAS-P-09, OT-P-01, OT-P-02																								
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14.45 – 15.00	Break																												

15.00 – 16.30	<b>World Forum for Women in Science: Research Partnership</b> <ul style="list-style-type: none"> <li>• <b>Panelist 1: HRH Princess Sumaya El-Hassan</b></li> <li>• <b>Panelist 2: Prof. Emerita Datuk Dr. Asma Ismail</b></li> <li>• <b>Panelist 3: Prof. Dr. Amal Amin</b></li> <li>• <b>Moderator: Prof. Dato' Dr. Rashila Ramli</b></li> </ul>																				
16.30 – 16.45	Break																				
16.45 – 17.30	<b>Keynote 3: Gender Inequality and Women - A Perspective from Germany</b> <b>Speaker: Prof. Dr. Peter Mayer</b>																				
17.30 – 18.30	<b>Parallel Session II</b> <table border="1"> <thead> <tr> <th>Session IIA</th> <th>Session IIB</th> <th>Session IIC</th> <th>Session IID</th> </tr> </thead> <tbody> <tr> <td>FAS-O-07</td> <td>ET-O-07</td> <td>MSS-O-07</td> <td>OT-O-01</td> </tr> <tr> <td>FAS-O-08</td> <td>ET-O-08</td> <td>MSS-O-08</td> <td>OT-O-02</td> </tr> <tr> <td>FAS-O-09</td> <td>ET-O-09</td> <td>MSS-O-09</td> <td></td> </tr> <tr> <td>FAS-O-10</td> <td>ET-O-10</td> <td>MSS-O-10</td> <td></td> </tr> </tbody> </table>	Session IIA	Session IIB	Session IIC	Session IID	FAS-O-07	ET-O-07	MSS-O-07	OT-O-01	FAS-O-08	ET-O-08	MSS-O-08	OT-O-02	FAS-O-09	ET-O-09	MSS-O-09		FAS-O-10	ET-O-10	MSS-O-10	
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18.30	End of Day 1																				

**Day 2 | Wednesday, 14<sup>th</sup> September 2022 | Malaysia Time (GMT+8)**

Time	Agenda																												
09.00 – 09.30	Registration for World Forum and International Conference																												
09.30 – 11.00	<b>Parallel Session III</b> <table border="1"> <thead> <tr> <th>Session IIIA</th> <th>Session IIIB</th> <th>Session IIIC</th> <th>Session IIID</th> </tr> </thead> <tbody> <tr> <td>FAS-O-11</td> <td>FAS-O-17</td> <td>MSS-O-11</td> <td>ET-O-11</td> </tr> <tr> <td>FAS-O-12</td> <td>FAS-O-18</td> <td>MSS-O-12</td> <td>ET-O-12</td> </tr> <tr> <td>FAS-O-13</td> <td>FAS-O-19</td> <td>MSS-O-13</td> <td>ET-O-13</td> </tr> <tr> <td>FAS-O-14</td> <td>FAS-O-20</td> <td>MSS-O-14</td> <td>ET-O-14</td> </tr> <tr> <td>FAS-O-15</td> <td>FAS-O-21</td> <td>MSS-O-15</td> <td>ET-O-15</td> </tr> <tr> <td>FAS-O-16</td> <td>FAS-O-22</td> <td>MSS-O-16</td> <td>ET-O-16</td> </tr> </tbody> </table>	Session IIIA	Session IIIB	Session IIIC	Session IIID	FAS-O-11	FAS-O-17	MSS-O-11	ET-O-11	FAS-O-12	FAS-O-18	MSS-O-12	ET-O-12	FAS-O-13	FAS-O-19	MSS-O-13	ET-O-13	FAS-O-14	FAS-O-20	MSS-O-14	ET-O-14	FAS-O-15	FAS-O-21	MSS-O-15	ET-O-15	FAS-O-16	FAS-O-22	MSS-O-16	ET-O-16
Session IIIA	Session IIIB	Session IIIC	Session IIID																										
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FAS-O-16	FAS-O-22	MSS-O-16	ET-O-16																										
11.00 – 11.15	Break																												
11.15 – 12.45	<b>World Forum for Women in Science: Leadership &amp; Entrepreneurship</b> <ul style="list-style-type: none"> <li>• <b>Panelist 1: Prof. Dato' Dr. Adeeba Kamarulzaman</b></li> <li>• <b>Panelist 2: Dr. Agata Blasiak</b></li> <li>• <b>Moderator: Assoc. Prof. Dr. Normi Mohd Yahaya</b></li> </ul>																												
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14.30 – 15.15	<b>Keynote 4: Citizen Science and Gerontology – Participatory Methods for Ageing Research</b> <b>Speaker: Prof. Dato’ Dr. Tengku Aizan Tengku Abdul Hamid</b>
15.15 – 16.00	<b>Keynote 5: Reimagining the Future of Education, from Personalised to Integrated Curriculum</b> <b>Speaker: Assoc. Prof. Dr. Wan Zuhainis Saad</b>
16.00 – 19.00	<b>Special Forum by Mustafa Science and Technology Foundation (MSTF): The Role of Female Scientists in Developing STI Ecosystem</b> <ul style="list-style-type: none"> <li>• <b>Session 1: Unity of Innovative and Technologist Women (16:00 – 17:30)</b></li> <li>• <b>Session 2: Women in Science Leadership (17:30 – 1900)</b></li> </ul>
19.00	End of Forum and Conference

**Day 3 | Thursday, 15<sup>th</sup> September 2022 | Malaysia Time (GMT+8)**

Time	Agenda
09.00 – 09.30	Registration for Workshop
09.30 – 12.30	<b>Promoting Leadership and Resilience Through Partnership and Entrepreneurship</b> <ul style="list-style-type: none"> <li>• <b>The Journey of Bringing an Innovation to The Market</b></li> <li>• <b>Protecting Your Innovation</b></li> <li>• <b>Technology Transfer for Your Innovation</b></li> </ul>
12.30 – 14.00	Break
14.00 – 17.00	<b>Value Creation: The Secret to Building Successful Innovations</b>
17.00	End of Workshop

# PANELISTS, MODERATORS, KEYNOTE SPEAKERS & COACH

## World Forum for Women in Science

### HRH Princess Sumaya bint El Hassan

Research Partnership – Panelist 1

She is a leading advocate for science as a catalyst for change. She is a dedicated science enabler in the Arab World where so many challenges urgently require science-based solutions. The Princess has worked for over a decade to help foster an environment for home-grown solutions to pressing issues facing the region. HRH is President of the Royal Scientific Society (RSS), Chair of the Princess Sumaya University for Technology (PSUT), and Vice-Chair of the Jordan Museum. In June 2017, the Director-General of UNESCO appointed HRH as UNESCO Special Envoy for Science for Peace. This unique honour recognises HRH's efforts to combine science and research with cultural heritage, to foster peace, opportunity, and prosperity. Princess Sumaya was Chair of World Science Forum 2017, which was held in Jordan under the theme of 'Science for Peace'. This biennial conference was founded in 1999 and is the leading global forum for scientists and policymakers. WSF 2017 marked its first time in the Middle East. She has dedicated herself to facilitating research opportunities and outputs in Jordan. She is the founder of the Advanced Research Centre at the RSS and has been a supporter of the SESAME project from its initiation to the present. HRH is Chair of the Board of the Amman Baccalaureate School. She believes strongly in the importance of creative education from the earliest stages to drive positive change in the region.



**Prof. Emerita Datuk Dr. Asma Ismail**

## Research Partnership – Panelist 2

She is a woman of many firsts. Besides being the first female Vice-Chancellor of Universiti Sains Islam Malaysia (USIM) and Universiti Sains Malaysia (USM), she is also the country's first female Director-General of Higher Education, first female President of Academy of Sciences Malaysia and the first female to be Chairperson of the Malaysian Qualifications Agency (MQA) and as the Ibn Sina Chair for Medicine at the International Islamic University Malaysia. She is also the first woman to be the National Science Advisor to the country and to the Prime Minister. She has a BSc (Biology) from the University of Nevada, Reno, USA, M.A. (Microbiology) from Indiana University, USA and a Ph.D (Cellular and Molecular Biology) from University of Nevada, Reno, USA. She also received her Honorary Doctor of Science from the University of Glasgow, Honorary Degree Doctor of the University, Keele University and Honorary Doctorate in Literature from Kyoto University of Foreign Studies (KUFS). She was conferred Professor Emerita status by Universiti Sains Malaysia in Dec. 2021 and awarded *Tokoh Akademik Negara* (National Academic Laureate), the most prestigious national award to an academic in March, 2022. She also received the Murrabi Award from the International Islamic University Malaysia in July, 2022. Her research impact includes attaining 16 patents and commercialized worldwide, the rapid diagnostic test for typhoid called *TYPHIDOT* which was advocated by WHO. She had won numerous awards and recognitions for her achievements at National and International levels and to date has shared her knowledge via more than 540 invited talks and more than 80 keynotes at national and global levels. She was elected to the Academy of Sciences Malaysia in 2003, The Academy of Sciences for the Developing World (TWAS) in 2010, The Islamic World Academy of Sciences in 2016 and was elected as Honorary Member of the Iranian Academy of Medical Sciences in 2017. Her passion for higher education and science development ecosystem gained international recognition and was elected to be a member of several international boards including the Board of Governors for Commonwealth of Learning (COL) based in Vancouver, Canada, member of the Directing Board and Executive Committee for Islamic Citation Center based in Shiraz, Iran for the OIC, Member of the College of Fellows, Keele University, Governing Advisory Board Member for Ritsumeikan Asia Pacific University, Japan and Co-Chair, Inter Academy Partnership Board based in Italy. At the national level she serves as a board member for CREST (Collaborative Research in Engineering, Science and Technology) Center to move STI based companies in the country since 2017, member of the National Science Council chaired by the Prime Minister and the High-Tech Nation Council chaired by the Minister of MOSTI (Ministry of Science, Technology and Innovation) and member of the National Action Council on Shared Prosperity Vision under the



Distinguished Educator category. Based on her experience and expertise, she served on the selection panel for the international awards and recognitions such as TWAS membership (Medical and Health Sciences) and the Islamic Development Bank (IDB) Prize for Women’s contribution to development. At the national level she served as a jury panel for the Merdeka Award, Rhodes Scholarship to select Malaysians to Oxford University, the Loreal Women in Science Award, the *Anugerah Akademik Negara* (National Academic Award), MOHE Entrepreneurial Award (MEA) and Best Managed Companies, Asia by Deloitte. Her landmark contributions to Malaysia’s higher education system include the establishment of the prestigious National Academic Award (*Anugerah Akademik Negara*), the establishment of Research Universities in Malaysia and in co-helming the development and implementation of The Malaysian Education Blueprint (Higher Education) 2013-2025.

**Prof. Dr. Amal Amin**

Research Partnership – Panelist 3

Dr. Amal Amin is a professor for polymers/nanotechnology at national research center-Egypt. She studied in, worked at and travelled to +30 countries including Germany (PhD-DAAD), USA, France, etc. She has distinguished scientific achievements including publications, projects, teaching, awards, etc. She was cofounder and executive committee member of the global and Egyptian young academies (GYA, EYAS). She was president, cofounder and coordinator of the Egyptian society and Arab network for advanced materials and nanotechnology. She was TWAS young affiliate, TWAS-AAAS science diplomacy alumni and member of TWAS-TYAN and other reputable organizations. She actively participated at meetings of WEF, IAP, TWAS, GYA, WSF, AAAS, UNESCO, INGS, NASAC, etc. She is a founding chair of women in science without borders’ (WISWB) initiative, World forum for women in science series and youth science forum. In December 2020, she cofounded Northern African Research and Innovation Management Association (NARIMA) initiative. Dr Amal is a founder for science diplomacy for the future initiative (2021) and executive committee member of (science in Exile) which is a global initiative to support refugee scientists and at-risk scholars. In 2021, Dr Amal has received outstanding women in tech award of Africa (Africa) and the award of science by women provided by women for Africa foundation (Spain). Recently, in 2021, Dr Amal has been selected in catalyst 2030 global initiative. In 2021, Dr Amal was selected as member of board of directors of ORCID. Dr Amal achievements were featured in women in science-inspiring stories from Africa (NASAC-IAP-2017), SAYAS Success stories of young scientists (2016), scientific African (2019), nature (2020), the next truth (2018, 2020), NASAC book on (Women and sustainable development in Africa-2020), Royal





society for chemistry (2020), and others. Dr Amal has several scientific and societal activities on national and international levels. She is especially interested in science communication, simplified science, increasing public awareness/literacy for science, science advice/diplomacy, innovation, science policy, science education, etc.

**Prof. Dato’ Dr. Rashila Ramli**

Research Partnership – Moderator

She is Principal Fellow, Professor of Political Science, Between 2013-2018, she was Director at the Institute of Malaysian and International Studies (IKMAS,) Universiti Kebangsaan Malaysia (UKM), and Visiting Principal Fellow at the UNU-International Institute of Global Health. Her areas of specialization are Human Security, Gender dan Development and Public Policy. Her research areas are on Human Security, Promoting Social Inclusion through SDGs and Public Policies. From 2019, she has worked closely with the All-Party Parliamentary Group on SDGs (APPGM-SDG) Parlimen Malaysia. Prof. Rashila holds the position of Deputy President of the Malaysian Social Science Association (PSSM), Co-Chair, Malaysia SDG Academic Network, member of the ISIS Council of Security Cooperation in Asia Pacific and, former Council Member of the Asia Pacific Forum for Women, Law and Development (APWLD). Her work on the Global Agenda 2030 Sustainable Development Goals has been recognized by UNESCO and the APPGM-SDG Parlimen Malaysia. Within UKM, she had received the awards of Anugerah Bitara on Internationalization (2012) and Anugerah Bitara on Research (2021) from UKM. In 2021, Prof. Rashila received several awards: Anugerah Buku Negara, Anugerah MAPIM and the Asia Pacific Lifetime Achievement Award for Leadership and ASEAN Sustainability.



**Prof. Dato' Dr. Adeeba Kamarulzaman**

Leadership & Entrepreneurship – Panelist 1

She is a Professor of Medicine and Infectious Diseases at Universiti Malaya and an Adjunct Associate Professor at Yale University. She was the Dean of the Faculty of Medicine, UM from 2011 to 2019. Professor Adeeba has played a leading role in the response to the HIV epidemic in Malaysia and globally and is currently the Chairman of the Malaysian AIDS Foundation and immediate Past President of the International AIDS Society, is a member of the WHO Science Council. Her achievements have been recognised through several national and international awards including the Merdeka Award and an Honorary Doctor of Laws from her alma mater, Monash University for her contributions to medicine and as a health advocate.



**Dr. Agata Blasiak**

Leadership & Entrepreneurship – Panelist 2

She is a developer and implementer of digital health technologies. She has co-developed several digital platforms for decentralized healthcare that are in the process of being clinically validated and has collaborated with leading health start-up innovators. Beyond technical development, Dr. Blasiak's research areas of interest are behavioural and societal aspects of digital health solutions as catalysts for the holistic translation of inventions into innovations that have a positive impact on patients. She has received multiple awards for her work, including MIT Technology Review recognition as a member of the Innovators Under 35 Asia Pacific 2021 (MIT TR35). Before venturing into the digital health space, Dr. Blasiak was a neuroengineer researcher and focused her efforts on molecular neuroengineering and developing neuro-implants. She holds a B.Sc.Eng. in Biotechnology from Warsaw University of Technology, Poland, and a Ph.D. in Bionanointeractions from University College Dublin, Ireland.



**Assoc. Prof. Dr. Normi Mohd Yahaya**

Leadership &amp; Entrepreneurship – Moderator

She is currently an Associate Professor in the Department of Cell and Molecular Biology, Faculty of Biotechnology and Biomolecular Sciences, Universiti Putra Malaysia and is one of the principal investigators of Enzyme and Microbial Technology Research Center. She graduated from Universiti Sains Malaysia with a joint PhD with Institute of Physical and Chemical Research (RIKEN), Saitama, Japan, in Molecular Biology, specializing in Protein Engineering. She received her postdoctoral training in structural biology, specifically in protein NMR at Université de Lorraine, France. Her current research interest lies in solving the structures



and functions of proteins related to antimicrobial resistance (AMR), as well as designing and characterization of inhibitory peptides in circumventing AMR. She is a recipient of the L’Oreal-UNESCO for Women in Science Award 2015, 44th IUPACWorld Chemistry Congress 2013 Young Scholar Award and American Chemical Society PACIFICHEM Young Scholar Award 2010. She was one of the selected Young Scientists for the 60th Meeting of Nobel Prize Winners with Young Scientists in Lindau, Germany, 2010. She is a member of the Young Scientists Network-Academy of Sciences Malaysia, Malaysian Society for Biochemistry and Molecular Biology, Biochemical Society UK.

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**Special Forum by Mustafa Science and Technology Foundation  
(MTSF): The Role of Female Scientists in Developing STI Ecosystem**

**Session 1: Unity of Innovative and Technologist Women**



**Maha Letchumy Arujanan**  
Moderator



**Dr. Ana Persic**  
Executive Secretary of the L'Oréal-  
UNESCO For Women in  
Science Programme



**Prof. Dr. Jackie Ying**  
Agency for Science, Technology and  
Research (ASTAR)



**Dr. Rike Yudianti**  
National Research and Innovation  
Agency Indonesia



**Dr. Orzala Nemat**  
SOAS University Afghanistan-Pakistan



**Dr. Ruslinda Rahim**  
National Nanotechnology Centre under  
the Ministry of Science, Technology and  
Innovation of Malaysia

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**Session 2: Women in Science Leadership**



**Esther Nakkazi**  
Moderator



**Datin Paduka Setia**  
**Dato' Prof. Dr. Aini Ideris**  
Universiti Putra Malaysia



**Assoc. Prof. Dr. Cheah Pike See**  
Universiti Putra Malaysia



**Prof. Dr. Ilkay Erdogan Orhan**  
Gazi University-Turkey



**Prof. Dr. Riffat Naseem Malik**  
Quaid-i-Azam University/Pakistan

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## The 7<sup>th</sup> International Conference for Women in Science

### Prof. Dr. Chia C. Wang

Keynote Speaker 1

She received her Ph.D. degree in Chemistry at University of California, Berkeley, and is the founding director of Aerosol Science Research Center at National Sun Yat-sen University, Taiwan. Prof. Wang's research involves: (1) developing novel aerosol instrumentation to advance the fundamental physicochemical properties of aerosols, (2) impacts of aerosols to the atmospheric, oceanic and environmental ecosystem, (3) health effects of aerosols and aerosol inhalation therapy, and (4) regulation and removal of anthropogenic aerosols. Prof. Wang has taken the



leading role in establishing the Aerosol Science Research Center (ASRC) of NSYSU launched in 2016 and is currently the first and only aerosol-focused research center in Asia. Since the outbreak of COVID-19, Dr. Wang has dedicated into exploring the airborne transmission of virus-laden aerosols and aerosol precautionary measures to reduce the risk of airborne transmission of respiratory viruses.

#### **Aerosols and HoPE-for Health of People and Earth**

Aerosols, fine particulate matters suspended in the air, plays crucial roles in affecting the atmospheric chemistry and the public health. However, air pollution and various anthropogenic aerosols suspended in it, especially PM<sub>2.5</sub>, have posed enormous threats toward the environment ecosystem and have become the highest health risk factor. Since the outbreak of COVID-19, the role of virus-laden aerosols in transmitting viral diseases has also been confirmed, pointing out the necessities to implement aerosol precautionary measures to reduce the risk of airborne transmission of pathogen-laden aerosols. In the first part of the talk, I will address our recent efforts in developing aerosol spectroscopic approaches that have helped advance our understanding in the structures, energetic properties and chemical activities of aerosols relevant in the atmospheric and environmental sciences. In particular, I will share the latest research advances obtained from aerosol photoelectron spectroscopic, time-resolved vibrational spectroscopy, other aerosol experimental techniques, as well as theoretical calculation. In the second part of the talk, I will address some important aspects related with airborne transmission of respiratory viruses, and effective aerosol precautionary measures. From what we have learnt about airborne transmission of COVID-19 and other respiratory viral diseases, it is necessary for a paradigm shift by revising the conventional paradigms and implementing aerosol precaution measures to protect the public against airborne transmission. Implementing universal masking with proper mask material and good fit, emphasizing ventilation and airflows, adding air filtration with HEPA purifiers and UV disinfection, are crucial strategies

in mitigating the risk of airborne transmission and assuring a satisfactory air quality free of pathogen. Finally, I will share the current endeavors at the Aerosol Science Research Center, National Sun Yat-sen University in Taiwan, R.O.C. in promoting the aerosol research, innovative education, industrial collaboration toward a more sustainable and healthier future for people and mother Earth.

**Prof. Dr. Gladys Nivera**

Keynote Speaker 2

She is a professor in mathematics at the Philippine Normal University, Manila. She was the Associate Dean of the Faculty of Science, Technology and Mathematics in 2013-2020 and the Mathematics Department Head in 2011 -2013. She obtained a Ph.D. in Science Education (Mathematics) from De La Salle University as a DOST scholar and was a PROBE Fellow in Mathematics at the Queensland University of Technology. As a two-term presidential appointee in the Teacher Education Council, she was involved in policy making in teacher education at the national level. Her most recent publications are “STEM Teacher Education in the Philippines” in Routledge’s STEM Education from Asia: Trends and Perspectives (2022) and “Futures for Post-Pandemic Mathematics Teacher Education: Responsiveness and Responsibility in the Face of a Crisis” in ZDM-Mathematics Education (2022). She is the lead author and coordinator of a K to 10 Mathematics textbook series.



**Gender Issues and the Philippine STEM Pipeline**

This presentation explores the connections between gender issues and the STEM Pipeline in the Philippines. It begins with the UNESCO Gender Report 2022, particularly the findings relating to STEM education. It delves into the Philippines gender report card and analyzes it in light of the challenges posed by the pandemic. Then, it presents the results of a Philippine STEM pipeline study which identifies the factors that strengthen or weaken the pipeline. Finally, it reflects on how to strengthen STEM education through increased women's representation in science.



**Prof. Dr. Peter Mayer**

Keynote Speaker 3

He is Professor of International Economics. After obtaining his doctorate degree from Goethe University in Frankfurt, he worked for a German Non-Governmental Organization in Ghana (1994-1997) and South Korea (1997-2001) before he joined the University of Applied Sciences in Osnabrück. He served in various functions in higher education management. He was Vice-President for International Affairs, he was dean, he was a member of the University Senate. From 2007 – 2021 he was the head of the International Deans Course, a training program for deans from Africa and Asia. He currently manages a program to push the frontiers of research management at 25 universities in the Mekong-region. In his research he focusses on regional integration and on higher education management. He was the author and the editor of a series of publications on higher education management.



**Gender Inequality and Women – A Perspective from Germany**

The presentation starts with an identification of the problem of gender inequality in science. In the second part the actors who are called upon to address the problem are presented. Nine ways of addressing the problem of low representation of women in science are presented. The presentation ends with four case studies and some lessons learnt.

**Prof. Dato’ Dr. Tengku Aizan Tengku Abdul Hamid**

Keynote Speaker 4

She is a pioneer in gerontology education and research in Malaysia and the region. She received her PhD degree from Iowa State University, Ames in 1992. She was responsible for the establishment of a multidisciplinary research entity, the Institute of Gerontology in 2002 which later changed its name to the Malaysian Research Institute on Ageing (MyAgeing) upon the authorisation of the Cabinet in 2015. MyAgeing is anchored in Universiti Putra Malaysia. Tengku Aizan is an active researcher and writer, involved in more than 60 projects funded by national and international agencies as Principal Investigator and Co-Investigator. Her Scopus H-index is 23. She sits in national and international committees related aged and ageing. She is a director in the Private Pension Administration and a fellow of Academy Science Malaysia.



**Citizen Science and Gerontology – Participatory Methods for Ageing Research**

Citizen science has a long history and in recent years it has been given a new lease of life as a promising approach towards the democratization of knowledge and research. With an expanding legitimacy, citizen science is being adopted in diverse fields of inquiry such as ecology, health and medicine, psychology, genetics, statistics, engineering, and computer sciences, including gerontological studies. Advancements in information technology has enabled members of the lay public to participate in various stages of the scientific process through effective collaboration. In Malaysia, citizen science has taken root in biodiversity-related environmental and conservation projects, but there are so much untapped potentials remain as active public involvement, crowdsourced and participant-led research can result in greater sustainability in terms of impact and adoption. Although citizen science and gerontological research in Malaysia is comparatively nascent, we are witnessing many novel approaches that promote multisector stakeholder engagement in studies on healthy ageing, age-friendly communities, and well-being in later life. Citizen science approaches has to be contributory, collaborative or co-productive/created, and scientists, especially social scientists, need to address localised issues and focus on its enriching outcomes. Citizen science is still a developing field, and there are numerous epistemological questions, as well as practical concerns of equitability, power relations, and ownership. There is little doubt that the adoption of citizen science methods can address complex issues of old age and ageing in Malaysia, and the scientific community must embrace participatory and collaborative approaches for the betterment and well-being of older persons in the country.

**Assoc. Prof. Dr. Wan Zuhainis Saad**

Keynote Speaker 5

She is an associate professor in Microbiology. She is a strong advocate of empowering learners in experiential learning . Winner of the National Academic Award (Teaching Award – Pure Science Cluster) 2018. Awarded patents on her microbiological research. She is also an educational technology enthusiast. She practices learning Microbiology with technology. She received copyrights for E-learning products and introduced innovative approach in teaching and learning such as Virtual Microbes, Awesome Microbes Carnival and many more. She has also developed innovative academic excellence initiatives including Experiential Learning and Competency Based Education Landscape (EXCEL), Service Learning Malaysia University for Society (SULAM), Future Workforce Engagement Series (ForCES).



### **Reimagining the Future of Education, from Personalised to Integrated Curriculum**

Flexible pathways to skills and credentials that prepare students for remote and digital jobs can pave the way for talent to rise from anywhere in the world. In the process, higher education providers should not only offer the infrastructure and environment for learning but also curate the sources of knowledge and any subskills necessary. One of the measures that will get learners' attention is personalised learning that offers highly relevant, custom content that aligns better in helping them accomplish their goals and career progression. It puts the learner in control of their learning process while opening up a wider plethora of possibilities supported by integrated curricula that provide flexibility and immersive learning experiences. With the ability to personalize and offer learning journeys from a distance, Learning for All, Diversity, Equity and Inclusion Focus, Mobile Apps for Learning are an "absolute must to invest on" in 2022. Due to these developments, the future of education should see new ways of teaching and learning that will focus on learner experiences.

## Workshop on Entrepreneurship

### **Prof. Ts. Dr. Suraya Abdul Rashid**

#### The Journey of Bringing an Innovation to The Market – Panelist 1

She is a Professor at the Department of Chemical and Environmental Engineering, Faculty of Engineering, Universiti Putra Malaysia. She received her bachelor's degree in Chemical Engineering from Nottingham University, United Kingdom in 2000. She then pursued her PhD in Chemical Engineering focusing on Nanotechnology from Imperial College London, United Kingdom in 2004. She is a Chartered Engineer under the Institution of Chemical Engineers (IChemE) and a nanotechnologist under the Malaysia Board of Technologist (MBOT). She currently serves as the Deputy Director at the Institute of Nanoscience and Nanotechnology (ION2), Universiti Putra Malaysia. Her research interests revolve around carbon nanomaterials synthesis and processing for various applications. She is also the founder of a start-up company (Qarbotech Sdn. Bhd.) where she serves as Chief Scientist. Qarbotech is currently commercializing her research product based on carbon nanotechnology; a novel photosynthesis enhancer for the agriculture and horticulture industry.



### **Assoc. Prof. Dr. Zahira Mohd. Ishan**

#### Protecting Your Innovation – Panelist 2

She is an Associate Professor at the School of Business and Economics, Universiti Putra Malaysia (UPM). She obtained a degree of Laws (Hons.) from the International Islamic University Malaysia in 1994, a Master of Laws in Commercial and Corporate Law from the University of London in 1996, and a PhD in Business Law from UPM in 2008. She also attended certified courses relevant to technology transfer managers, namely the series of Technology Transfer Workshop under the Alliance of Technology Transfer Professionals (ATTP); the JPO/IPR Training Course for IP Trainers 2018; the Licensing Academy by PIPRA and UC Davis School of Law 2014; SRI's Five DOI 2014; SRI's Venture Plan Essentials Boot Camp 2013, and Professional South East Asian Patent Drafting Course(SEAD) 2013, apart from several other seminars and courses on technology transfer and commercialization. She was also a Professional Trainer (MIM-CPT) (Malaysian Institute of Management) in 2010-2012.



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Dr Zahira joined UPM as a tutor in 1994, and as a permanent academic staff in 1996. She has the experience teaching Business Law, Company Law, International Trade Law, Franchising Law and Intellectual Property (IP) Law courses and her research interest is in legal business relation and IP. She was involved in the development of IP in UPM in year 2000-2004 and was appointed as UPM's expert Intellectual Property Panel Evaluator since 2010. Dr Zahira was later appointed as a Deputy Director at the Intellectual Property Division of Putra Science Park (PSP) in 2013-2018 for three consecutive terms and reappointed for another term from 15 Sept. 2019 until 14 Sept. 2022. As a Deputy Director, she managed the UPM's intellectual property protection process and instilled the IP and IP rights awareness among members of the university. She also reviewed and advised IP matters in research collaboration, joint ownership, licensing and assignment deals. Dr. Zahira speaks on the issues of intellectual property rights and intellectual property management in seminars and workshops at the national and international levels. At the national level including for the government agencies (National Institute for Public Administration (INTAN), Department of Irrigation and Drainage, and Public Works Department), universities, polytechnics, and community project (FELDA). At the international level including for INSTP Workshop in Iran, International Centre for Diarrhoeal and Disease Research (ICDDR) Bangladesh, Botswana Accountancy College (BAC) and University Brunei Darussalam (UBD). She had also actively participated in a series of the World Intellectual Property Organization (WIPO) regional meetings for the establishment of the Technology and Innovation Support Centre (TISC) in Malaysia and in UPM as well as the Enabling the IP Environment (EIE) Project. Her contribution to IP management in UPM includes bringing up the university's name by winning the National IP Award for the Best Organization in IP Management in 2014, 2016, 2017 and 2018. Dr Zahira also actively involved in a non-profit association for the technology managers of Malaysia, namely the Innovation and Technology Managers Association (ITMA) Malaysia since 2015, where she held the post of Secretary of ITMA Malaysia for the 2016/2017 and 2017/2018 sessions, Assistant Secretary for the 2018/2019 session, and as Committee Member for 2020/2021 session. She was also appointed as a member of Franchise Advisory Board (2007-2009) and became a member of Malaysian Franchise Association (2004-2013; 2019-2021).

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**Prof. Dr. Samsilah Roslan**

Technology Transfer for Your Innovation – Panelist 3

She has completed Stanford Research Institute - SRI International trainings (2009-2011) and the IP and Technology Commercialisation Program at the Licensing Academy, School of Law, UC Davis in 2013. Between 2013-2019, Samsilah Roslan was appointed as the Director of Putra Science Park (PSP), UPM. Working on a hybrid model of sciencepark and TTO, PSP has managed to become the nucleus at the university for scientists, researchers, industrial collaborators and funders to develop many technology ventures. Samsilah has led more than 200 negotiations with multinationals, large corporations and SMEs. Apart from



commercialisation achievements, UPM was named six times winner of national best organization in intellectual property management by MyIPO. Samsilah was also involved in the setting up of Innovation and Technology Managers Association (ITMA) in Malaysia, and is currently the president. She and her team from ITMA have conducted trainings to more than 500 innovation and technology managers from Malaysian public and private universities, polytechnics, as well as other local agencies. She has also conducted international trainings funded by IDB which was attended by participants from various OIC countries. In 2016, she was appointed as consultant to Ministry of Education Malaysia on the OIC Collaborative Effort in Commercialization and Entrepreneurship Education (OIC-CECE). She was also appointed by MESTECC/MOSTI as the Head of National TechVenture Blueprint for Malaysia (2019), scientific committee member of International Teleconference on Technology and Policy for Supporting Implementation of COVID-19 Recovery Plan in Southeast Asia (ITTP-COVID19) 2021, steering committee of Malaysia Social Innovation Accelerator Programme (MySIAP) 2021, member of working group, Human Capital & Research Pillar, Global Innovation Index (2021-2025), Research, Development, Innovation, Commercialisation and Economy (RDICE) Roadmap Study (2022), Malaysia Open Science Platform (MOSP) Policy and Guideline 2021, member, Board of Governance (BOG) for Malaysia Laboratories for Academia-Business Collaboration (MyLAB) 2018-2023. Samsilah is a registered technology transfer professional (RTTP) and is currently one of the council member of Alliance of Technology Transfer Professionals (ATTP), Netherlands. Between 2019-2021, she was appointed as the Dean at the Faculty of Educational Studies, UPM and is currently serving as a professor at the university.

**Assoc. Prof. Dr. Wan Nurhayati Wan Ab. Rahman**

Moderator

She is a Deputy Director (Promotion and Commercialisation) of Putra Science Park (PSP) Universiti Putra Malaysia (UPM) and an Associate Professor at the Faculty of Computer Science and Information Technology, UPM. Her academic experience since 2000 in the field of Software Engineering and Information System. She has contributed as tutor, lecturer, supervisor for more than 65 bachelor and master projects, and PhDs. She has published in journals, conferences and books in the research field. She has been actively involved in the promotion and commercialisation of UPM’s innovations for eight years, starting as the innovation champion and InnoHub coordinator. InnoHub, the first market validation hub for UPM's technologies and innovations. InnoHub has accepted 83 innovation projects since 2014 till 2021. Currently, there are 39 ongoing in-house startups being nurtured. Besides, 30 startup companies managed to secure a cumulative investment of RM18.3mil. She leads in UPM-industry-investor networking and matching, aimed at collaborating with all the key players in the commercialisation of the innovation ecosystem. To date, UPM has managed to commercialise 213 technologies with gross sales of RM70.5mil. Qualified and experienced in promotion and commercialisation management, she has conducted a series of training related to commercialisation of technology and innovation to provide exposure and technology transfer skills to different organisations and platforms. She is also frequently being invited as a panel and speaker at national and international seminars and events that cater issues on the university commercialisation and startup market validation.



**Mr. Adrian Joseph**

Business Model to Validate and Establish Your Start-Up – Coach

He is a practicing design thinker, innovator and business developer who is passionate about commercializing R&D solutions.. He first began his development journey while he was in university where he worked for a Singaporean technology startup during the SARS epidemic selling light activated disinfectant materials, He then co-invented and commercialized chemical coagulant with CCM Chemicals which is being used in Malaysian water treatment plants. Adrian spent the next 8 years in entrepreneur development, designing solutions and programmes for bringing scientific solutions to market. With Biotechcorp, Adrian setup several national level



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centers; including the Centre for Marker Discovery and Validation (CMDV), Malaysia's first plant and animal genomics Centre & the UPM Supercritical Fluid Centre (SFC). Adrian ran CMDV for 2 years bringing it to RM 1 million in sales. In 2013, Adrian co-founded InnoHub, UPM, Malaysia's first-of-its-kind university market validation program that has seen the creation of 83 startups to date. At the time of writing over RM 25 million funds have been raised. Adrian coaches and teaches design thinking. Adrian is also trained with Stanford Research Institute (SRI) and holds multiple certificates in business model designing and strategic innovation management. Adrian is currently a mentor at UPM InnoHub. Adrian is also co-founder of Biogenes Technologies, a Malaysian deep tech startup reinventing the way disease research and diagnostics kit development is done via its patented digital biotechnology solutions.

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# PRESENTATION SCHEDULE

## Parallel Session I

Session IA | Tuesday, 13<sup>th</sup> September 2022

Chairperson: Assoc. Prof. Dr. Geetha Annavi

Time	Registration ID	Session ID	Title and Authors
11.45-12.00	FAS-148	FAS-O-01	Effect of Nitrogen Application on Forage Yield and Quality in Locally Developed Sorghum for Ruminant Feed  <b>Nazatul Shima Naharudin</b> , Effa Yunos and Nurul Izzah Muhammad Azmin
12.00-12.15	FAS-180	FAS-O-02	The effect of microwave accelerating aging process on the physicochemical and textural properties of white rice ( <i>Oryza Sativa</i> L.)  <b>Aliah Zannierah Mohsin</b> , Munira Mohd Maasom, Iffah Nadhira Madzuki
12.15-12.30	FAS-572	FAS-O-03	Metagenomic insights into the prokaryotic communities associated with mangrove soils of Gazi Bay along the Kenyan coastline  <b>Grace Kinyanjui</b> and Eucharika Kenya
12.30- 12.45	FAS-671	FAS-O-04	Physicochemical and Aerodynamical Attributes of Docetaxel and Curcumin-loaded Nanoemulsion in Pulmonary Delivery  <b>Azren Aida Asmawi</b> , Norazlinaliza Salim and Mohd Basyaruddin Abdul Rahman
12.45-13.00	FAS-769	FAS-O-05	Assessment of Inter-Station Variation of Gasoline for Forensic Investigation by using GC-MS data and Principal Component Analysis  <b>Loong Chuen Lee</b> , Md Gezani Md Ghazi and Hukil Sino
13.00-13.15	FAS-748	FAS-O-06	Electrospun conducting polymer micro/nanofibers for biomedical applications  <b>Norizah Abdul Rahman</b>

**Session IB | Tuesday, 13<sup>th</sup> September 2022**

**Chairperson: Dr. Nor Kamilah Saat**

Time	Registration ID	Session ID	Title and Authors
11.45-12.00	ET-139	ET-O-01	Optimization of methylene blue adsorption parameters using modified spent mushroom substrate adsorbent prepared via microwave activation  <b>Nur Ayshah Rosli</b> , Mohd Azmier Ahmad and Mohamad Firdaus Mohamad Yusop
12.00-12.15	ET-489	ET-O-03	Extraction, Characterization, and Applications of Nano-Hydroxyapatite and Synthesis of Its Film Composites  Afia Subhani, <b>Anika Bushra</b> and Nafisa Islam
12.15- 12.30	ET-828	ET-O-04	Investigation of Energy Absorption Capabilities of Thin-Walled Aluminium Structure with Different Thickness  <b>Nuraini Abdul Aziz</b> and Iyad Mohamed
12.30-12.45	ET-835	ET-O-05	Epoxidized Bio-based Oil for Greener Ternary NR/BR/SSBR Rubber Blend Composites  <b>Nur Raihan Mohamed</b> , Nadras Othman, Raa Khimi Shuib and Muhamad Nur Iman Syafaat Din
12.45-13.00	ET-157	ET-O-06	The Hybrid Technique of Soils Stabilizing and Reinforcing using Lime and Coir Fiber  <b>Ainin Sofea Md Ya'asin</b> , Nik Norsyahariati Nik Daud

**Session IC | Tuesday, 13<sup>th</sup> September 2022**

**Chairperson: Assoc. Prof. Dr Norazak Senu**

Time	Registration ID	Session ID	Title and Authors
11.45-12.00	MSS-466	MSS-O-01	New Generalized Closed Concepts in Fuzzy Bitopological Spaces  Adem Kilicman and <b>Ahlam Alharbi</b>
12.00-12.15	MSS-189	MSS-O-02	Seventh-order Multi-step Runge-Kutta-Nyström Method for Integrating Special Second-order Ordinary Differential Equations  <b>Athraa Abdulsalam</b> , Norazak Senu, Zanariah Abdul Majid and Nik Mohd Asri Nik Long

12.15-12.30	MSS-241	MSS-O-03	Operation Matrix Method for Solving Slos Fractal-Fractional Differential Equations with Generalized Caputo Fractal-Fractional Derivative  <b><u>Aml Shloof</u></b> , Norazak Senu, Ali Ahmadian
12.30- 12.45	MSS-992	MSS-O-04	Developing a method of smoothing out pseudorandom numbers – trend generated by Blum-Blum Shub algorithm  <b>Mai Zurwatul Ahlam bt. Mohd Jaffar</b> and Lami Farah Lateef Joey
12.45-13.00	MSS-160	MSS-O-05	Nonstationary Daily Healthcare Stock Market Price using Non-transformed Dimensionality Reduction Technique  <b><u>Yusrina Andu</u></b> , Muhammad Hisyam Lee and Zakariya Yahya Algamal
13.00-13.15	MSS-101	MSS-O-06	Numerical Method for Solving Volterra Integro-Differential Equations with Delay  <b><u>Zanariah Abdul Majid</u></b> , Nur Auni Baharum and Norazak Senu

**Session ID | Tuesday, 13<sup>th</sup> September 2022**

**Chairperson: Dr. Wan Mohd Syazwan Wan Solahudin**

Time	Registration ID	Session ID	Title and Authors
11.45-12.00	ES-249	ES-O-01	The Academic Empowerment of Iraqi Female Undergraduate Students via Extracurricular Activities: Case Study  <b><u>Reem Abou Assi</u></b> , Ibrahim M. Abdulbaqi and Chan Siok Yee
12.00-12.15	SS-622	SS-O-01	The roles of multidimensional asset capitals to improve the well being of urban poor  <b><u>Nor Azlina Abu Bakar</u></b> , Harith Mohmmad Zin, <u>Aznida Azlan</u> , Faziawati Abdul Aziz, and Norsidah Ujang
12.15-12.30	SS-382	SS-O-02	Zero Waste Management Among Household: Examining the Personal and Situational Factors  <b><u>Zetty Aziza Ahmad</u></b> and Emy Ezura A. Jalil
12.30-12.45	SS-572	SS-O-03	Productivity of Local Beef Supply in Peninsular Malaysia

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			<b>Razida Hanem Mohd Radzil</b> , Hanny Zurina Hamzah, Shaufique Fahmi Ahmad Sidique and Anjas Asmara@Ab. Hadi Samsudin
12.45-13.00	SS-858	SS-O-04	Associativity of university women in masculinized professional spaces in the 19th and 21st centuries
			<b>Estefanía Pomajambo-Figueroa</b> , M.M

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## Poster Presentation

Session 1 | 14.00 – 14.45 | Tuesday, 13<sup>th</sup> September 2022

Chairperson: Assoc. Prof. Dr. Bimo Ario Tejo

Registration ID	Session ID	Authors	Title
FAS-209	FAS-P-01	Chooi Lin Phooi, <b>Elisa Azura Azman</b> and Roslan Ismail	Effect of Sandwich compost on the soil-plant nitrogen
FAS-554	FAS-P-02	<b>Nur Diyana Alyas</b> , Fadzilah Puteh, Koh Soo Peng, and Azlina Mansor, Rosliza Jajuli	Comparative evaluation of total phenolic content and antioxidant activities of Malaysian stingless bee <i>Heterotrigona itama</i> propolis extracts using different extraction approaches
FAS-864	FAS-P-03	<b>Anisah Jamaluddin</b> , Musaalbakri Abdul Manan, Dang Lelamurni Abdul Razak, Nur Yuhasliza Abd. Rashid, Amsal Abd. Ghani and Nurul Yuziana Mohd Yusof	Effect of <i>Aspergillus oryzae</i> -fermented broken rice and Brewers'rice on anti-melanogenic activity in co-culture of UVB-irradiated keratinocytes and melanoma
FAS-922	FAS-P-04	<b>Hussein M Rashid</b> , Fouad K Mohammad and Daniele Suzete Persike de Oliveira	Impact of type 2 diabetes mellitus on oxidative stress and on the activity of blood cholinesterase and its response to chemical inhibitors
FAS-398	FAS-P-05	<b>Vakgesri Muniandy</b> , Syafinaz Amin Nordin And Wan Nur Ismah Wan Ahmad Kamil	Antibiotic Susceptibility Profiles of Klebsiella SPP. Clinical Isolates from Hospital Pengajar Universiti Putra Malaysia (HPUPM)
FAS-471	FAS-P-06	<b>Nur Suraya Che Yaacob</b> , Nik Mohd Afizan Nik Abd. Rahman, Shahrul Ainliah Alang Ahmad and Yahaya M. Normi	Inhibition and Stability Analyses of Specially Designed Peptide Inhibitors Against Bleg-1 Evolutionary Divergent B3 Metallo- $\beta$ -Lactamase

**Session 2 | 14.00 – 14.45 | Tuesday, 13<sup>th</sup> September 2022**

**Chairperson: Dr. Nur Adilah Roslan**

Registration ID	Session ID	Authors	Title
FAS-975	FAS-P-07	<b>Reega Keshnee</b> , Neetoo Huda, Buys Elna, Soobhooroyen Anandavallee	Application of Predictive Food Microbiology to Assess the Growth Kinetics of <i>Staphylococcus aureus</i> in Cooked Yellowfin Tuna
FAS-751	FAS-P-08	<b>Laura Alicia Villalobos Rodríguez</b> and J. Efraín Ramírez Benítez.	Food intake, biochemical and oxidative stress markers in Mexican young overweight and obese adults.
FAS-126	FAS-P-09	<b>O.E. Ogunjinmi</b> , B.A. Oyebode, O. A. Anifowose and K.O. Ariori	Antioxidant Properties of Parquetina nigrescens Extracts and Their Effect on Diabetic Albino Rats Induced by Alloxan
OT-551	OT-P-01	<b>Farah Syahrain Roslan</b> , Nur Fadhilah Mokhtar, Suriana Sabri, Adelene Song Ai Lian, Wan Nur Ismah Wan Ahmad Kamil	Antimicrobial Activity Produce from <i>Paenibacillus polymyxa</i> KP10 against Methicillin-Resistant <i>Staphylococcus aureus</i>
OT-280	OT-P-02	<b>Anita Abd Rahman</b> , Rosliza Abdul Manaf, Lim Poh Ying, Subapriya Suppiah and Muhamad Hanafiah Juni	Factors in Improving Better Risk Practices among First Responders in Radiological Emergency: Importance of Women Participation

**Parallel Session II**

**Session IIA | Tuesday, 13<sup>th</sup> September 2022**

**Chairperson: Ch.M Dr. Norizah Abdul Rahman**

Time	Registration ID	Session ID	Title and Authors
17.30-17.45	FAS-889	FAS-O-07	Molecular Simulation of Biocompatible Reticular Materials for Improving Food Storage and Transport using Cyclodextrin Metal-Organic Framework  <b>Tuan Nurul Azura Tuan Kob</b> , Mohd Basyaruddin Abdul Rahman, Felipe Gándara, and Muhammad Alif Mohammad Latif

17.45-18.00	FAS-910	FAS-O-08	Substrate Docking And Molecular Dynamic Simulation of Receptor-Drug Interaction of curcuminoids and NS3 helicase DENV2  <b><u>Aina Hazimah Bahaman</u></b> , Mohd Basyaruddin Abdul Rahman, Bimo Ario Tejo and Siti Munirah Mohd Faudzi
18.00-18.15	FAS-932	FAS-O-09	Novel Biomolecules Targeting EGFR and VEGFR are Promising Anti-tumor Chemotherapeutics  <b><u>Lubna Tahtamouni</u></b> , Ammar Kubba
18.15- 18.30	FAS-512	FAS-O-10	Performance of Tomato Varieties in Aonla based Multistoried Agroforestry System  <b><u>Noor Shaila Sarmin</u></b> and Md Main Uddin Miah

### Session IIB | Tuesday, 13<sup>th</sup> September 2022

Chairperson: Dr. Meenakshii A/P Nallappan

Time	Registration ID	Session ID	Title and Authors
17.30-17.45	ET-877	ET-O-07	POFA-Modified Soil-Cement Columns as a Rigid Inclusion in Soil Reinforcement  Chee Pei Pei and <b><u>Nik Norsyahariati Nik Daud</u></b>
17.45-18.00	ET-940	ET-O-08	Slope Remediation using Hydroseeding Technique: <i>Signal Grass</i>  <b><u>Nik Norsyahariati Nik Daud</u></b> , Muhammad Imran Mulwarman and Muhammad Asyraaf Mat Husain
18.00-18.15	ET-363	ET-O-09	Discontinuous Deformation Analysis for Rock Failure Method for Numerical Simulation of Jointed Rock Mass: A Review  <b><u>Hai Ping Ma</u></b> and Nik Norsyahariati Nik Daud
18.15- 18.30	ET-958	ET-O-10	An Electrochemical Alternative to Reduce the Environmental Impact of Evaporitic Lithium Extraction from Brines. Stage I: Removal of Calcium and Magnesium  <b><u>Noelia A. Palacios</u></b> , César H. Díaz Nieto, Korneel Rabaey and Victoria Flexer

**Session IIC | Tuesday, 13<sup>th</sup> September 2022**

**Chairperson: Prof. Dr. Leong Wah June**

Time	Registration ID	Session ID	Title and Authors
17.30-17.45	MSS-819	MSS-O-07	Solution of third-order linear integro-differential equations using Cubic B-spline method  <b>Hamida Ali Shafter</b> , Norazak_Senu, Zanariah Abdul Majid and_Nadihah Wahi
17.45-18.00	MSS-413	MSS-O-08	A robust operational matrix of nonsingular derivative to solve fractional variable-order differential equations  <b>Mays Basim Nasih</b> , Norazak Senu, Seyedali Ahmadian Hosseini and Zarina Bibi Ibrahim
18.00-18.15	MSS-447	MSS-O-09	Artificial Neural Network for Solving Fractional Differential Equations in Caputo sense  <b>Mohd Rashid Admon</b> , Norazak Senu, Ali Ahmadian, Zanariah Abdul Majid
18.15- 18.30	MSS-563	MSS-O-10	Financial Applications derivation of Fractional Fokker-Planck Equation with Levy stable Process  <b>Reem Abdullah Aljethi</b>

**Session IID | Tuesday, 13<sup>th</sup> September 2022**

**Chairperson: Ts. Dr. Muhammad Kashfi Shabdin**

Time	Registration ID	Session ID	Title and Authors
17.30-17.45	OT-955	OT-O-01	Implant Stability Quotient Values of Two Different Designs of 4-Implant Mandibular Fixed Detachable Restorations  <b>Yara A.Kammoun</b> , Mohamed M. Khamis, Ahlam M. El-Sharkawy and Rania A. Fahmy
17.45-18.00	OT-620	OT-O-02	A Cross-Sectional Study on Knowledge, Attitude and Practice (KAP) of the Malaysian Public on Antimicrobial Resistance (AMR) and Antibiotics Use  <b>Deebadarishani Sathasivan</b> , Ana Masara Ahmad Mokhtar, Mazlin Mohideen, Amira Suriaty Yaakop, Nur Azzalia Kamaruzaman



### Parallel Session III

#### Session IIIA | Wednesday, 14<sup>th</sup> September 2022

Chairperson: Dr. Shahrizim Zulkifly

Time	Registration ID	Session ID	Title and Authors
09.30-09.45	FAS-755	FAS-O-11	The Density Functional Theory study for selected Np-based actinide compounds  <b><u>M. Sahakyan</u></b>
09.45-10.00	FAS-762	FAS-O-12	Deconvolution Approach for the Determination of Crystallinity and Ionic Species Fraction in Conductive Solid Biopolymer Electrolytes  <b><u>K.H. Kamarudin</u></b> and M.I.N. Isa
10.00-10.15	FAS-284	FAS-O-13	Osmotic Dehydration: Simple but Significant  <b><u>Nora Salina Md Salim</u></b>
10.15- 10.30	FAS-890	FAS-O-14	Nonlinear absorption and efficient optical limiting of gold, silver, and gold-silver nanocomposite  <b><u>Abeer Salah</u></b> , Shaimaa Helyal, Yehia Badr, Salah Hassab-Elnaby
10.30-10.45	FAS-919	FAS-O-15	Potential of Carboxymethyl Sago Starch Hydrogel as Delivery System for Newcastle Disease Vaccine (LaSota Strain)  <b><u>Norhazlin Zainuddin</u></b> , Nur Fattima' Al-Zahara' Tuan Mohamood and Abdul Rahman Omar
10.45-11.00	FAS-666	FAS-O-16	A study of structural properties of RdRp DENV by using Molecular Dynamics simulations an <i>in-silico</i> study  <b><u>Amaal Mohammed Salih Nasr</u></b> , Mohd Basyaruddin Abdul Rahman, Muhammad Alif Mohammad Latif , Bimo A. Tejo

#### Session IIIB | Wednesday, 14<sup>th</sup> September 2022

Chairperson: Dr. Mohd Amiruddin Abd Rahman

Time	Registration ID	Session ID	Title and Authors
09.30-09.45	FAS-552	FAS-O-17	Eco-Friendly Organic Polymers as Gas Storage Media  <b><u>Dina Ahmed</u></b>

09.45-10.00	FAS-200	FAS-O-18	Effect of $\text{Na}_2\text{CO}_3/\text{Al}_2\text{O}_3$ on the Calcium Fluoroaluminosilicate based Bioglass Ceramics  <b>Nur Quratul Aini Ismail</b> , Nor Kamilah Sa'at, Mohd Hafiz Mohd Zaid, Norhazlin Zainuddin, Mohd Zul Hilmi Mayzan
10.00-10.15	FAS-784	FAS-O-19	Assessment of Physical Health Characteristics in Selected Selangor Rivers in Malaysia  Nadeesha Dilani Hettige, <b>Rohasliney Hashim</b> , Zulfa Hanan Ash'aari, Ahmad Abas Kutty and Nor Rohaizah Jamil
10.15- 10.30	FAS-723	FAS-O-20	Comparative Analysis of Ultra-High Performance Liquid Chromatography and Antioxidant Properties Between Kenaf ( <i>Hibiscus cannabinus</i> L.) Seed and Soybean ( <i>Glycine max</i> ) Milk Substitutes  <b>Nur Syamimi Zaini</b> , Roselina Karim, Ahmad Faizal Abdull Razis and Norhasnida Zawawi
10.30-10.45	FAS-424	FAS-O-21	Preliminary Analysis of Several Milk Composition Genes in A Local Dairy Buffalo Farm  <b>Rabi'atul Adawiyah Fauzi</b> , Nurul Izza Ab Ghani, Ahmad Ismail, Md. Zuki Abu Bakar @ Zakaria <sup>4</sup> , Mohd Zamri Saad
10.45-11.00	FAS-980	FAS-O-22	Quantification of the rare sugar trehalulose and antioxidant activities of stingless bee honey produced in three consecutive years  <b>Nurul Ainaa Farhanah Mat Ramlan</b> , Farah Adilah Md Jafrry , Nur Sharafuna Irdina Mohd Arshad, Norliyana Mohd Rosdi and Norhasnida Zawawi

**Session IIIC | Wednesday, 14<sup>th</sup> September 2022**

**Chairperson: Assoc. Prof. Dr. Siti Hasana Sapar**

Time	Registration ID	Session ID	Title and Authors
09.30-09.45	MSS-305	MSS-O-11	Sufficient Conditions for the Existence of Minimizers for Fuzzy Variational Problems  Mansi Verma, <b>Chuei Yee Chen</b> , Adem Kilicman, Gafurjan Ibragimov and Fong Peng Lim
09.45-10.00	MSS-206	MSS-O-12	Some remarks on delta sequences and role in the convolutions  <b>Adem Kilicman</b>

10.00-10.15	MSS-117	MSS-O-13	Fuzzy TOPSIS-based New Divergence Measure for Staff Performance Appraisal  <b>Mohamad Shahir Saidin</b> , Lai Soon Lee, Mohd Rizam Abu Bakar and Muhammad Zaini Ahmad
10.15-10.30	MSS-396	MSS-O-14	Prediction of Dengue Cases in Malaysia using Fuzzy Inference System  <b>Suzelawati Zenian</b> and Tan Zu Er
10.30-10.45	MSS-575	MSS-O-15	Approximating the effective length of interval to forecast in fuzzy time series  <b>Suriana Lasaraiya</b> , Suzelawati Zenian, Risman Mat Hasim and Azmirul Ashaari
10.45-11.00	MSS-376	MSS-O-16	Determinant of Internal Factors for Academic Achievement using Multiple Regression: A Comparison Study Between Gender in Universiti Malaysia Sabah  <b>Siti Rahayu Mohd Hashim</b> and Mazni Mustapha

**Session IIID | Wednesday, 14<sup>th</sup> September 2022**

**Chairperson: Dr. Muhammad Khairul Adib Muhammad Yusof**

Time	Registration ID	Session ID	Title and Authors
09.30-09.45	ET-450	ET-O-11	Effects of Channel Thickness on Electrical Performance of Pentacene Based Organic Thin Film Transistors  Siti Nurhafidhza Mohd Ridzam, Mohamed Fauzi Packeer Mohamed and <b>Nor Azlin Ghazali</b>
09.45-10.00	ET-947	ET-O-12	Classifying The Imagination of Movement with Attention Level  <b>Fouzieh Md Yassin</b> , Norita Md Norwawi, Nor Azila Noh, and Afishah Alias
10.00-10.15	ET-833	ET-O-13	Blended Self-Compacting Concrete Incorporating Wood Ash and Quarry Dust  <b>Nor Azizi Safiee</b> , Noor Azline Mohd Nasir and Nabilah Abu Bakar
10.15- 10.30	ET-909	ET-O-14	The Potential Usage of Natural Rubber Latex Emulsion in Modifying Problematic Soil Properties for Geotechnical Works  <b>Nur Nabilatul Husna Zamri</b> , Nik Norsyahariati Nik Daud

10.30-10.45	ET-189	ET-O-15	Extraction, Characterization, and Applications of Nano-Hydroxyapatite and Synthesis of Its Film Composites  <b>Afia Subhani</b> , Anika Bushra, Nafisa Islam
10.45-11.00	ET-273	ET-O-16	Measuring Lean Six Sigma Training Effectiveness: A case study in higher education  Munirah A'Tirah Zaidi and <b>Nur Amalina Muhammad</b>

## Poster Presentation

Session 3 | 13.45 – 14.30 | Wednesday, 14<sup>th</sup> September 2022

Chairperson: Assoc. Prof. Chm. Dr Jaafar Abdullah

Registration ID	Session ID	Authors	Title
MSS-290	MSS-P-01	<b>Farida Lolila</b> , Mohamed S. Mazunga and Ntombizikhona B. Ndabeni	Baseline Measurements of Natural Radioactivity around the Manyoni Uranium Deposit (Tanzania): Selection of sampling points
MSS-827	MSS-P-02	Nabilah Ruza and <b>Saiful Izzuan Hussain</b>	Early Breast Cancer Mass Detection in Mammograms Using CNN EfficientNet-B2 Model
ET-914	ET-P-01	<b>Noor Hadzuin Nik Hadzir</b> , Per B. Zetterlund and Frank P. Lucien	Application of compressed gasses in miniemulsion photopolymerization
SS-952	SS-P-01	<b>Nurul Aqila Abd Razak</b> , Azita Ahmad Zawawi	From 'Being Shy to Saying Hi: The Role of Edutainment in Enhancing Children's Development
CS-822	CS-P-01	Kajeen Hassan Jasim, Husni Muhammed Hasan, <b>Suad Yousif Alkass</b> , Daniele Suzete Persike de Oliveira, Yousif Ali	PTSD and hormonal imbalance on internally displaced YAZIDE women in Northern Iraq
CS-966	CS-P-02	Husni Muhammed Hasan, Kajeen Hassan Jasim, <b>Daniele Suzete Persike de Oliveira</b> , Suad Yousif Alkass, Yousif Ali	PTSD and Physiological Disturbance on Internally displaced Yazide women in Northern Iraq

# ABSTRACTS

## Parallel Session I

## FAS-O-01

## Effect of Nitrogen Application on Forage Yield and Quality in Locally Developed Sorghum for Ruminant Feed

Nazatul Shima Naharudin<sup>1, a)</sup>, Effa Yunos<sup>2</sup> and Nurul Izzah Muhammad Azmin<sup>1</sup>

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<sup>a)</sup>*Corresponding author: nazatul@upm.edu.my*

**Abstract.** In livestock production systems, feeding expenses cover 70 % of the overall costs. A breeding program in UPM has developed sorghum as new alternative for animal feed. The objective of this study was to determine the effect of nitrogen application on the forage yield and quality of three sorghum genotypes. The experiment was conducted at Ladang 10, UPM in a split plot RCBD with three replications. The main plots were different nitrogen rates (120 kg/ha and 0 kg/ha) while the subplots were the three genotypes. Traits related to yield and quality were measured, including biomass yield (ton/ha), plant height (cm), crude protein (CP) content (%) and neutral detergent fiber (NDF) content (%). Analysis of variance for split plot and LSD test were used for the statistical analyses. Among the genotypes, G3 was found to have high biomass yield under both nitrogen input rates. Another genotype G2 has high CP and low non-digestible fiber content. These two promising sorghum genotypes will be selected as new sorghum variety for animal feed in Malaysia.

**Keywords:** *Sorghum bicolor*, biomass yield, ruminant feed, protein content, nitrogen use efficiency

## FAS-O-02

### The effect of microwave accelerating aging process on the physicochemical and textural properties of white rice (*Oryza Sativa L.*)

Aliah Zannierah Mohsin<sup>1a)</sup>, Munira Mohd Maasom<sup>2</sup>, Iffah Nadhira Madzuki<sup>2</sup>

<sup>1</sup>*Faculty of Food Science and Technology, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia.*

<sup>2</sup>*Faculty of Chemical Engineering Technology, Universiti Malaysia Perlis, 02600 Arau, Perlis, Malaysia*

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**Abstract.** Rice aging process requires at least 4-6 months, large space, and high operational costs. Microwave heating is introduced to accelerate the normal aging process by optimizing the significant environmental factors. This study aims to evaluate the effect of microwave heating on the physicochemical and textural properties of aged white rice grain (1, 2, 4, and 6 months). Microwave heating was applied at 500 W or 600 W for 2 min while 6 months-aged rice was used as control (natural aging). The aged rice exhibited significant differences in their moisture content, kernel expansion, water uptake, volume expansion, solid loss, texture analysis in cooked rice, and starch amylose and amylopectin. From the results, 4 months of 600 W for 2 min was found to be the most similar compared to naturally aging. Therefore, this study revealed the potential of artificial aging using microwave heating for the improvement of texture rice cooking quality.

**Keywords:** Artificial aging, Microwave heating; Physicochemical properties; Textural properties; Rice aging

## FAS-O-03

## Metagenomic insights into the prokaryotic communities associated with mangrove soils of Gazi Bay along the Kenyan coastline

Grace Kinyanjui<sup>1, a)</sup> and Eucharia Kenya<sup>1</sup>

<sup>1</sup>*Department of Biological Sciences, University of Embu, Kenya*

<sup>a)</sup>*Corresponding author: gracekinyanjui11@gmail.com*

**Abstract.** Prokaryotic communities play a pivotal role in driving biogeochemical cycles in mangrove ecosystems. In this study, we used Illumina MiSeq sequencing of 16S rRNA gene amplicon to determine the prokaryotic diversity and community structure within the mangrove soils of Gazi Bay. Soil samples were collected based on mangroves' zonation, and their pH and EC were analyzed. Metagenomic analysis showed high levels of prokaryotic diversity and species richness. *Proteobacteria*, *Bacteroidetes*, and *Firmicutes* were the predominant bacterial groups. Although less abundant, the archaeal groups comprised *Thaumarchaeota* and *Euryarchaeota*. The prokaryotic community structure was greatly differentiated among samples. This finding was confirmed by the site-specific clustering on the NMDS plot. Overall, the study has provided insights into the prokaryotic communities in the mangrove soils of Gazi Bay. Our results also indicated mangrove zonation and varying levels of soil pH and EC as potential drivers of variations in prokaryotic community structure in these ecosystems.

**Keywords:** Mangroves, soil metagenome, 16S rRNA gene sequencing, prokaryotic communities



## FAS-O-04

## Physicochemical and Aerodynamical Attributes of Docetaxel and Curcumin-loaded Nanoemulsion in Pulmonary Delivery

Azren Aida Asmawi<sup>1</sup>, Norazlinaliza Salim<sup>1</sup> and Mohd Basyaruddin Abdul Rahman<sup>1, 2, a)</sup>

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**Abstract.** Lung cancer is the most common cause of cancer-related deaths worldwide. The synergistic anticancer effect of docetaxel and curcumin may emerge as an attractive therapeutic candidate in lung cancer treatment. Besides, delivering the drugs using a lipid-based nanocarrier system via the lung gains much interest as nano-size particles can cross the cellular barrier. However, several requirements on its physicochemical and aerodynamical properties should be taken into account for effective pulmonary delivery. In this work, an efficient screening for the selection of pharmaceutically acceptable nanoemulsion excipients has been examined. The nanoemulsion formulation was prepared using a high-energy emulsification method and then subjected to characterizations. The formulation was found to be nano-sized, homogenously dispersed with pH, osmolality, and viscosity values that met the ideal requirement for pulmonary application. The aerosolized nanoemulsion system was able to be deposited on the deep lung region with an aerodynamic size of less than 5  $\mu\text{m}$  and demonstrated more than 95% aerosol output and inhalation efficiency greater than 75%. Overall, this nanoemulsion formulation for inhalation mode has significant promise in lung cancer therapy.

**Keywords:** Docetaxel, curcumin, lipid-based carrier, nanoemulsion, pulmonary delivery

## FAS-O-05

## Assessment of Inter-Station Variation of Gasoline for Forensic Investigation by using GC-MS data and Principal Component Analysis

Loong Chuen Lee<sup>1, 2, a)</sup>, Md Gezani Md Ghazi<sup>1,3</sup> and Hukil Sino<sup>1, 2</sup>

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**Abstract.** Gasoline is often employed by arsonist in initiating or accelerating a fire upon a crime. Hence, gasoline is one of the most frequently encountered evidence at a fire crime scene. Despite detection of gasoline alone is sufficient to indicate the crime case but it is preferably to knowing the origin of the gasoline, i.e., service station sold it. Therefore, the purpose of this preliminary work is to evaluate the inter-station variation of Petronas gasoline sold by stations at Bukit Changgang and Salak Tinggi, Selangor. Six replicates of each sample were analyzed by a gas chromatography-mass spectrometer (GC-MS). The pixel-level GC-MS data was processed by principal component analysis (PCA) to elucidate the inter-station variation. Result showed that the two RON95 gasoline of Petronas that sold by two service stations can be discriminated. The scores plot of PCA showed the 12 chromatograms have been clustered into two groups.

**Keywords:** forensic fire investigation, GC-MS, PCA, gasoline

FAS-O-06

## Electrospun conducting polymer micro/nanofibers for biomedical applications

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**Abstract.** Conducting polymers are organic polymers that can conduct electricity. The advantage of conductive polymers over metallic materials is their processability, primarily by dispersion. Conducting polymers micro/nanofibers have recently received great attention due to their high surface area per volume and extensive porosity, combined with unique properties such as high electrical conductivity or fluorescence. These materials are being considered for a range of applications, including biomedical applications. Among techniques used for the preparation of polymer nanofibers, electrospinning is a simple, fast and relatively cheap technique. In this study, the electrospun conducting polymers micro/nanofibers were prepared by using electrospinning technique. The fibers were used for two types of biomedical applications which were DNA sensor and scaffold for tissue engineering. The results indicate the potential of such fibers to be used as biodegradable scaffold for tissue engineering and biosensor.

**Keywords:** conducting polymer, electrospinning, DNA sensor, drug delivery

## ET-O-01

## Optimization of methylene blue adsorption parameters using modified spent mushroom substrate adsorbent prepared via microwave activation

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**Abstract.** Water pollution is a major global issue that affects the human population worldwide. In this study, *Pleurotus ostreatus* spent substrate (POSS) was used as a precursor to synthesis a high-porosity adsorbent via chemical-microwave activation. The POSS were prepared using the following parameters: chemical treatment with H<sub>3</sub>PO<sub>4</sub> and heat treatment for 20 mins using 600 W microwave power. The adsorption process was optimized using response surface methodology (RSM), which included adsorption time (min), pH, and adsorbent dosage as independent variables, with the response being MB percent removal and adsorption capacity of the adsorbent. According to the optimization, the removal of MB is 99% and the adsorption capacity is 10.15 mg/g at an adsorption time of 60 minutes, a medium pH of 9, and an initial adsorbate dosage of 0.2 g. Optimizing the adsorption process is critical for scaling up and systematically determining the most influential parameters.

**Keywords:** *Pleurotus ostreatus*, spent mushroom substrate, adsorption, optimization, microwave activation

## ET-O-02

## Measuring Lean Six Sigma Training Effectiveness: A case study in higher education

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**Abstract.** Over the past few decades, Lean Six Sigma (LSS) has become one of the most popular problem-solving methodologies in various industries. The organizations take the initiative to educate their employees about LSS via training. Without effective training and knowledge, it is challenging for each employee in an organization to implement LSS successfully. This research aimed to measure LSS training effectiveness by comparing pre-and post-training using Kirkpatrick's Four Level Evaluation Model; reaction, learning, behavior, and result level. The surveys were distributed to the participants of LSS Yellow Belt training at a local university. The results are compared using a box plot and t-test analysis. The study found that, for all evaluation levels, the post-training level is superior to the pre-training level. Based on the observations during the training, catchball, hands-on activities, class etiquette, and Plan-Do-Check-Act (PDCA) are the key training approaches and lead to effective LSS training.

**Keywords:** Lean Six Sigma, training, measurement, case study, higher

## ET-O-03

## Extraction, Characterization, and Applications of Nano-Hydroxyapatite and Synthesis of Its Film Composites

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**Abstract.** In this study, novel chitosan/nano-hydroxyapatite/starch (CS/HAp/St) biocomposite was formulated using *Moringa oleifera* leaves as a green source. HAp was extracted from *Moringa oleifera* leaves following rapid microwave irradiation technique with a yield of 4% and characterized using Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and energy dispersive x-ray analysis (EDX). Successful extraction of flakes-like HAp was confirmed by FTIR and the Ca/P ratio was found to be 1.68, close to the literature value of 1.67. Antibacterial activity of HAp was evaluated against *Escherichia coli*, which demonstrated better antibacterial resistance with increasing concentrations of HAp in the bacterial culture. Moreover, CS/HAp and CS/HAp/St composite films were formulated using solvent casting method and characterized using FTIR and SEM. Finally, the effect of starch incorporation in the films was studied, which showed that inclusion of starch resulted in dissolution of previously insoluble polymer-like CS/HAp films in room temperature water.

**Keywords:** Hydroxyapatite, Antibacterial property, Bio-composite films

## ET-O-04

## Investigation of Energy Absorption Capabilities of Thin-Walled Aluminium Structure with Different Thickness

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**Abstract.** Thin-walled is a structure that were usually used as the energy absorber of vehicle body including bus. There is different thickness of thin walled structure used for the bus structure that serve the purpose of absorbing the impact energy thus reduce the structure damage during collision. In this study, the quasi-static test was done to obtain the impact load data against displacement from the axial compression testing machine. To determine the energy absorption characteristic of the structure, the calculation of Specific Energy Absorption (SEA) and Crash Force Efficiency (CFE) were done using the collected experimental data. Finite Element Analysis was conducted using simulation software to compare and verified the experimental result. The results show that the Aluminium 6061 with aspect ratio of 3.44 have the highest SEA which is 999.8 J/kg and the Aluminium 6061 with aspect ratio of 3.39 have the highest CFE which is 75.8%.

**Keywords:** Thin-walled, Energy Absorption, Impact, Specific Energy Absorption, Finite Element Analysis

ET-O-05

## Epoxidized Bio-based Oil for Greener Ternary NR/BR/SSBR Rubber Blend Composites

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**Abstract.** Bio-based oil is a promising oil that has the potential to replace mineral oil in elastomers as a plasticizer. Mineral oil has been recognized as hazardous to the environment and generated from a non-renewable resource. The purpose of this research is to develop a bio-based processing oil for greener and sustainable tyre tread compound. Epoxidized palm oil (EPO) has been identified as a potential bio-based processing oil for greener tyre treads. Thus, in this study, EPO was synthesized by the epoxidation method. Furthermore, EPO in various compositions was used as a processing oil in a ternary rubber blend. The curing characteristics and mechanical properties were examined and compared to the compound containing mineral oil (RPO). The findings demonstrate EPO at low composition (5 phr) increased about 18% in tensile strength compared to the compound with RPO at the same composition. The enhancement in tear strength, elongation at break and modulus at 300% were as well observed in the compound containing the EPO.

**Keywords:** Ternary rubber blends, Tyre tread, Bio-based oil, Epoxidized Palm Oil



## ET-O-06

## The Hybrid Technique of Soils Stabilizing and Reinforcing using Lime and Coir Fiber

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**Abstract.** In this study, hydrated lime is used as a binder for stabilizing the geotechnical behaviour of problematic soils in earthworks, while coir fiber has the highest tensile strength of all known natural fibers used as a reinforced material. The effect of so-called hybrid techniques in treating soils was determined, especially in the strength behaviour. The lab-based experiment, including particle size analysis, proctor compaction test, and direct shear strength on natural and treated soils was done. The content of coir fiber was varied in percentage from 0%, 0.5%, 1% and 1.5% and the optimum lime content (OLC), 5% of lime was used. The results showed by increasing coir fiber content, the shear strength values are increased for about 215% and 248% for both FE and BE soil samples, respectively. Overall, 1% of coir fiber content can achieved the optimum shear strength of treated soil with a constant optimum lime content of 5%. It can be concluded that the hybrid techniques of coir fiber with a lime can improved the strength properties of studied soil.

**Keywords:** coir fiber, geotechnical properties, lime, soil, strength

MSS-O-01

## New Generalized Closed Concepts in Fuzzy Bitopological Spaces

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**Abstract.** The scientist Zadeh put landmark papers concerning introduction to fuzzy topology. Subsequently several authors generalized basic concepts to fuzzy sets and developed the theory of fuzzy topological space. In particular, Kandil (1989) introduced fuzzy bitopological spaces. So idea of this work is to improve several mathematical topics in fuzzy bitopological spaces. Because it considered new science and has many applications, such as applying the concept of closure, opening and separation to expanding and narrowing the cancer cell and controlling its content. Also, in artificial intelligence and in making a mathematical model or database. The importance of this work is evident through it will be a fertile reference because it introduces many basic concepts which has not yet been discussed, and the problem statement lies in introduce basic notions of generalized closed sets in fuzzy bitopological spaces. Also, we defined some basic theorems and properties on these sets.

**Keywords:** Fuzzy bitopological spaces, fuzzy generalized closed sets, fuzzy generalized neighborhoods, fuzzy closure operator, fuzzy interior operator.

MSS-O-02

## Seventh-order Multi-step Runge-Kutta-Nyström Method for Integrating Special Second-order Ordinary Differential Equations

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**Abstract.** Nyström type methods are extensively used for the numerical solution of the initial value problems (IVPs) in the ordinary differential equations (ODEs). Specifically, they are widely used to directly solve second-order ODEs. Although the derivation of new higher-order methods with fewer numbers of function evaluations is of great importance in increasing the accuracy and efficiency of the methods, however, this is rarely done due to the difficulty or complexity of some derivations. This study focuses on constructing seventh-order multistep Runge-Kutta-Nyström (MSN) method with lower stages for the numerical integration of special second-order ODEs. The linear stability of the method is analyzed. Numerical experiments have shown the superiority of the proposed method for solving this type of problem compared to Runge-Kutta (RK) type methods in the literature.

**Keywords:** Higher-order method, Multi-step Runge-Kutta-Nyström methods, Ordinary differential equation, second-order initial value problems

MSS-O-03

## Operation Matrix Method for Solving Slos Fractal-Fractional Differential Equations with Generalized Caputo Fractal-Fractional Derivative

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**Abstract.** Sediment loss (SLO) is a crucial geological phenomenon that defines the reduction of mass over time due to the differential influence of controlling factors. The competence of rocks is regarded as a controlling factor in this study, while weathering and erosion are regarded as decaying parameters. Attributed to a decrease in total mass per unit time, a numerical method is developed to solve the SLO fractal-fractional differential equations (FFDEs). We approximate the solution of the FFDEs as basis vectors of shifted Legendre polynomials (SLPS). We also extend the derivative operational matrix of SLPS to the generalized derivative operational matrix in the sense of new generalized Caputo fractal-fractional derivative (GCFFD). The efficiency of the developed numerical method is tested by taking various test examples. In this paper, we stated the GCFFD in three main categories: first, various values in fractal parameter  $\beta$ . Second, different values in fractional parameter  $\alpha$ . Lastly, different values in SLO by erosion (decaying parameter  $\lambda$ ).

**Keywords:** fractal operators, New generalized Caputo-type fractional derivative, fractal-fractional equations, New generalized Caputo-type fractal-fractional derivative.

## MSS-O-04

### Developing a method of smoothing out pseudorandom numbers – trend generated by Blum-Blum Shub algorithm

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**Abstract.** We are interested with the Blum-Blum Shub algorithm BBS that uses a scalar seed that operates by squaring the scalar. Here, random is represented by fluctuation of the generated pseudorandom numbers reflecting the generator itself. For this reason, we compare occurrence – trend of such numbers. Then, we develop a method of smoothing out the fluctuated trend that could measure volatility of the trend. This study benefits in such a way that generated numbers themselves are potential to reveal the generator mechanism or performance before proceeding with statistical tests of randomness.

**Keywords:** Please provide up to 5 keywords, separated by commas

**MSS-O-05****Nonstationary Daily Healthcare Stock Market Price using Non-transformed Dimensionality Reduction Technique**

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**Abstract.** Healthcare stock market price is usually nonstationary. General practice of handling nonstationary stock market price is through transformation process, which may cause loss of data originality. To overcome this, an alternative way of direct handling of the stock market price is of interest. The dimensionality reduction of nonstationary stock market price was performed by using generalized dynamic principal component (GDPC), adapting Brillinger dynamic principal component (BDPC) concept based on the reconstruction of the stock market price. Daily observations of healthcare stock market price were considered for this study. Stationarity test was carried out and the analysis were two-based, transformed and non-transformed. Then, three principal component methods were used to reduce the dimensionality. The results shows that GDPC have a higher percentage of explained variance percentage (above 90%) and lower mean squared error among the other methods. Thus, this shows that a direct application may also achieved better result performance.

MSS-O-06

## Numerical Method for Solving Volterra Integro-Differential Equations with Delay

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**Abstract.** The aim of this research is to produce accurate numerical results in solving Volterra integro-differential equations (VIDE) with delay constant type. The delay arguments are approximated using previously calculated values while the integration part is approximated using the quadrature rule. The proposed multistep block method in the predictor and corrector mode is derived by applying the Taylor expansion. The consistency, zero stability, and convergence of the method are determined. The test problems are solved by approximating two points simultaneously using constant step size. The numerical results obtained have shown that the proposed block method is better in terms of accuracy, total steps and total function calls compared to the existing methods.

**Keywords:** Multistep method, block method, constant delay, constant step-size, Volterra integro-differential equations

## ES-O-01

## The Academic Empowerment of Iraqi Female Undergraduate Students via Extracurricular Activities: Case Study

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**Abstract.** The United Nations' 2030 Sustainable Development Goals emphasizes education quality. For females' education is about empowerment and instilling a sense of belonging. Empowering females via STEM education is an effective tool on various levels. The initiation of extracurricular activities (ECA) in STEM in the currently studied Iraqi university is an adopted policy that, since 2018, has started to be observed and evaluated among the pharmacy undergraduate students. This aimed to implant the participation of females in STEM sciences; identify best practices for incorporating extracurricular activities into the learning medium; document and recognize initial informal STEM learning contexts. Interestingly, Cohort rates were 100% in both technology scopes of scientific abstract video competition and green ambassador remote volunteering, respectively. Furthermore, scientific writing and digital management under conference ECA showed the highest retention and persistence rates respectively. Thus, these ECA empower females by providing information and inclusion to acquire new knowledge and skills.

**Keywords:** Female empowerment, Undergraduate, Extracurricular, Activities, Iraqi.



## SS-O-01

## The roles of multidimensional asset capitals to improve the well being of urban poor

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**Abstract.** Despite growing research examining urbanization and urban poor in Malaysia, there is still lack of critical and explicit analysis of how people relate to the social, environmental, institutional and economic contexts, which influences the relationships among urbanization, resilient community and sustainable development. This study aims to explore how fundamental understanding on the options that are accessible to communities, and to the recognition of the basic assets (human, physical, social, and financial capital) that urban poor people possess and how they change over time. Assets are further determined by policies, institutions and processes with which people engage. The findings show that vulnerability context such as shocks (e.g. flash flood, Covid 19 pandemic) have greater impacts on the survival of urban poor compare to stresses (e.g. rapid development of high-end projects). The study recommends that every household should have access to five asset capitals to become resilient when shocks or stresses happened.

**Keywords:** Urbanization, urban poor, resilient community, assets capital

## SS-O-02

## Zero Waste Management Among Household: Examining the Personal and Situational Factors

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**Abstract.** It is crucial to minimize waste generation and create sustainable behaviour towards zero waste in the future. Zero Waste management is a symbolic act that is an alternative to solid waste management to achieve sustainability. This work examines the relationship between zero waste management and household behaviour and the situational factors related to the local authorities and stakeholders. It also aims to prove a relationship between personal and situational factors. The respondents for the survey are the household in Northern Peninsular Malaysia (Alor Setar Municipality), which will be analysed using quantitative research methods. We employed a Structural Equation Model (SEM) using Smart-PLS to assess the responses. The results of the analysis revealed that out of nine factors, four factors have a significant influence on zero waste management among the households. It is observed that legal (L), social norm (SN), knowledge and experience (KE), self-efficacy (SE) and are the top factors contributing to households' behaviour on zero waste management in the Alor Setar Municipality. The outcome of this study is expected to aid municipalities in setting a long-term waste management goal in terms of solid waste that involves the householders and related agencies in the area. It will benefit in understanding zero-waste management from a micro-scale perspective and contribute to the body of knowledge in zero waste management.

**Keywords:** Zero Waste Management, Household Sustainable Behaviour, Solid Waste Management, Circular Economy (CE), Structural Equation Model (SEM)

SS-O-03

## Productivity of Local Beef Supply in Peninsular Malaysia

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**Abstract.** Malaysian beef supply depends more than 70 per cent on imported sources. Technological aspects in each state would answer the productivity of beef cattle supplies in Peninsular Malaysia. The research aims to study the impact of technological changes on the productivity of local beef supply. The analysis are from 44-panel data of slaughtered cattle as an output and other inputs by 2014 to 2017. Data Envelopment Analysis (DEA) used for the Malmquist Index of productivity analysis. Results found through the estimation of Total Factor Productivity (TFP) and its components suffer a decline in productivity. For TFP change, surprisingly East Coast region states are facing the negative trend whilst they are the highest cattle populated states in Peninsular Malaysia. The study proves local cattle population does not contribute to the local beef supply productivity and the technological aspect is not a contributor to productivity. Imported cattle are the main contributor to the local beef supply.

**Keywords:** local beef supply, productivity, Peninsular Malaysia, Malmquist Index, cattle

SS-O-04

## Associativity of university women in masculinized professional spaces in the 19th and 21st centuries

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**Abstract.** Nineteenth-century women used various strategies to access to universities, such as associativity and "reform from below." As in the 21st century, Peruvians women have used the same tools to increase and strengthen permanence in careers still with a male majority, based on international policy to increase the number of women in STEM careers. What similarities and differences exist between both historical groups? This research was conducted using the comparative historical research method, with techniques, such as participant observation between 2017 and 2019 in Lima, and the review of electronic historical documents. The result is the identification of local and international bonds as referents and allies, as well as citizen association. The main difference is that, nowadays, it can be done in increasingly specific areas and under the paradigm of women's human rights.

**Keywords:** Associativity, Peru, Women in STEM, 19<sup>th</sup> century, women's human rights

# ABSTRACTS

## Parallel Session II

## FAS-O-07

## Molecular Simulation of Biocompatible Reticular Materials for Improving Food Storage and Transport using Cyclodextrin Metal-Organic Framework

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**Abstract.** Fast ripening and pest attack are the two most common causes of food loss in climacteric fruits. Some gasses show fast ripening and promotes fungal growth during storage, reducing fruit quality and shelf life. Food losses can also occur as a result of insect pest attacks in stored agricultural products. Reticular materials, also known as metal-organic frameworks (MOFs), are a type of functional material with unique physical and chemical characteristics. MOF has shown to be a promising material in fields such as gas adsorption and sensors due to its intrinsic characteristics. We provide a detailed study of three gas adsorption processes (ethylene, ozone, and hydrogen sulphide) in a biocompatible MOF, cyclodextrin-metal-organic-framework-1 (CD-MOF-1). Grand canonical Monte Carlo simulations were used to model the adsorption of ethylene, ozone, and hydrogen sulphide at 298 K over a range of pressures (0-160 kPa). The analysis of interaction energies indicated that adsorbent-adsorbate interactions were just as important as adsorbate-adsorbate interactions. These three gasses molecules favored small apertures, according to simulated snapshots. This useful knowledge may be used to develop MOFs for improved gas adsorption and storage.

**Keywords:** metal-organic framework; molecular dynamic simulation; gas adsorption; fungicides; food safety

## FAS-O-08

## Substrate Docking and Molecular Dynamic Simulation of Receptor-Drug Interaction of Curcuminoids and NS3 Helicase DENV2

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**Abstract.** Curcumin is a promising inhibitor of dengue virus (DENV) due to its antiviral effect. Despite the potential, curcumin-based drug development is hindered due to its poor solubility and rapid hydrolysis in aqueous media, which leads to low bioavailability in the tissue after administration. Numerous approaches have been undertaken to solve this, including the analogue synthesis to look for new synthetic curcumin analogues to act on specific targets and at the same time overcome the drawbacks and gain efficacy with reduced toxicity. The objectives of this study are to evaluate the effectiveness of curcuminoids as antiviral to DENV infection and to elucidate the use of curcumin analogues to improve the performance of the drug. Thus, a virtual screening analysis of curcuminoid structures with DENV protein targets respectively NS3 Helicase DENV2 will be carried out using computational docking and molecular dynamic simulation approach to study inhibitory activity and their interaction with the key residues whereas significantly speed up the pace of such screening and can drastically improve hit rates. The binding affinity of curcumin to NS3HDV2 is  $-7.4$  kcal/mol, whereas the best three chosen from the curcumin analogues results are E6P2 ( $-11.1$  kcal/mol), 1CJS ( $-11.0$  kcal/mol), and J1DA ( $-10.8$  kcal/mol). Based on the results, it shows that curcuminoids exhibit more potent inhibition of NS3 Helicase DENV2 infectivity compared to the curcumin parents.

**Keywords:** Curcumin, MD simulation, DENV, Docking, NS3 Helicase

## FAS-O-09

## Novel Biomolecules Targeting EGFR and VEGFR are Promising Anti-tumor Chemotherapeutics

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**Abstract.** Cancer is the second leading cause of death worldwide, and despite huge advances in cancer treatment, cancer drug resistance is still a main challenge. Inhibitors that target EGFR and VEGFR-2, two receptors that are upregulated in solid tumors, are promising chemotherapeutics. Our work focuses on synthesizing novel biomolecules that are identified by molecular docking studies to target these receptors. The results of molecular docking are then validated in vitro, and the mechanism(s) by which these novel compounds induce apoptosis and cell cycle arrest are studied by cytotoxicity assays, qRT-PCR, immunoblotting, flow cytometry, and inhibition assays. We have been successful in synthesizing several biomolecules that exhibit potent anti-tumor activities by targeting either EGFR or VEGFR-2.

**Keywords:** Angiogenesis, tyrosine kinase receptors, cytotoxicity, molecular docking, admet



## FAS-O-10

## Performance of Tomato Varieties in Aonla based Multistoried Agroforestry System

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**Abstract.** The present study was conducted to screen of suitable tomato variety/varieties for aonla (*Phyllanthus emblica*) based multistoried agroforestry for the terrace ecosystem of Bangladesh. Aonla was considered an upper story species, while two minor fruits namely carambola and lemon were used as middle story species and four tomato varieties (BARI tomato 19, BARI tomato 18, BARI tomato 8 and BARI tomato 3) were planted as lower storied crop. The experiment was laid out in a two-factor RCBD with three replications. The system combinations were, T<sub>1</sub> =Aonla+Carambola+Lemon+Tomato, T<sub>2</sub> =Aonla+Lemon+Tomato, T<sub>3</sub> =Aonla+Tomato and T<sub>4</sub> =Tomato on open field. A quadratic polynomial relationship was found between yield of tomato and light (% PAR) which was represented as  $Y = -0.0104x^2 + 1.901x - 18.999$  ( $R^2 = 0.9795$ ), where are  $R^2$  value was very high and highly significant indicating that increasing PAR (%) increases the yield of tomato. The superior yield performance of tomato was found in BARI Tomato 18 followed by BARI Tomato 3, BARI Tomato 19 and BARI Tomato 8 (BARI Tomato 18 > BARI Tomato 3 > BARI Tomato 19 > BARI Tomato 8).

**Keywords:** Agroforestry, tomato, photosynthetic active radiation (par), multistoried agroforestry system

ET-O-07

## POFA-Modified Soil-Cement Columns as a Rigid Inclusion in Soil Reinforcement

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**Abstract.** Rigid inclusions are extensively used due to its ability to reduce settlement and improve bearing capacity of weak soil. This study investigates the performance and effectiveness of Palm Oil Fuel Ash (POFA)-modified soil-cement columns in soil reinforcement. Unconfined compression test was performed to evaluate the strength behavior of soil-cement column with varying percentages of cement and POFA as cement substitute (0% to 30% by 5% increment) after curing for 14 and 28 days. Load deformation test was then carried out to study the settlement behavior of soil reinforced with POFA-modified soil-cement column. It is showed that the unconfined compressive strength (UCS) increases as the POFA content in the binder increases but shows a reduction when the POFA content further increases beyond 15% of cement in the binder. It can be summarized that the soil reinforced by POFA-modified soil-cement column with 0%, 10% and 20% POFA as cement replacement in the binder experience 30%, 39% and 45% reduction in settlement as compared to the unreinforced soil. Therefore, it can be concluded POFA-modified soil-cement column can be considered as an effective and economical alternative to the traditional soil-cement column for ground improvement.

**Keywords:** cement, deformation, palm oil fuel ash, soil, strength

## ET-O-08

**Slope Remediation using Hydroseeding Technique: *Signal Grass***

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**Abstract.** In Malaysia, due to the weather condition, rainfall has been a major triggering factor for the landslides that had occurred. To overcome the slope failure, one of the recent techniques is hydroseeding. The objective of this study is to determine the strength value of slope with and without plant which is *Signal grass*. A series of laboratory tests to compare the strength of soil with and without grass based on roots has been carried out. Results obtained for strength parameters have shown the range values for effective cohesion,  $c'$  value is 11 – 49 kPa for the soil samples with *Signal grass* while for the soil sample without grass is 18kPa. The internal friction angle,  $\phi'$  value for the soil samples with the *Signal grass* root reinforcement falls in the range of 39 - 54° while for the soil sample without *Signal grass* is 18°. Shear strength values falls in the range of 140- 170 kPa for sample with grass and 50 kPa for without grass sample. It can be concluded that soil samples with *Signal grass* shows higher values compared to the soil samples without *Signal grass* for both parameters. Hence, the application of *Signal grass* is suitable and effective for the slope remediation solution since both parameters are reflected to the shear strength of the soil.

**Keywords:** hydroseeding, *signal grass*, slope stability, rainfall, remedial.

ET-O-09

## Discontinuous Deformation Analysis for Rock Failure Method for Numerical Simulation of Jointed Rock Mass: A Review

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**Abstract.** Discontinuous deformation analysis for rock failure (DDARF) method is based on discontinuous deformation theory which was proposed in recent years to analyze the strength, deformation and stability of jointed rock mass, and recently it is widely used in numerical simulation of jointed rock mass. The explanation on important of DDARF methods applied in i) compression test, ii) surrounding rock stability analysis, iii) anchoring effect of surrounding rock and iv) related tests and other aspects based on previous literature are the aim of this paper. It can be summarized that the DDARF method still has deficiencies in the generation of multi-scale grids. Although several scholars have generated multi-scale grids with the help of other software, there is still instability in the use process.

**Keywords:**

## ET-O-10

## An Electrochemical Alternative to Reduce the Environmental Impact of Evaporitic Lithium Extraction from Brines. Stage I: Removal of Calcium and Magnesium

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**Abstract.** In a context in which it is urgent to change the energy matrix dependent on fossil fuels for a more sustainable one, the reference to energy accumulation, electromobility and lithium is undeniable. Continental brines as present in a small region in South America, are the most abundant and the easiest to exploit with an evaporitic method. Current practice is highly water and chemical intensive, and delivers besides lithium only waste to be landfilled. Concerns about processing practices are growing, particularly with the local native population. As an alternative to the current extraction process, it is proposed an integrated membrane electrolysis process with three stages, each based on a water electrolyser with a side crystallizer. Lithium is present in diluted concentrations together with different ions, and it is imperative to fully remove both magnesium and calcium before lithium carbonate can be precipitated.

**Keywords:** lithium, magnesium, calcium, electrolysis, circular economy

MSS-O-07

## Solution of third-order linear integro-differential equations using Cubic B-spline method

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**Abstract.** The collocation method based on the cubic B-spline method is developed to solve third-order linear Fredholm and Volterra integro-differential equations. The cubic B-spline method is used to collocate the solution and its derivatives. While the integral part is approximated using the Gauss-Legendre quadrature formula. Convergence analysis of the cubic B-spline method is studied theoretically. The method is applied to six test examples and numerical solutions are compared with the analytic solution. It was found that the proposed method is efficient and can solve different values of  $N$  in third order linear integro-differential equations.

**Keywords:** Cubic B-spline, Fredholm integro-differential equations, Gauss-Legendre quadrature, Volterra integro-differential equations, Third-order linear equations

MSS-O-08

## A robust operational matrix of nonsingular derivative to solve fractional variable-order differential equations

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**Abstract.** On this work concentrates the Atangana–Baleanu fractional-order and variable-order and is a new fractional derivative by using the Mittag Leffler function, which is nonlocal and nonsingular. For this purpose, the operational matrices based on Legendre polynomials will be used together with the collocation points which help us to reduce the problem and transforms it into a system of algebraic equations thus greatly simplifying the problem. This method is applied to solve two equation types, linear and nonlinear fractional differential equations. Some numerical examples are given to display the simplicity and accuracy of the proposed technique and compare it with other numerical methods.

**Keywords:** *shifted Legendre polynomials; nonsingle kernel; operational matrix; variable-order*

MSS-O-09

## Artificial Neural Network for Solving Fractional Differential Equations in Caputo sense

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**Abstract.** The capability of Artificial Neural Network (ANN) on solving Fractional Differential Equations (FDEs) has shown success in arena field of mathematical research. However, the effect of different number of hidden layer and nodes on the solutions accuracy is still unknown. Thus, this research aims to design new scheme based on one of ANN variants known as deep feedforward neural network (FNN) with vectorized algorithm (FNNVA) using selected first-order optimization techniques which are gradient descent (GD), momentum method (MM) and adaptive moment estimation method (Adam) to solve Caputo FDEs. The method formulation is developed and vectorized to make it computationally efficient. The analysis is done through different learning rates. The results shows FNNVA with Adam technique with one and two hidden layers outperformed among others by appropriate selection value of learning rates and number of neurons respectively. This scheme provide high accuracy and low computational cost.

**Keywords:** Artificial neural network, Feedforward neural network, Vectorized algorithm, first-order optimization techniques, learning rates



MSS-O-10

## Financial Applications derivation of Fractional Fokker-Planck Equation with Le`vy stable Process

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**Abstract.** In this study, we exhibit a generalized Fractional Fokker-Planck equation. The generalized equation has fractional time-space differentiation and yields anomalous diffusion due to a Levy stable stochastic forcing. The new Fractional equation derived through Le`vy motion, instead of the Brownian motion, conveniently describes the quite skewed and heavy-tailed plume. To establish of fractional Fokker-Planck using Transition probability density function with a L`evy stable source. This yields an anomalous diffusion coefficient, as well as a non-trivial fractional factor which relates to the possible asymmetry of a the Le`vy stable source. We use a stable distribution to model market data. By using market data, Fractional Fokker-Planck, and the simulation method, we show the characteristics and connections between them.

**Keywords:** Fokker Planck Equation, Le`vy process, fractional differential equations.

## OT-O-01

**Implant stability quotient values of two different designs of 4-implant mandibular fixed detachable restorations.**

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**Abstract.** The study was to investigate the effect of implant angulation on the implant stability quotient values. Thirty-two edentulous patients were randomly allocated to 2 equal groups. Group A received two anterior axially directed and two distal tilted implants while group B received four axial implants in the interforaminal mandibular region. On the same day of surgery conversion technique for immediate loading was accomplished. Three months later, all patients received a screw- retained metal resin cantilevered mandibular restoration. A follow-up protocol of baseline, 3, 6, and 12months was scheduled to assess implant stability. The clinical results of implant stability quotient revealed a statistically significant increase for the group A and the tilted implants ( $P < 0.003$ ) when compared to group B and the axial posterior implants respectively. In the conclusion, the better implant stability quotient values of the tilted implants may be a result of the proper implant-bone contact.

**Keywords:** Immediate loading, computer-guided flapless surgery, tilted implants, axial implants, All-on-four.

## OT-O-02

## A Cross-Sectional Study on Knowledge, Attitude and Practice (KAP) of the Malaysian Public on Antimicrobial Resistance (AMR) and Antibiotics Use

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**Abstract:** Resistance of microorganisms to antimicrobial drugs has become a deadly and costly threat in healthcare. Apart from non-compliance, various other factors such as misuse of antibiotics in many fields led to the rapid increase of antimicrobial resistance (AMR) globally. The study aimed to identify knowledge, attitude and practice (KAP) regarding AMR and antibiotics use among the public in Malaysia. A cross-sectional survey with a self-administered questionnaire was conducted among the general public in the northern region of Malaysia, whereby a total of 440 participants were randomly selected. It was found that majority of the respondents were male (51.14%), of Malay race (50.68%) with 80.7% having monthly household income <RM5000. From the results, the overall satisfactory level of KAP showed significant values of <0.001 for knowledge and practice, but not for attitude. These findings play a role in developing tools to implement strategies for prudent antibiotics use among the public.

**Keywords:** Misuse, overuse, prescription, demand, microorganism

# ABSTRACTS

## Parallel Session III

FAS-O-011

## The Density Functional Theory study for selected Np-based actinide compounds

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**Abstract.** Strong onsite interactions between strongly correlated  $f$ -electrons in actinide compounds became major challenges for density functional theory (DFT) methods in solid state physics. The LDA+U method has considered as a well-established model for these systems in many studies. In this paper, the electronic structure of ferromagnetic  $\text{Np}_2\text{PdGa}_3$  and  $\text{Np}_2\text{PtGa}_3$  intermetallics, crystallizing in the orthorhombic  $\text{CeCu}_2$ -type structure, is investigated by means of the DFT theory. Including the relativistic effects of spin-orbit coupling, and Hubbard term corrections, meaningful changes in the magnetic and electronic properties of  $\text{Np}_2(\text{Pd,Pt})\text{Ga}_3$  are discussed. In particular, the reduction in magnetic moment and DOS enhancement at the Fermi energy are in good agreement with the Kondo lattice characteristic.

**Keywords:** Condensed matter physics, Density functional theory, spin-orbit coupling, intermetallic compounds.

FAS-O-12

## Deconvolution Approach for the Determination of Crystallinity and Ionic Species Fraction in Conductive Solid Biopolymer Electrolytes

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**Abstract.** In this study, deconvolution technique was applied to investigate the ionic transport properties in conductive solid biopolymer electrolyte (SBE) films. This property is crucial to determine the potential of SBE to be utilized as a component in a battery. XRD deconvolution reveals the percentage of crystallinity, while FTIR deconvolution shows the fraction of ionic species in SBE. Both XRD and FTIR deconvolution was performed using OriginPro, data analysis and graphing software.

**Keywords:** Deconvolution technique, XRD, FTIR, Solid Biopolymer Electrolyte

## FAS-O-13

**Osmotic Dehydration : Simple but Significant**

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**Abstract.** One-third of food produced for human consumption is lost or wasted. The United Nations Sustainable Development Goals (SDG) aim to halve food waste by 2030. Therefore, concerted efforts to prevent food waste are needed to provide more food for human consumption, thereby reducing greenhouse gases. Food preservation is one strategy for ensuring food sustainability. Drying is an important unit operation in food preservation because it reduces the water content of food products. A variety of drying techniques have recently emerged in food processing to improve the drying performance. Osmotic dehydration is one of the promising pre-treatments that have been implemented in the drying process to reduce energy consumption while also providing better dried product quality. The aim of this study is to provide an overview of osmotic dehydration and emphasise its challenges. In addition, progress in research on osmotic dehydration in circumventing the challenges was highlighted.

**Keywords:** Osmotic Dehydration, Drying, Food Preservation, Sustainability, Pre-treatment.

## FAS-O-14

## Nonlinear absorption and efficient optical limiting of gold, silver, and gold-silver nanocomposite

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**Abstract.** In this study, metallic nanomaterials silver, gold and composite silver-gold nanoparticles AgNPs, AuNPs, and (Ag-Au) NPS were prepared via chemical reduction, the prepared AgNPs, AuNPs have a spherical shape with an average diameter of about 12, 15 nm. Respectively as confirmed by Transmission Electron Microscope (TEM). absorption peaks for Ag NPs, Au NPs were observed at 420, 520 nm respectively, After the formation of the composite, the same absorption peaks were observed due to the contribution of metallic Ag and Au nanoparticle. an open aperture Z-scan setup was used to calculate the nonlinear absorption coefficient  $\beta$  values and signs. The calculated nonlinear absorption coefficients for Ag, Au, and (Ag-Au) nanocomposites were positive and Ag-Au NPs displays a blend of Ag and Au NPs nonlinearities. That makes (Ag-Au) NPs composites promising candidates for optical limiting applications.

**Keywords:** Z Scan, nonlinear optical absorption, metallic nanocomposite, optical characterization



## FAS-O-15

## Potential of Carboxymethyl Sago Starch Hydrogel as Delivery System for Newcastle Disease Vaccine (LaSota Strain)

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**Abstract.** The highly contagious Newcastle disease virus (NDV) continues to threaten poultry all over the world. The NDV vaccine is a promising solution to the current Newcastle disease challenges, and thus an efficient delivery system should be developed to facilitate the efficacy of the vaccines. In this study, carboxymethyl sago starch (CMSS) hydrogel was synthesized by the acidic crosslinking agent, acetic acid. This CMSS hydrogel was utilized as a carrier for the NDV (LaSota strain) in poultry to improve the thermal stability and effectiveness of the vaccine. The structural properties and morphology of the CMSS hydrogel were characterized by Fourier Transform Infrared (FT-IR) spectroscopy and scanning electron microscopy (SEM). The FT-IR spectroscopy confirmed the presence of carboxylic acid, due to the reaction of COO<sup>-</sup> in the CMSS with H<sup>+</sup> from the acetic acid. The SEM micrograph showed irregular pores of the CMSS hydrogel after crosslinking reaction with acetic acid. The in-vitro viability test for stability study of the encapsulated NDV showed it best at 27°C for 30 days with a 100% mortality rate of embryonated specific pathogen-free (SPF) eggs. In conclusion, CMSS hydrogel could be a promising delivery system for the NDV vaccine to reduce the main problem of the live vaccine that requires biocontainment and a cold chain to prevent vaccine deterioration.

**Keywords:** Sago starch, carboxymethyl starch, hydrogel, NDV vaccine, delivery system.

**FAS-O-16****A study of structural properties of RdRp DENV by using Molecular Dynamics simulations an *in-silico* study**

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Molecular dynamics simulations (MD) have become much more important in molecular biology and drug development in recent years. These simulations completely captured the behaviour of proteins and other biomolecules. In our study, we compared the structures of RdRp DENV3 proteins (2J7U apoprotein) and (2J7W complex) during MD simulations and their flexibility with YASARA software and Amber14 force field. After 150 ns, we obtained 255 conformations for both structures. For both structures with root mean square deviation (RMSD), root mean square fluctuation (RMSF), radius of gyration (Rg), solvent accessibility surface area (SASA), energy value, hydrogen bonding (NH bonding), and dynamic cross-correlation matrix (DCCM), analyses were performed using MD simulations. The results showed a difference in RMSD for the apoprotein, in which the apoprotein had more conformations than that of the complex. And for the RMSF, there are flexible residues on the apoprotein, and these residues (Met342 to Arg352) are near the active site. In the complex structure, the average Rg value was found to be 25.97, whereas for Apo it showed a value of 25.53. The hydrogen bond demonstrated that the complex was more than compared to the apoprotein, and SASA demonstrated that at 65ns, the structures are open and there is more area to access the solvent, and for DCCM, the complex showed full correlation more than the apoprotein. In our study, a computational method (MD simulations) was used to compare the apoprotein with the complex during 150 ns.

**Keywords:**

MD simulations, Ensemble generation, RdRp, DENV, *in-silico*

**Author Biography**

My name is Amaal Mohammed Salih Nasr. I am from Libya. I finished my master's at UCSI University in biotechnology. I am a PhD student at Universiti Putra Malaysia. I am from the chemistry department. My field of study is Theoretical and Computational Chemistry. My supervisor is Dr. Bimo Ario Tejo. I'm working on dengue virus RdRp. I have done Molecular Dynamics Simulations and Molecular Docking.

## FAS-O-17

**Eco-Friendly Organic Polymers as Gas Storage Media**Dina S. Ahmed<sup>1, a)</sup><sup>1</sup>*Department of Medical Instrumentation Engineering, Al-Mansour University College, Baghdad, Iraq*<sup>a)</sup>*Corresponding author: [dinasaadi86@gmail.com](mailto:dinasaadi86@gmail.com); [dina.saadi@muc.edu.iq](mailto:dina.saadi@muc.edu.iq)*

**Abstract.** Three phosphate esters were successfully synthesized from the reaction of 2-, 3- and 4-hydroxybenzaldehyde with phosphoryl chloride. Reactions of phosphate esters with benzidine in the presence of glacial acetic acid gave the corresponding novel phosphorus organic polymers containing the azomethane linkage. The structures of the synthesized compounds were confirmed by Fourier transform infrared spectroscopy, nuclear magnetic resonance and elemental analysis. Interesting physiochemical properties for the polymeric materials were observed using a combination of several techniques such as gel permeation chromatography, scanning electron microscopy, Brunauer–Emmett–Teller and nitrogen adsorption–desorption isotherm, Barrett–Joyner–Halenda and H-sorb 2600 analyzer. The mesoporous polymers exhibit tunable porosity with Brunauer–Emmett–Teller surface area (SABET = 24.8–30 m<sup>2</sup>.g<sup>-1</sup>), pore volume (0.03–0.05 cm<sup>3</sup>.g<sup>-1</sup>) and narrow pore size distribution, in which the average pore size was 2.4–2.8 nm. The synthesized polymers were found to have high gas storage capacity and physico-chemical stability, particularly at a high pressure. At 323 K and 50 bars, the polymers have remarkable carbon dioxide uptake (up to 82.1 cm<sup>3</sup>.g<sup>-1</sup>) and a low hydrogen uptake (up to 7.4 cm<sup>3</sup>.g<sup>-1</sup>). The adsorption capacity of gasses for polymer 5 was found to be higher than other polymers.

**Keywords:** eco-friendly polymers; phosphorus polymers; gas storage; gas uptake; gas capture; Brunauer–Emmett–Teller surface area

## FAS-O-18

**Effect of  $\text{Na}_2\text{CO}_3/\text{Al}_2\text{O}_3$  on the Calcium Fluoroaluminosilicate based Bioglass Ceramics**

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**Abstract.** Bioactive glass (BG) is well known as materials that have ability to form hydroxyapatite layer (HA) that accelerates bonding between bone tissues indicating a good biological response. However, previous BG with composition of  $\text{SiO}_2\text{-CaO-Na}_2\text{O-P}_2\text{O}_5$  system exhibits lower mechanical strength. The present research is to study the effect of alumina ( $\text{Al}_2\text{O}_3$ ) in the  $44\text{SiO}_2\text{-(20-x) Na}_2\text{CO}_3\text{-24CaO-6P}_2\text{O}_5\text{-6CaF}_2\text{-xAl}_2\text{O}_3$  system where  $x = (0, 3, 6, \text{ and } 9 \text{ wt}\%)$  towards its mechanical performance. The structural and microstructural were investigated by x-ray diffraction (XRD) and scanning electron microscopy (SEM). The density of the glass ceramic samples was measured by Archimedes' method. From the results, it was found that the higher composition of  $\text{Al}_2\text{O}_3$  sinter at  $950^\circ\text{C}$  has good result in term of density measurement. The XRD confirmed the crystallization of anorthite, fluorapatite and nacaphite increase with increasing  $\text{Al}_2\text{O}_3$ . The SEM shows the morphology of agglomeration and irregular shape with a variation on size of sintered bioactive glass.

**Keywords:** alumina, crystalline, glass-ceramics, mechanical properties, melt-derived

## FAS-O-19

## Assessment of Physical Health Characteristics in Selected Selangor Rivers in Malaysia

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**Abstract.** This research aims to evaluate the physical habitat quality of the Rawang sub-basin of the Selangor River. Seven river sampling sites were selected, including Guntong (SR1), Guntong's tributaries (SR2/reference), Kuang (SR3 and SR7), Gong (SR4), Buaya (SR5), and Serendah (SR6) using random sampling based on accessibility and proximity to freshwater fish farms. The habitat assessment was performed during the rainy (August) and dry (December) 2019. Results indicated that the Guntong River tributary recorded the highest Qualitative Habitat Evaluation Index (QHEI) (14.99) with the suboptimal condition (11 - 15.9). The average habitat score of other sampling sites under the suboptimal condition, namely Guntong (SR1), Kuang (SR3), Buaya (SR5), and Serendah (SR6) Rivers, were recorded as 13.16, 11.30, 12.58, and 14.05, respectively. Meanwhile, the Kuang River (SR7) and Gong River (SR4) score were 10.65 and 10.61 (marginal condition/6 - 10.9) respectively. To conclude, this study showed that the QHEI is a helpful tool in identifying the potentially unsustainable fish farming impacted river sites to evaluate the river's physical health.

**Keywords:** Aquatic ecosystem, fish farming, habitat assessment, QHEI, and Selangor River.

FAS-O-20

## Comparative Analysis of Ultra-High Performance Liquid Chromatography and Antioxidant Properties Between Kenaf (*Hibiscus cannabinus* L.) Seed and Soybean (*Glycine max*) Milk Substitutes

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**Abstract.** This study was conducted to evaluate and compare between whole and dehulled kenaf (*Hibiscus cannabinus* L.) seed and soybean (*Glycine max*) milk substitutes in terms of their chemical compound content and antioxidant properties. Qualitative analysis of chemical compounds by ultra-high performance liquid chromatography (UHPLC) revealed that whole kenaf seed milk (WKM), dehulled kenaf seed milk (DKM), and soybean milk (SM) contain various bioactive components, and some were present in all samples. Their presence suggests that WKM and DKM may exert health-promoting biological effects comparable to those of SM. Based on spectrophotometric assays of antioxidant properties, WKM and DKM yielded higher total phenolic contents (TPC) and superior antioxidant activities in comparison to SM. Significant and strong negative correlation between TPC and ferrous ion chelating (FIC) of WKM was observed. Essentially, kenaf seed milk offers promising prospective as a functional beverage owing to the presence of bioactive components and good antioxidant properties.

**Keywords:** kenaf, fibre crop, dehulling, milk substitute, antioxidants

## FAS-O-21

### Preliminary Analysis of Several Milk Composition Genes in A Local Dairy Buffalo Farm

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**Abstract.** Demand for buffalo cheese; mozzarella is increasing in Malaysia. However, the local buffalo milk production supply is very low due to the local buffalo being underutilized and their milk composition genes are unknown. Thus, the objective of this study was to screen the presence of the genes in 52 dairy buffalos from Beranang, Selangor. *SCD* gene was absent — no amplification in all buffalos. High percentages (both 98%) of both *GH* and *GHR* genes show good potential for milk production. However, absence of *SCD* gene shows low-fat composition. Low percentage (23.08%) of *DGAT1* gene shows low-fat content. High (94.23%) and low (1.92%) percentages of *PRL* and *PRLR* genes, respectively show variation in protein composition. In conclusion, the genetic potential of buffalos from Beranang requires improvement for increasing their milk quality. This can be done by selecting and introducing buffalos with *DGAT1*, *PRL*, *PRLR* and *SCD* genes and breeding them.

**Keywords:** *Bubalus bubalis bubalis*, milk compositions genes

## FAS-O-22

## Quantification of the Rare Sugar Trehalulose and Antioxidant Activities of Stingless Bee Honey Produced in Three Consecutive Years

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**Abstract.** Two stingless bee honey (SBH) from the species *Geniotrigona thoracica* and *Heterotrigona itama* were collected from Ladang 10, Universiti Putra Malaysia in three consecutive years. Their sugar composition and antioxidant activities were determined using high-performance liquid chromatography (HPLC) coupled with evaporative light scattering detector (ELSD), total flavonoid content (TFC), total phenolic content (TPC) and ferric reducing antioxidant power (FRAP) assay respectively. Trehalulose was the predominant sugar in both species, with *G. thoracica* having the most significant trehalulose amount at 85.23 % and both species have fructose and glucose present in small amount. Sugar profile varied significantly each year, but trehalulose remained the highest sugar content. Antioxidant activities of SBH show that *H.itama* exhibit higher and significant TFC, TPC, and FRAP value than *G.thoracica*. FRAP activities shows a strong correlation with TFC and TPC. In conclusion, SBH produced by the two species are consistently high in trehalulose and *H. itama* honey maintained high antioxidant properties throughout the three years.

**Keywords:** Stingless bee honey, *Geniotrigona thoracica*, *Heterotrigona itama*, trehalulose, antioxidant



MSS-O-11

## Sufficient Conditions for the Existence of Minimizers for Fuzzy Variational Problems

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**Abstract.** Fuzzy variational problems have received significant attention over the past decade due to a number of successful applications in fields such as optimal control theory and image segmentation. The current literature on fuzzy variational problems focuses on the necessary optimality conditions for finding the extremums and has been studied under several differentiability conditions. In this study, we prove the sufficient conditions for the existence of minimizers for fuzzy variational problems under a weaker notion of convexity, namely preinvexity, and Buckley-Feuring differentiability. We further discuss its application in a cost minimization problem.

**Keywords:** Fuzzy variational problem, existence of minimizer, sufficient conditions, invex set, preinvex function

**MSS-O-12****Some Remarks on Delta Sequences and Role in The Convolutions**

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**Abstract.** The delta function(distribution), also known as the unit impulse is a generalized function or distribution over the real numbers or complex, whose value is zero everywhere except at zero, and its integral over the entire real line is equal to one. Even it was studied in the literature earlier than Dirac however this delta function is popularized by P.A.M Dirac, but it was already known as 'impulse' function in classical physics since it is used to model a tall narrow spike function (an impulse), and other similar abstractions such as a point charge, point mass or electron point and further the moment and dipole in the electromagnetic theory. In the present study we construct and study the properties of some sequences including the geometric properties that converge to the Dirac delta functions and play the role of the approximate identities in the convolution theory.

**Keywords:** delta function, impulse function, distributions, approximate identities

## MSS-O-13

## Fuzzy TOPSIS-based New Divergence Measure for Staff Performance Appraisal

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**Abstract.** Numerous applications of fuzzy set theory have made use of different divergence measure techniques. The divergence measure is a method for calculating the discrimination between two objects. The aim of this study is to develop a new divergence measure that is integrated with the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) technique. Due to its simplicity and suggestion of ideal and anti-ideal results, the TOPSIS technique has received significant popularity as a multi-criteria decision-making (MCDM) method. Linguistic expressions are transformed into triangular fuzzy numbers using the fuzzy concept. In order to illustrate the usefulness and efficacy of the proposed method, a numerical example of a staff performance appraisal is provided. Results from this study were compared to those from other MCDM techniques, and it was found that the proposed method provides more sensible and feasible solutions than its counterparts.

**Keywords:** Divergence measure, TOPSIS method, fuzzy concept, linguistic expressions, performance appraisal

## MSS-O-14

## Prediction of Dengue Cases in Malaysia using Fuzzy Inference System

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**Abstract.** Dengue is a mosquito-borne viral disease that has rapidly spread worldwide, including Malaysia. Dengue viruses are transmitted through various social and environmental factors such as population density, human mobility, and climate variable. This paper presents a mathematical model by using fuzzy inference system as a forecasting model. The prediction of dengue cases is based on the climate variables such as temperature, relative humidity, and rainfall.

**Keywords:** Fuzzy inference system, forecasting, dengue, temperature, rainfall

## MSS-O-15

## Approximating the effective length of interval to forecast in fuzzy time series

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**Abstract.** The research on forecasting in fuzzy time series has increased due to its capability in dealing with uncertainty and vagueness. However, in this research the effectiveness of the forecasting is hugely depending on the first step in every forecasting model being applied, that is the determination of the size of the intervals. However, previous study did not mention on the best length of interval to be used in the model. In this study, we suggested a few different lengths of interval to be used, to look for the best size of interval in fuzzy time series. The aim is to increase the accuracy of forecasting. This method is applied to the selected data of tuberculosis cases reported monthly in Sabah starting from January 2012 until May 2020. The data is collected from the Queen Elizabeth Hospital in Kota Kinabalu, Sabah. The performance of evaluations is showed by comparison on the values obtained for MSE and RMSE. Two numerical data sets from the whole tuberculosis data were used to illustrate the chosen methods.

**Keywords:** Fuzzy time series, Fuzzy number, Length of interval, Forecasting, Tuberculosis

## MSS-O-16

## Determinant of Internal Factors for Academic Achievement using Multiple Regression: A Comparison Study Between Gender in Universiti Malaysia Sabah

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**Abstract.** Group positiveness is believed to be a potential significant factor on academic achievement among undergraduate students. This study attempted to investigate the effects of collective self-esteem (CSE), group trust (GT), and each domain of CSE and GT upon academic achievement and to compare the effects of CSE, GT and each of their domains between male and female students. Eight hundred and sixty-nine students from various faculties in Universiti Malaysia Sabah voluntarily participated in the study. CSE and GT were measured by two standard instruments which are the Collective Self-Esteem Scale and the Trust in Team Scale. Both of the scales contain four domains. Membership Self-Esteem, Private Self-Esteem, Public Self-Esteem, and Importance to Identity are the domains for CSE. Whilst, GT are comprised of Competence, Integrity, Benevolence, and Predictability. Academic performance was measured by the students' Cumulative Grade Point Average (CGPA). Descriptive data analysis, correlation analysis and multiple regression analysis have been conducted. Membership Self-Esteem and Competence were found to be the determinants for students' academic achievement. Whereas, Predictability was found to be an additional determinant for female students' academic achievement.

**Keywords:** Collective Self-Esteem, Group Trust, Team Trust, Academic Performance, Multiple Regression.

## ET-O-11

## Effects of Channel Thickness on Electrical Performance of Pentacene Based Organic Thin Film Transistors

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**Abstract.** As organic transistors is extensively been research in applications of flexible and low cost electronics applications, the analytical models and simulation methods were demanded to predict the optimized performance and circuit design. In this work, the electrical properties of organic thin film transistors (OTFTs) were studied as a function of the thickness of pentacene channel layer. A bottom gate, top contact structure was investigated by simulating the electrical characteristics of OTFT using 2D empirical simulation. The device with 2  $\mu\text{m}$  channel length and various pentacene thickness layers varied from 20 nm to 150 nm has been simulated. From the simulation, drain current of organic transistor was increased as the channel thickness increased. The subthreshold slope decreased as channel thickness increased and current on/off ratio analysed is approximately  $10^6$ . Thus, the simulation provides significant extraction of information about the behaviour of the organic thin film transistor.

**Keywords:** organic thin film transistors (OTFTs), TCAD simulation, pentacene, top gate bottom contact.

## ET-O-12

**Classifying The Imagination of Movement with Attention Level**

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**Abstract.** Brain-Computer Interface (BCI) acquires brain signals and translates them into machine commands that represent the user's intention. For those with physical impairments, having a device that can only be operated by their thoughts is advantageous. Therefore, this study is presenting a classification of the movement imagination with a small sample size of attention levels. The provided data was collected by asking all subjects (6 subjects) to imagine the movement to the left and right. The attention levels that range from 0 to 100 were obtained by using an electroencephalography (EEG) device; Neurosky Mindwave Mobile Plus. The electrode placement was at the area of the left prefrontal lobe. The Arduino was programmed to have a sampling rate of one sample per second for controlling purposes. The sample size was 360 from 6 trials. The classification was done with logistic regression. A 5-fold cross-validation method was utilized to evaluate the classification results. There might be a loss of useful information with the low sampling rate. This led to the low accuracy of the classification.

**Keywords:** Brain-Computer Interface, Movement imagination, classification, attention level.



## ET-O-13

## Blended Self-Compacting Concrete Incorporating Wood Ash and Quarry Dust

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**Abstract.** Self-compacting concrete (SCC) is concrete which has an ability to self-compacted by its own weight. SCC have been recognized as good flowing ability with high resistance to segregation while maintaining their cohesiveness at fresh stage. The performances of SCC made of ordinary concrete ingredients was well established. Evolution of concrete technology bring the needs for exploration of sustainable concrete ingredients. Some of the by-product waste produced from industrialization could be recycled for the benefit of construction materials such as wood ash and quarry dust. This paper utilized the use of wood ash and quarry dust as cement and fine aggregate replacement respectively for SCC. Partially replacement of cement and fine aggregate by wood ash and quarry dust are used. Combination of 10% and 25% replacement rate was used for wood ash and quarry dust respectively. The physical and chemical characteristics of wood ash, fresh and hardened properties of developed SCC are discussed in this study. Based on the results, all the fresh properties results are within the acceptable range values given by EFNARC (2002) except for slump flow and L-box of selected mixes only. Moreover, it is observed that the inclusion of 10% wood ash had a slight enhancement on hardened properties of SCC in presence of 25% quarry dust due to pozzolanic activity of wood ash and the fineness of the quarry dust that contributed to the reduction in voids of the concrete which leads to attain more compaction, which improves the strength of the SCC. From the results obtained, it can be concluded that the incorporation of wood ash and quarry dust showed remarkable/comparable results compared to control mix which suggest the usage of these two constituents in the production of SCC is way forward in concrete technology of using waste as alternative for concrete mixtures.

**Keywords:** Self-compacting concrete, wood ash, quarry dust, admixture, fresh state, flowability

## ET-O-14

## The Potential Usage of Natural Rubber Latex Emulsion in Modifying Problematic Soil Properties for Geotechnical Works

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**Abstract.** Soil is the most encountered materials as it is employed in various geotechnical engineering structures such as foundation, excavation and supporting ground structures, slope stability, pavement, dams, building and others. When soil collapses as a result of shear, it is deemed weak soil or inappropriate soil due to severe settling and crushing. Moreover, when local natural aggregates are of poor quality and expensive to import, the expense of excavating the subgrade soils and replacing them with granular materials is high, or when the subgrade soils are soft and have limited bearing capacity, then the planned structure will face a huge problem. In order to protect the construction structures, it is necessary to identify and understand the soil properties and method to strengthen and stabilize it. This paper will highlight and discuss the important aspects of the potential usage of natural rubber latex emulsion (NRLE) in modifying problematic soil properties by reviewing several previous studies such as i) the problematic soils properties, ii) factors that influence the stabilization technique, iii) history and application of NRLE in stabilizing problematic soils and iv) the economic valuation of NRLE usage in geotechnical works in general.

**Keywords:** Natural rubber latex, emulsion, subgrade, stabilization, road.

## ET-O-15

## Extraction, Characterization, and Applications of Nano-Hydroxyapatite and Synthesis of Its Film Composites

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**Abstract.** In this study, novel chitosan/nano-hydroxyapatite/starch (CS/HAp/St) biocomposite was formulated using *Moringa oleifera* leaves as a green source. HAp was extracted from *Moringa oleifera* leaves following rapid microwave irradiation technique with a yield of 4% and characterized using Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and energy dispersive x-ray analysis (EDX). Successful extraction of flakes-like HAp was confirmed by FTIR and the Ca/P ratio was found to be 1.68, close to the literature value of 1.67. Antibacterial activity of HAp was evaluated against *Escherichia coli*, which demonstrated better antibacterial resistance with increasing concentrations of HAp in the bacterial culture. Moreover, CS/HAp and CS/HAp/St composite films were formulated using solvent casting method and characterized using FTIR and SEM. Finally, the effect of starch incorporation in the films was studied, which showed that inclusion of starch resulted in dissolution of previously insoluble polymer-like CS/HAp films in room temperature water.

**Keywords:** Hydroxyapatite, Antibacterial property, Bio-composite films

# ABSTRACTS

## Poster Presentation

## FAS-P-01

**Effect of Sandwich Compost on the Soil-plant Nitrogen**

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**Abstract.** Nitrogen (N) is important for the leafy vegetable to grow. Local based soil amendment has unknown N content and availability to plant for SPAD values. The objective was to determine the N of the soil-plant system with the application of Sandwich compost. Eight treatments were the combination of Sandwich compost substrate as a soil amendment applied before plant growing and its leachate as seed priming agent and liquid fertilizer. The control treatment was the commercial fertilizer application. Soil total N under Sandwich compost substrate amendment (> 0.12 % N) showed significantly higher than pre-amended soil and substrate unamended ones. Plant N was significantly higher (4 % N) in the third growing cycle; however, amended and unamended substrates exhibited a similar N percentage (2.8-3.5 % N). SPAD values showed similar trend with soil total N. Soil total N, plant N and SPAD values were slightly positively correlated. Food waste as the raw materials of Sandwich compost was not promising in every growth. In short, Sandwich compost substrate synchronizes N for soil and plant N.

**Keywords:** Bokashi; food waste; leachate; liquid fertilizer; soil amendment

## FAS-P-02

**Comparative evaluation of total phenolic content and antioxidant activities of Malaysian stingless bee *Heterotrigona itama* propolis extracts using different extraction approaches**

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**Abstract.** Propolis, one of the beehive products derived from the industry that is abundant in bioactive compounds. Their diverse biological characteristics have been recognised for their therapeutic and health-improving qualities. In the present study, total phenolic content and antioxidant activities of three different extraction techniques were compared including physical (autoclaved-assisted and sonication), chemical (ethanol) and enzymatic extraction (bromelain, B-glucosidase, pectinase and cellulase). The difference in the extraction method approach determines the value of the total phenolic content (TPC) and antioxidant activities of the propolis extracts, ferric reducing antioxidant power (FRAP) and 2,2-diphenyl-1-picrylhydrazyl (DPPH) scavenging assay. Briefly, ethanolic extracts showed the highest TPC, FRAP and DPPH free radical scavenging activities as opposed to other propolis extracts at  $227.22 \pm 10.28$  mg GAE/g,  $167.22 \pm 10.28$  and  $109.74 \pm 1.911$  mg AAE/g, respectively. These findings suggested that propolis extract has the potential for therapeutic purposes particularly, for the prevention of oxidative stress-related disorders.

**Keywords:** autoclave-assisted extraction, enzymatic-assisted extraction, sonication extraction

## FAS-P-03

**Effect of *Aspergillus oryzae*-fermented Broken Rice and Brewers' Rice on Anti-melanogenic Activity in Co-culture of UVB-irradiated Keratinocytes and Melanoma**

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**Abstract.** In this study, the anti-melanogenic effects of two water extracts from *Aspergillus oryzae*-fermented broken rice (FBR) and Brewer's rice (FBrR), were investigated using UVB-irradiated human keratinocytes indirectly co-cultured with human melanoma. The results demonstrated a significant reduction in intracellular tyrosinase activity by the FBR and FBrR in melanoma, which led to a slight decrease in the melanin content. The tyrosinase (TYR), tyrosinase-related protein-1 (TRP-1), and tyrosinase-related protein-2 (TRP-2) gene expression were also significantly downregulated by both FBR and FBrR extracts. Both FBR and FBrR extracts inhibited the growth factor ET-1 as well as pro-inflammatory cytokines TNF- $\alpha$ , IL-1 $\beta$ , and IL-6, which may have contributed to the anti-melanogenic effect in the UVB-treated co-culture. In conclusion, both FBR and FBrR extracts are potential bio-ingredients for use in the cosmetics industry as cosmeceuticals.

**Keywords:** Broken rice, Brewers' rice, tyrosinase, melanogenesis, melanin

## FAS-P-04

## Impact of Type 2 Diabetes Mellitus on Oxidative Stress and on the Activity of Blood Cholinesterase and Its Response to Chemical Inhibitors

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Correlation between oxidative stress and plasma cholinesterase activity in type 2 diabetes mellitus patients and healthy individuals was analyzed besides *in vitro* inhibition of plasma and erythrocyte cholinesterase activities by dichlorvos. Plasma and erythrocyte cholinesterase activities and plasma lipid peroxidation (MDA) were determined by Ellman's method and colorimetry at 535 nm, respectively. Higher plasma and erythrocyte cholinesterase activities and higher malondialdehyde levels were found in type 2 diabetic patients ( $P < 0.05$ ). Dichlorvos at 0.5 and 1  $\mu\text{M}$  inhibited plasma and erythrocyte cholinesterase activities in control and diabetic patients (plasma  $-43 \pm 16$  ;  $-46 \pm 17$  and erythrocyte  $-34 \pm 18$  ;  $-45 \pm 17$ ), respectively. The percentages of cholinesterase inhibition in diabetic patients were higher than in healthy subjects ( $P < 0.05$ ). Diabetes type 2 renders the patients more susceptible to oxidative stress. Patients with diabetes could be more sensitive to toxicity by cholinesterase inhibitors. Accordingly, caution should be practiced in patients using cholinesterase inhibitors.

**Keywords:** Type 2 diabetes mellitus; cholinesterase activities; oxidative stress; cholinesterase inhibitors; anti-cholinesterase therapy



**FAS-P-04****Antibiotic Susceptibility Profiles of *Klebsiella* spp. Clinical Isolates From Hospital Pengajar Universiti Putra Malaysia (HPUPM)**

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The rise of extended-spectrum- $\beta$ -lactamase (ESBL) and carbapenemases producing strains in *Klebsiella* spp. clinical isolates are worrying, and its causing resistance to carbapenems, the last resort of antibiotics. Studies on antimicrobial susceptibility patterns and distribution is crucial in understanding the mechanism of resistance in clinical isolates. Therefore, this study aims to investigate the antibiotic susceptibility profile of *Klebsiella* spp. clinical isolates obtained from ill patients in Hospital Pengajar UPM (HPUPM). Fifty-four *Klebsiella* spp. clinical isolates were collected from HPUPM between January to June 2022. The antibiotic susceptibility profiles of the isolates were determined using Kirby-Bauer disk diffusion method against different classes of antibiotics. The findings showed that among 54 *Klebsiella* spp. isolates, all were resistant towards ampicillin and ciprofloxacin. In terms of carbapenems, the isolates were more resistant towards meropenem (46%) compared to imipenem (13%). In addition, 78% of isolates were resistant towards cephalosporins indicative of ESBLs producing strains. Besides beta-lactams, these isolates were also resistant towards kanamycin (52%). Overall, most of the isolates are ESBLs but not all are carbapenem-resistant Enterobacteriaceae (CRE). In conclusion, the emergence of ESBL and carbapenemases producing strains is a concern, as it causes limitations of the antimicrobial agent against treating patients optimally.

**KEYWORDS:** antibiotic susceptibility, carbapenemases, extended-spectrum- $\beta$ -lactamase (ESBL), Kirby-Bauer disk diffusion, *Klebsiella* spp.

## FAS-P-05

## Inhibition And Stability Analyses of Specially Designed Peptide Inhibitors Against BLEG-1 Evolutionary Divergent B3 Metallo- $\beta$ -Lactamase

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**Abstract.**  $\beta$ -lactam antibiotics are the most useful chemotherapeutic agents in the treatment of diseases of bacterial origin. However, the emergence of antimicrobial resistance (AMR) mechanism among pathogenic bacteria has downsized the efficacy of antibiotics via the production metallo- $\beta$ -lactamase (MBL), an enzyme which deactivates  $\beta$ -lactam antibiotics by hydrolyzing the  $\beta$ -lactam ring of the antibiotics. Among the subclasses of MBLs, B1 and B3 MBLs are reported to have wide activity spectrum towards  $\beta$ -lactams. Clinical inhibitors that are targeted against B3 subclass MBLs are scarce. Hence, the present study highlights the characterization of specially designed inhibitory peptides against BLEG-1, a novel, evolutionary divergent and broad activity spectrum B3 subclass MBL from *Bacillus lehensis* G1. Four peptides were found to inhibit BLEG-1 in the range of 50% to 80% even at 1  $\mu$ M. Although thermostability assay showed that they are not thermally stable, pH stability assay showed that they are able to withstand acidic pH, retaining inhibition of BLEG-1 in the range of 50% to 76%. This property might be of advantage for their possible application as therapeutics against AMR in pH sensitive release systems.

**Keywords:** metallo- $\beta$ -lactamase, BLEG-1, inhibitory peptides, inhibition, pH

## FAS-P-06

## Application of Predictive Food Microbiology to Assess the Growth Kinetics of *Staphylococcus aureus* in Cooked Yellowfin Tuna

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**Abstract.** Tuna meat is very proteinaceous in nature and therefore highly perishable. In the event of time-temperature abuse, *Staphylococcus aureus* (SA), a toxin-producing bacteria, can rapidly proliferate thereby compromising the safety of cooked tuna meat. The aim of this project was therefore to model the growth of SA in cooked yellowfin tuna when subjected to various temperature scenarios. Using food microbiology predictive software, the growth models showed maximum specific growth rates of 0.0091, 0.0151, 0.0354, 0.0664, and 0.0776 h<sup>-1</sup> at 2, 4, 15, 25, and 35°C, respectively with trace levels of the staphylotoxins A – E detected. Levels of SA surpassing 5 Log CFU/g after 2 days at 25°C can pose a health risk. Microbial growth models have relevant applications in the tuna industry and can be used in complementarity with traditional microbiological analyses for faster decision making with respect to release of consignments of cooked tuna products.

**Keywords:** Predictive Food Microbiology, *Staphylococcus aureus*, Cooked Tuna, Food Safety, Modelling

## FAS-P-07

## Food Intake, Biochemical and Oxidative Stress Markers in Mexican Young Overweight and Obese Adults

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**Abstract.** The prevalence of overweight and obesity in Mexican young adults has risen in the last time. In this study, we analyze oxidative stress and lipid profile markers, as well as their correlation with food intake in obese and overweight young subjects (19-22 years old) from the region southeastern of México. Food intake information was obtained by food frequency questionnaires carried out on 100 people (19-22 years). A sample (n=60) was selected, nitric oxide (NO) levels and catalase activity (CAT) were measured in serum by Griess method and spectrophotometry respectively. Anthropometric measures and lipid profile was determined by conventional methods. NO release was higher in obese and overweight, in contrast, CAT was lower in both cases compared with control subjects. Fast foods, sugar-sweetened beverages, fried food were consumed in high proportions in all cases. These findings establish differences between subjects with and without apparent metabolic alterations, but with overweight and obesity.

**Keywords:** Obesity, Oxidative Stress, Catalase activity, Overweight, Food intake

## FAS-P-08

**Antioxidant Properties of *Parquetina nigrescens* Extracts and Their Effect on Diabetic Albino Rats Induced by Alloxan**

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**Abstract.** *Parquetina nigrescens* is a medicinal plant often used in traditional African medicine to treat a range of conditions. *Parquetina nigrescens* leaves and stems crude methanol extract was extracted to evaluate its phytochemical, antioxidant activity, and anti-diabetic impact on fasting blood glucose levels in alloxan-induced diabetic rats. Column chromatography with n-Hexane, chloroform, ethyl acetate, and methanol were used to fractionate the crude extracts. Phytochemicals screening and antioxidant tests on DPPH radical scavenging activity and total antioxidant capacity were evaluated. In alloxan-induced diabetic rats, the impact of intraperitoneal administration of *P.nigrescens* extract at various dosages of 250mg/kg, 500mg/kg, and 1000mg/kg on blood glucose levels was investigated. The presence of tannins, flavonoids, saponins, alkaloids, steroids, terpenoids, and cardiac glycosides was determined phytochemically. At a concentration of 1.0mg/ml, the DPPH of *P.nigrescens* ethyl acetate fraction had a maximum value of 96.84 %. *P.nigrescens* ethyl acetate has the greatest total antioxidant capacity (0.59 + 0.01), whereas n-hexane has the lowest total antioxidant capacity (0.003 + 0.01). When diabetic albino rats treated with the extracts were compared to nondiabetic albino rats, diabetic albino rats treated with the extracts showed a significant (P0.05) decrease in blood glucose levels. The observed therapeutic efficacy may be attributed to the phytochemicals found in *P.nigrescens* preparations.

## OT-P-01

**Antimicrobial Activity Produce From *Paenibacillus Polymyxa* Kp10 Against Methicillin-Resistant *Staphylococcus Aureus***

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**Abstract:** By the 21<sup>st</sup> century, the emergence of antimicrobial pathogens around the world are rising critically and becomes a major problem in healthcare. This is due to the unregulated usage of antibiotics in the treatment that leads to high morbidity and mortality. Methicillin-resistant *Staphylococcus aureus* (MRSA) is one of the multidrug-resistant pathogens that cause chronic infections. Treatment of these infections using conventional antibiotic are ineffective due to antimicrobial resistance. This has propelled the search for alternative antibiotic therapy using antimicrobial peptides (AMPs). AMPs are small protein molecules that have a broad spectrum of antimicrobial and immune-modulatory activities against pathogens. *Paenibacillus polymyxa* is a gram-positive bacteria that is able to produce AMPs against the pathogen. This study aims to screen antimicrobial activity produced from *P. polymyxa* against MRSA. Firstly, cell-free culture supernatant (CFCS) isolated from *P. polymyxa* KP10 will be prepared. Then, the antimicrobial activity of CFCS against nine MRSA clinical isolates will be determined using the agar well diffusion method. The sensitivity of antimicrobial activity of CFCS in various pH, temperature, and proteolytic enzymes will be analysed. The findings from this study will provide insight into the potential of AMPs produced from *P. polymyxa* KP10 with antimicrobial properties against MRSA.

**Keywords:** Methicillin-resistant *Staphylococcus aureus*, antimicrobial, antimicrobial peptides, *Paenibacillus polymyxa*.

## OT-P-02

## Factors in Improving Better Risk Practices among First Responders in Radiological Emergency: Importance of Women Participation

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**Abstract.** Radiological-related industries have grown in popularity because of its beneficial applications, particularly in the medical field. However, their hazards should not be underestimated, and emergency preparedness is essential. As a result, a study was done to examine factors that influenced first responder risk practices towards radiological situations. Approximately 238 first responders from Klang Valley were chosen randomly to complete the questionnaire, and the data was analyzed using IBM SPSS version 25. The response rate was 94.9%. Factors that influenced better risk practices was found to be female responders (cOR=2.877, 95% CI: 1.527-5.419, p=0.001), having undergraduate education (cOR=4.473, 95% CI: 1.882-10.634, p=0.001), with middle-income earning (cOR=4.784, 95% CI:1.207-18.958, p=0.001) and has radiological experiences (cOR=2.902, 95% CI:1.408-5.981, p=0.004). Besides having relevant education level, radiological experiences and appropriate income, women's participation as first responders was also crucial to improve preparedness and response, particularly when dealing with catastrophes that are met with public skepticism, such as radiation.

**Keywords:** radiological, emergency, preparedness, women

## MSS-P-01

**Baseline Measurements of Natural Radioactivity around the Manyoni Uranium Deposit (Tanzania): Selection of sampling points**

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**Abstract.** In order to acquire baseline data for prospective uranium mines, environmental radioactivity measurements are usually performed over large areas. This leads to a huge number of sampling points with a time-consuming and expensive data-acquisition process. For this study, probabilistic and non-probabilistic sampling strategies were used to determine the fewest possible sampling points needed to establish baseline data around the prospective uranium mine of Manyoni (Tanzania). The probabilistic approach used stratified and systematic grid sampling to obtain 32 sampling points at a 27.96 km<sup>2</sup> site prone to pollution from the prospective mining activities. These points were proportionally distributed based on pre-determined strata, geological areas, and administrative wards. Non-probabilistic sampling used judgmental sampling to allocate 8 sampling points in a region expected to receive higher levels of mining dust pollution than the WHO guidelines. We present a more representative and less expensive sampling approach with fewer sampling points around the prospective mine.

**Keywords:** Sampling strategy, Sampling points, Uranium mining, Baseline data, Natural radioactivity



MSS-P-02

## Early Breast Cancer Mass Detection in Mammograms Using CNN EfficientNet-B2 Model

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**Abstract.** Radiologists typically evaluate mammograms, X-rays, and MRIs of the breast to discover abnormalities. Even experienced radiologists face difficulty to detect microcalcifications, lumps, and masses, resulting in a high percentage of false positives and negatives. Rapid innovations in image processing and deep learning provide promise for the development of enhanced breast cancer detection applications. In this article, we employed deep learning method that uses a deep convolutional neural network (CNN) to automatically learn features from optimum breast mass classification from mammograms in order to improve the classification performance compared to previously reported approaches. The suggested EfficientNet-B2 model surpasses state-of-the-art methods and greatly enhances detection performance with a 93% overall accuracy.

**Keywords:** breast cancer, deep learning, convolutional neural network

## ET-P-01

## Application of compressed gasses in miniemulsion photopolymerization

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**Abstract.** Miniemulsion polymerization has received significant attention because polymer particles are generated directly from monomer droplets. Conducting photopolymerization of miniemulsions is challenging as light scattering is the main impediment due to the high turbidity. Photopolymerization requires a transparent system with a minimal light scattering effect to allow light penetration through a medium. The first step was finding the transparency pressure of a modified styrene miniemulsion recipe under compressed gasses, followed by photopolymerization of the miniemulsion at transparency pressure. The influence of miniemulsion turbidity on the polymerization rate, particle diameter and molecular weight is discussed. Retention index matched miniemulsions are more efficient, as transparency provides a reduction in light scattering. The turbidity of miniemulsions initiated by visible light has a significant effect on the polymerization rate. The approach presented offers an interesting route to conduct miniemulsion photopolymerization under environmentally friendly carbon dioxide.

**Keywords:** Photopolymerization, miniemulsions, carbon dioxide

SS-P-01

## From 'Being Shy To Saying Hi: The Role Of Edutainment in Enhancing Children's Development

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**Abstract.** Significant studies revealed that parents' especially in developing countries believe optimal learning will only be achieved through structured education. However, as educational design becomes complex, demand for new educational methods is required to meet future generations' needs. Edutainment promotes learning through exploration, interactivity, and repetition, strengthening children's cognitive, psychomotor and emotional skills. As parental involvement is known to be important in children learning process, this study aimed to assess the parents' perspectives on the effect of the edutainment approach on children's development. A survey was conducted on a sample of 384 parents who have exposed their children to any edutainment approaches or fun-learning programs. The result suggested that most respondents agreed that the edutainment approach positively impacted the child's learning process, providing an environment that maximizes children's psychological development and supports children's emotional well-being. Preferred modules discussed provide adequate guidelines for parents/ edutainment providers in understanding the children's needs.

**Keywords:** edutainment, children's development, fun-learning, environment, recreation

CS-P-01

## PTSD and Hormonal Imbalance on Internally Displaced Yazide Women In Northern Iraq

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ACTH, adrenaline and CRF concentrations according to PTSD severity were analyzed in survivors of genocide-related events after ISIS attack on Iraq in 2014. Groups (n=30 per group): Negative control = healthy individuals living outside the camps, Positive control = healthy individuals living inside the camps and PTSD group = individuals diagnosed with PTSD. PTSD diagnosis was done by PTSD DSM-5 (PCL-5) scale. Hormonal concentration was determined by ELIZA. In the PTSD group ACTH, adrenaline and CRF were increased by 43%, 43% and 51%, respectively, compared to negative control ( $p < 0.01$ ). Increase in ACTH (15%), adrenaline (12%) and CRF (24%) was observed in PTSD group compared to positive control ( $p < 0.01$ ). As the severity of the disease progresses CRF (26%,  $p < 0.05$ ) and adrenaline (50%,  $p < 0.05$ ) were increased, however ACTH concentration decreased (14%) ( $p < 0.01$ ). The results corroborate that PTSD leads to alteration of hypothalamic-pituitary-adrenal axis response.

**Keywords:** Posttraumatic stress disorder, Trauma, HPA axis, ACTH, CRF, Adrenaline; Biomarkers

## CS-P-02

## PTSD and Physiological Disturbance on Internally Displaced Yazide Women In Northern Iraq

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PTSD chronicity/severity and physiological parameters were evaluated in women living in internally displaced people camps. Negative control = healthy individuals outside the camps, Positive control = healthy individuals inside the camps and PTSD group. PTSD diagnosis was done by PTSD DSM-5 (PCL-5). Waist circumference (9.72%), systolic blood pressure (7.9%) and heart rate (13.87%) were increased in the PTSD group, compared to negative control. Systolic blood pressure (10.43%), blood oxygen saturation (1.28%) and heart rate (9.4%) were increased in PTSD group, compared to positive control. The group "Extreme" showed increased body mass index (36.66%), waist circumference (8.57%), systolic blood pressure (10.94%) and fasting blood sugar (9.26%), compared to group "Moderate", besides higher levels of fasting blood sugar (8.03%) and systolic blood pressure (11.02%), compared to "Severe". PTSD chronicity led to increased body mass index. PTSD has impact on physiological parameters which may be aggravated by severity/chronicity of the disease.

**Keywords:** Posttraumatic stress disorder, Trauma, Physiology.

# COMMITTEE BIOGRAPHIES



**Mohd Basyaruddin** is a Senior Professor of Chemistry (VK5) at Universiti Putra Malaysia and was appointed as a Distinguished Visiting Scholar at University of California, Berkeley. He received his PhD in Catalysis Chemistry (Southampton) and was a post-doctoral fellow in Structural Biology (Edinburgh). He has secured >RM28 million worth of research grants worldwide in biocatalysis, computational chemistry and nanodelivery, published >260 papers, presented >400 papers, graduated >80 postgraduates, developed >25 patents and won >100 awards. He has received the Young Scientist recognitions from various international bodies and was named the Face of Science@Malaysia for his contribution to engaging youth in science. He was the Founding Chairman of the Young Scientists Network and is currently the President of the Malaysian Analytical Sciences Society. He is actively involved in science-related national policy development and review. He also acts as a coordinator and mentor in professional academic training and in countless STEM outreach activities nationwide.

**Adem Kilicman** is a full Professor in the Department of Mathematics at Universiti Putra Malaysia. He received his Bachelor and master's degrees from Hacettepe University in 1989 and 1991 respectively, Turkey. He obtained his PhD from University of Leicester in 1995, UK. He has actively involved several academic activities in the Faculty of Science and Institute of Mathematical Research (INSPEM). Adem Kilicman is also member of some Associations; PERSAMA, SIAM, IAENG, AMS. His research areas include Differential Equations Theory, Functional Analysis and Topology. Currently, 428 articles were registered in the Scopus as publication list by Prof. Kilicman.



**Janet Lim Hong Ngee** is a Professor at the Department of Chemistry, Faculty of Science, Universiti Putra Malaysia. She has published more than 260 ISI-cited journal articles, with a citation of 11,525 and an h-index of 61. She has a deep interest in graphene chemistry. She utilizes the two-dimensional material for various applications such as battery, supercapacitor, sensor, solar conversion, water research, and additive for polymers, oils and coolant. She has received numerous international and national grants to conduct research.

**Wan Mohd Syazwan** is a Senior Lecturer at the Department of Biology, Faculty of Science, UPM, with related expertise in the field of marine ecology and biodiversity. His post-doctoral research focused on assessing the impacts of climate change on marine ecosystems, and to project the long-term productive capacity and revenues of marine resources. His current interests revolve around the ecological dynamics of marine ecosystems and fauna, for improved understanding on the socioeconomic impacts on coastal livelihood. He has authored and co-authored several highly reputable articles and book chapters, and actively involved in coastal communities' outreach in raising awareness of harmful marine species, especially jellyfish.



**Jaafar Abdullah** is an Associate Professor at the Department of Chemistry, Faculty of Science, and currently Head of Functional Nanotechnology Devices Laboratory (FNDL), Institute of Nanoscience and Nanotechnology (ION2), University Putra Malaysia (UPM). His research interest involves the use of functionalized nanomaterials such as nanocrystals semiconductor quantum dots, graphene quantum dots, nanocrystalline cellulose for sensing applications. He has received numerous awards for his research work. He has authored and co-authored more than 100 journal articles and 12 patents pending.

**Norizah Abdul Rahman** is a senior lecturer at the Department of Chemistry, University Putra Malaysia. Her research work involves polymers nanofibers in a wide range of applications including scaffold for tissue engineering, drug delivery and removal of heavy metals. She is also working on polymer composites and self-healing rubber. She has received several research grants from the Ministry of High Education and funding from industries. She has authored and co-authored more than 50 articles and book chapters.



**Muhammad Kashfi** is senior lecturer at Physics Department, Universiti Putra Malaysia. Through research funds and collaborations with other universities, foreign laboratories, and corporations, my research focuses on Smart Materials especially on magnetorheological (MR) materials. My research focuses on the rheological, conductive, and optical aspects of magnetorheological materials. I am also a member of the Malaysia Board of Technologies and the Malaysian Solid-State Science and Technology Society (FMAS).

**Khairul Adib Yusof** received the B.Sc. degree from Universiti Putra Malaysia (UPM) in 2016, and the Ph.D. degree in space science from Universiti Kebangsaan Malaysia (UKM) in 2021. He is currently a Senior Lecturer with the Department of Physics UPM. His research interests include earthquake precursor, ground and space geomagnetic observations, signal processing, and computer programming (MATLAB). He has authored and co-authored several highly reputable articles in indexed journals, a book and owns a patent pending.



**Mohd Amiruddin Abd Rahman** is a Senior Lecturer with the Department of Physics Universiti Putra Malaysia. He is the first person that was awarded with a joint PhD degree between University of Sheffield, United Kingdom, and Universiti Putra Malaysia. He has been principal investigator for 4 research projects related to machine learning. His current research interest is within the field of data science, machine learning and artificial intelligence where he has published more than 30 high impact articles in the area.

**Norazak Senu** is currently an Associate Professor with the Department of Mathematics and Statistics, Universiti Putra Malaysia. Also, as associate researcher at Institute for Mathematical Research, UPM. His main interests include working on different types of differential equations and modeling real-world systems using Runge-Kutta type and other numerical methods. He published more than 100 articles in the peer-reviewed international journals. He achieved several governmental grants to support his scientific works. He is also serving as a referee in more than 50 reputed international journal articles.



**Halimah Mohamed Kamari** is a Professor at the Department of Physics, Faculty of Science, Universiti Putra Malaysia. She received her bachelor's in Physics from University of Malaya, Master and PhD in Materials Science from Universiti Putra Malaysia. She has teaching experience of more than 30 years. Her research areas include glass, ceramics, nano materials and materials science. She has published more than 290 ISI-cited journal articles. She is the life member and fellow of the Malaysian Solid State and Technology Society.



**Norihan Md Arifin** is a professor of Applied Mathematics at Department of Mathematics and Statistics, Universiti Putra Malaysia. She received her PhD in 2005 in the area of fluid dynamics. She has teaching experience of more than 20 years in the areas of Mathematics. Her work focuses specifically on the mathematical modeling of boundary layer problem in hybrid nanofluid.



**Wan Nurhayati** is a Deputy Director (Promotion and Commercialisation) of Putra Science Park (PSP) Universiti Putra Malaysia (UPM) and an Associate Professor at the Faculty of Computer Science and Information Technology, UPM. Her academic experience since 2000 in the field of Software Engineering and Information System. She has contributed as tutor, lecturer, supervisor for more than 65 bachelor and master projects, and PhDs. She has published in journals, conferences and books in the research field. She has been actively involved in the promotion and commercialisation of UPM's innovations for eight years, starting as the innovation champion and InnoHub coordinator. InnoHub, the first market validation hub for UPM's technologies and innovations. InnoHub has accepted 83 innovation projects since 2014 till 2021. Currently, there are 39 ongoing in-house startups being nurtured. Besides, 30 startup companies managed to secure a cumulative investment of RM18.3mil. She leads in UPM-industry-investor networking and matching, aimed at collaborating with all the key players in the commercialisation of the innovation ecosystem. To date, UPM has managed to commercialise 213 technologies with gross sales of RM70.5mil. Qualified and experienced in promotion and commercialisation management, she has conducted a series of training related to commercialisation of technology and innovation to provide exposure and technology transfer skills to different organisations and platforms. She is also frequently being invited as a panel and speaker at national and international seminars and events that cater issues on the university commercialisation and startup market validation.

**Haslina Ahmad** is an Associate Professor at the Faculty of Science, Universiti Putra Malaysia. She received her Ph.D in 2009 in the area of Bioinorganic Chemistry. Her research work involves drug design and drug delivery, specifically on anticancer research. She is also working on the synthesis of nanomaterials for various applications. She has authored and co-authored more than 50 high impact articles and book chapters. She also has 1 patent granted on the bioactive peptide for wound treatment.





**Noor Azrizal Abdul Wahid** is a Senior Lecturer at the Department of Biology, Faculty of Science, Universiti Putra Malaysia. He received his bachelor' degree in Ecology and Biodiversity program from Universiti Malaya in 2010. He then pursued his master's degree in Universiti Malaya in the field of entomology and molecular biology, and earned the degree in 2016. In 2021, he graduated with a PhD degree from the same university in the field of entomology, with special focus on the molecular systematics, genetic and population structure, and pathogen interaction in medical-veterinary importance insects. His research expertise has been developed through various research activities and collaboration.

**Geetha Annavi** has her expertise in population genetics, molecular and behavioral ecology and conservation biology, particularly of wild animals (i.e., mammals) and terrestrial ecosystems. Currently, her research is focused on the endangered Malayan tapir (*Tapirus indicus*) both captive and wild in Peninsular Malaysia. She is investigating the genetic, ecology and behavior aspects of this animal. She is also interested in developing an effective ex situ captive breeding model to maximize the number of healthy progeny that are produced in captivity and a successful reintroduction program of these captive born tapirs into the wild.





## Contact us

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