

A quarterly palm oil newsletter brought to you by
 IChemE Palm Oil Processing Special Interest Group

POPSIG

IChemE

In the News

- 2 Message from Editor
- 3 MSPO Certification mandatory by the end of December 2019
- 4 POPSIG supports Love MY Palm Oil Campaign
- 5 POPSIG visits Xiamen ...
- 6 POPSIG Attends IChemE AGM Rugby on 20th May 2019
- 7 Performance Analysis of Dividing Wall Column for Oleochemical Fractionation Process on 11/2/2019
- 8 MOSTA Workshop
- 10 The Truth about Oil Palm—Palm Oil Milling Initiatives
- 12 POPSIG University Roadshow 2019—2020
- 14 Biodiesel Production using Subcritical Water and Supercritical Methanol Treatment by UTM
- 15 Q3 Diary of Events

2019 Q2

POPSIG

NEWSLETTER



Palm Oil Processing Special Interest Group

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Editor's Message

Following China's foreign waste ban in August 2017, plastic waste from UK, EU, USA, Canada and Australia have been diverted to Thailand, Vietnam, Indonesia and Malaysia. These ASEAN nations lack of resources to recycle adequately. Such deliveries often contain a mixture of various waste types, which make adequate recycling difficult if not impossible. So most of it is incinerated or buried. Industrialised countries ship their waste to ASEAN to prevent their homelands from getting swamped by the goods they discard.

On 10th June 2019 a BBC programme 'War on Plastic with Hugh and Anita' <https://www.bbc.com/news/science-environment-48581669> actually traced UK plastic waste to Malaysia, Jenjarom to be exact. Hugh Fearnley-Whittingstall writes, "I went to Malaysia at the end of last year to see this problem for myself, and it's absolutely horrible. I found myself walking across grim landscapes of trashed plastics, stacked up in bales and piles as far as the eye could see. Shockingly, but somehow inevitably, there was no shortage of plastic from the UK. Tubs, bottles and trays from all-too familiar household brands, bags and plastics stamped with the logos of our leading supermarkets, and even recycling bin bags with the names of councils from all around the UK. Most of this stuff is what we've put out, in good faith, as recycling - having no idea that our councils and waste companies were planning to send it half way round the world. And I can tell you, it's very unlikely to be recycled. Malaysia, like many other developing countries, is completely overloaded with plastic waste from countries which actually do have the capability to process this plastic, but prefer simply to pass the problem on."

People in glass houses should not throw stones - it is not sustainable - that is the charge they level against palm oil. We must fight back and continue to ship these plastic waste back to UK, EU, USA, Canada and Australia.

This issue reports on many firsts for POPSIG

- we awarded the first Student Bursary
- we awarded the first Best Final Year Design Award
- the upcoming university roadshow to share the truth about palm and a fulfilling career in the palm oil industry

We had another joint SIG evening talk cum webinar this time with SONG MY and BESIG MY. Widening the audience group made the event inclusive with about 50 participants at the talk and another 50 via the webinar. The subject of the talk "The Truth about Palm Oil and Palm Oil Milling Initiatives" attracted a lot of questions which our young speaker Mervin Chew from Sime Darby answered very well. Sime Darby Plantation as the world's largest producer of certified sustainable palm oil, plays a leading role in the development and promotion of sustainable practices in the palm oil sector. It is a founding member of the Roundtable on Sustainable Palm Oil (RSPO) and it seeks to advance the production, procurement and use of sustainable oil palm products. The event received positive feedback that the session was interactive and the participants on the webinar were pleased to be able to participate in the Q&A session.

We promised participants a link to 'Get to know palm oil' on our website so here it is <https://www.icheme.org/membership/communities/special-interest-groups/palm-oil-processing/resources/get-to-know-palm-oil/>

There are a lot more articles inside which we hope you will find useful and please do give us feedback.

Guest Editor
Qua Kiat Seng

For further information about POPSIG please contact the Secretary Assoc. Prof. Dr Wu Ta Yeong at wu.ta.yeong@monash.edu

MSPO Certification Mandatory by the End of December 2019

MSPO (Malaysian Sustainable Palm Oil) certification scheme is operated by MPOCC (Malaysian Palm Oil Certification Council) which oversees the development and implementation of the MSPO standards and scheme documents. The MSPO certification scheme was established independently and is not aimed at competing with other certification schemes that are available in the market. The MSPO certification scheme reflects the realities of the local oil palm industry and is devised to respond to concerns expressed by interested stakeholders.



The well established RSPO (Roundtable on Sustainable Palm Oil) being a global and voluntary scheme has its limitations and for the last few years certification has been stagnating at around 20%. It is seen as a platform for plantations rather than small holders who make up about half the growers of palm oil. MSPO will allow Malaysia to differentiate its sustainability in the palm oil industry.

Mr. Chew had just returned from Brussels where he joined officials of top palm oil producers Malaysia and Indonesia April 8 – 9 to voice their objection to the European Union’s delegated act that restricts the use of the edible oil in biofuel.

There are challenges ahead for MSPO and POPSIG visited MPOCC on 12 April 2019 to offer its support to the new CEO, Mr. Chew Jit Seng, who took over the helm in January this year. Mr. Chew was previously the VP, Sustainability at Genting Plantation Berhad and the MPOA alternate to Dato’ Carl Bek-Nielsen in the RSPO Board of Governors. Before this he was Director, R & D at the Malaysian Palm Oil Association (MPOA) from 2005 – 2008. With an MSc degree in Plantation Management from UPM he is well placed to take MSPO forward.



L to R Mohan Balasingam, Qua Kiat Seng and Chew Jit Seng at MPOCC.

Last year Mr. Hong Wai Onn, chair of POPSIG was a peer reviewer for the MPSO certification scheme and in the photo below he was attending their two day training course on 13 and 14 November 2018.

Mr. Chew received a copy of our latest POPSIG newsletter and information about the forthcoming Hazards Asia Pacific 2019. He is very supportive of our project, the university roadshow, where we will visit in 2019-20 the 23 universities in Malaysia offering chemical engineering and share insights into the palm oil industry as well as career opportunities.

POPSIG supports Love MY Palm Oil Campaign

It has been IChemE POPSIG’s pleasure to support Love MY Palm Oil campaign!

Primary Industries Minister Teresa Kok officiated the Palm Oil Cooking Competition Program (LMPOCC) in conjunction with the Love MY Palm Oil campaign 2019 at SMK Palong 7 (Felda), Gemas, Negeri Sembilan on April 20, 2019. The LMPOCC was organized by Havys Oil Mill Sdn Bhd, and POPSIG was one of the supporters of this meaningful event.

“Saudi Arabia and Ethiopia have been identified as new potential markets to import Malaysian palm oil. These two countries are new markets and we will try to promote our palm oil there,” she said after launching the event.

Also present was the chief executive officer of the Malaysian Palm Oil Certification Council, **Mr.** Chew Jit Seng and Havys Oil Mill Sdn Bhd chairman, Datuk Lim Kin Eng.

The LMPOCC was held to support the Love MY Palm Oil campaign 2019. The campaign's objective is to instil national pride and greater appreciation for Malaysian palm oil, focusing on socio-economic importance, health, nutrition, and food and non-food applications.

A total of 17 groups had participated in this cooking competition. One of event highlights was participants from the Ghanaian and Nigeria High Commission in Malaysia were showcasing their traditional dishes cooked with raw palm oil.



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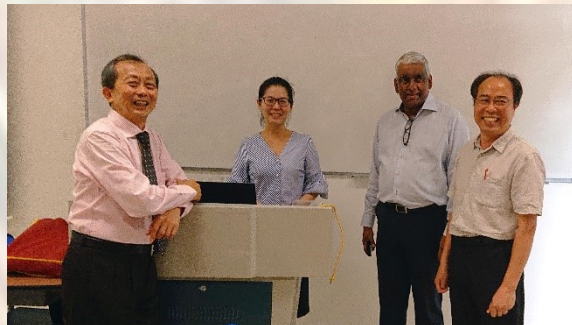


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1. Token of Appreciation presented by the organizer, Havys Oil Mill Sdn Bhd, to IChemE Palm Oil Processing Special Interest Group.
2. Certificate of Appreciation presented by the organizer, Havys Oil Mill Sdn Bhd, to IChemE Palm Oil Processing Special Interest Group.
3. Primary Industries Minister Teresa Kok (fourth right) at the Cooking with Palm Oil Competition in conjunction with the Love MY Palm Oil campaign 2019 at SMK Palong 7 (Felda), Gemas, Negeri Sembilan.
4. Primary Industries Minister Teresa Kok presented prizes to the winners – D’ Sawit Sweet (first place), Heaven’s Kitchen (first runner up) and Rendang Beringin (second runner up).

POPSIG visit Xiamen ...

Xiamen University Malaysia (XMUM), located near the Kuala Lumpur International Airport on 8th May 2019. This is where Asst. Prof. Dr Ong Wee Jun is located. He received the IChemE Award 2018 for Young Researcher. His research's breakthrough is the successful engineering of photocatalysts for efficient utilization of solar light for H₂O splitting and CO₂ reduction into energy-rich fuels to mimic natural photosynthesis in plants.



On the extreme right is Prof. Chen Binghui.

Xiamen University (XMU), China was founded by a Malayan Chinese Mr. Tan Kah Kee in 1921. It has three campuses in China, all built with the distinctive and beautiful architectural style of Mr. Tan. This has carried through to the Malaysian campus which was opened on 22nd February 2016.

We met up with Prof. Chen, the Dean of Energy and Chemical Engineering before Qua's talk on 'Preparing for IR 4.0.' with reference to palm oil.



L to R Mohan Balasingam, Assoc. Prof. Dr. Yong Wai Fen and Qua Kiat Seng at the main entrance.



The attentive Chemical Engineering undergraduates.

Assoc. Prof. Dr. Yong from the Department of Chemical Engineering took us on a tour of the facilities. The Department of Chemical Engineering has 19 faculty members and 250 undergraduates up to the 3rd year. The university has about 4600 undergraduates and all stay within the campus. A third of them are from China. IChemE has a student chapter in XMUM.

Qua took questions after his talk. One undergraduate observed that while each IR had positive effects, they also caused the environment to deteriorate. Qua responded that any improvements man sought to improve his life can have negative effects on the environment and Chemical Engineers have an important role to play to manage and minimize these effects.

We were impressed by the laboratories and research facilities. The range of analytical instruments is wide and most up to date. The teaching laboratories for Chemical Engineering comprise the experiments for fluid flow, mass and heat transfer, unit operation, thermodynamics, reaction engineering and others.

POPSIG attends IChemE AGM in Rugby on 20th May 2019

The IChemE 2019 AGM was attended by 3 representatives from Malaysia viz Ir Qua Kiat Seng representing the IChemE in Malaysia board and POPSIG, Dr. Nagasundara Ramanan as Congress Member representing Malaysia and Victoria Gan Mee San, Congress Member representing Students and also POPSIG. The Congress members were also there for the inaugural meeting of the Congress on 20th and 21st of May 2019.



IChemE Chief Executive Jon Prichard, IChemE President Ken Rivers, newly elected IChemE Deputy President 2019-20 Stephen Richardson, and Honorary Treasurer Iain Martin at the 2019 Annual General Meeting



L to R Ramanan, Victoria and Qua at the IChemE office in Rugby where the AGM was held.

The Annual General Meeting saw some movement within the Institution’s Board of Trustees.

Professor Stephen Richardson, of Imperial College London was elected as IChemE’s new Deputy President and will serve a six-month term. In November 2019, he will become President and serve for 18 months, ensuring a full three-year term as a Trustee (Deputy President, President, and Past President).

IChemE President Ken Rivers and IChemE Past President John McGagh were elected to extend their terms until November 2019, in order to allow Richardson time to get up to speed with the activities of the Board of Trustees.

Iain Martin, who has served as Honorary Treasurer since May 2018, was re-elected for the role.



Victoria caught sharing a light moment at the short AGM of 45 minutes.

The Malaysia team took the opportunity to network and distribute copies of the latest POPSIG newsletter to selected members. We met up with the Learned Society Committee led by Jarka Glassey, VP Technical and supported by Claudia Favell-White, Director of Learned Society. Tom White, VP International was particularly interested in the development model of IChemE in Malaysia as he is interested in the expansion of IChemE internationally. We were delighted to learn that IChemE President Ken Rivers will be coming to Malaysia in September for Hazards Asia Pacific 2019 and we look forward to discussing POPSIG activities with him.

Performance Analysis of Dividing Wall Column for Oleochemical Fractionation Process

It was with pleasure to have Dr.-Ing. Mohamad Rizza Othman from Universiti Malaysia Pahang (UMP) to present a POPSIG seminar at Monash University Malaysia, on the application of dividing wall distillation column (DWDC) in the oleochemical industry.

DWDC has been in use over the past 18 years by many major players in the oil and gas and specialty chemicals industries. As such, Dr.-Ing. Rizza found it surprising that when presented, many Malaysian oleochemical producers are still sceptical on the application and economic benefits of DWDC.

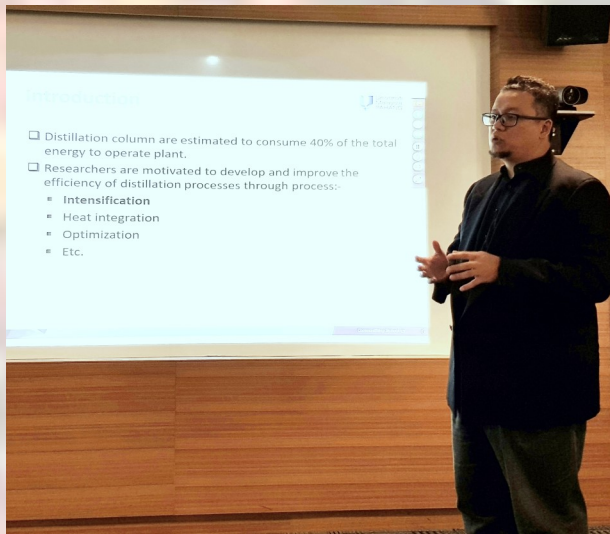
One distinguished feature of the DWDC is that it physically combines the pre-fractionation and main column into one single distillation column, and has a dividing wall in the middle of the column to split the reflux and vapour streams.

As sequential models for DWDC is not readily available in

commercial software packages, a model was hence developed by Dr.-Ing. Rizza using Aspen Plus. It was successfully shown in his model that DWDC can potentially save more than 10% in operating expenditures compared with conventional distillation methods. Environmentally, DWDC will produce more than 10% less of carbon emission. All these benefits are mainly the results of effective intensification and heat integration between processes offered by DWDC.

A pilot plant is also being setup by Dr.-Ing. Rizza and his research team to study the operability and controllability issues presented by DWDC, in particular when applied in oleochemical processing.

Dr.-Ing. Rizza obtained his engineering doctorate degree from Germany, and is now a proud member of the Faculty of Chemical and Natural Resources Engineering, UMP Gambang Campus. Anyone who wish to understand further on the potential applications of DWDC is welcome to contact Dr.-Ing. Rizza.



Dr.-Ing. Mohamad Rizza Othman presenting the application of DWDC in the oleochemical industry.



Dr.-Ing. Rizza and members of POPSIG.

MOSTA WORKSHOP - TOWARDS A SUSTAINABLE PALM OIL INDUSTRY: MANAGING THE DOWNSTREAM SECTOR 11-12th JUNE 2019 PETALING JAYA

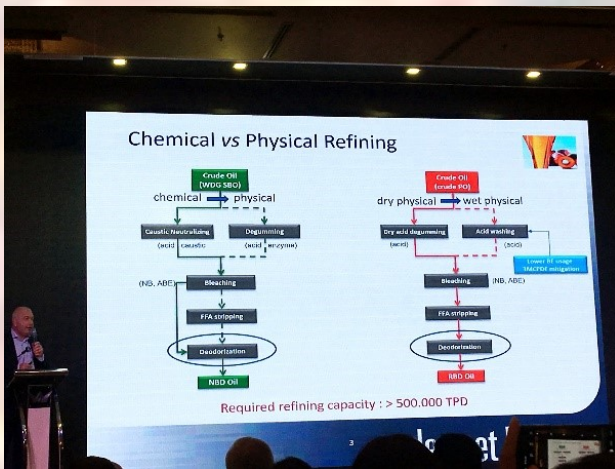
Day 1:

Palm Oil is the most significant global edible oil representing more than 35% of the annual world vegetable oil consumption. Its unique composition making Palm Oil the most versatile edible oil without modifying its natural origin. However, the issues in refining including the quality of palm oil and some minor contaminants affecting food safety.

The Malaysian Oil Scientists' & Technologists' Association (MOSTA) organized a practice workshop in Crystal Crown Hotel, Petaling Jaya, where its theme is "Managing the Downstream Sector (including refining, quality control and eliminate undesired contaminants)".

The first section was given by Ms. Leow Huey Chuen who analyzed the Palm Oil Supply & Demand Dynamic and explained the opportunities in China market. In the same session, the Group Leader of Lipid Nutrition Company, Dr. Voon Phooi Tee provided a meta-analysis about the effect of Palm Olein on Blood Lipid Status in Healthy Adults. The representatives in other companies discussed their opinions with the speakers during the question and answer section. In the same day, another session was held in the afternoon after the lunch break. The speakers introduced their companies and presented the revolutions in the process of downstream sector. Basically, their topics were related to the development of quality control (e.g. remove unwanted components) by using new technologies and the advanced methodologies in the refineries. The pathway of different refining processes is shown below.

The figure below shows the impact of process parameters on oil quality controls. Mr. Hans Christian Holm, from the "Novozymes", left a deep impression on me with a unique opening by using different meaningful figures.



Impact of Process Parameters on Oil Quality

Summary

| | Temperature | Time | Pressure | Steam |
|---------------------------|-------------|------|----------|-------|
| Taste | + | ++ | + | ++ |
| Color | ++ | + | - | - |
| Trans FA | ++ | ++ | - | - |
| Glycidyl Esters | ++ | ++ | ++ | + |
| FFA/Tocopherols | ++ | - | ++ | + |
| Contaminants ¹ | ++ | - | ++ | + |

¹ trans, H₂ dioxins

Day 2:

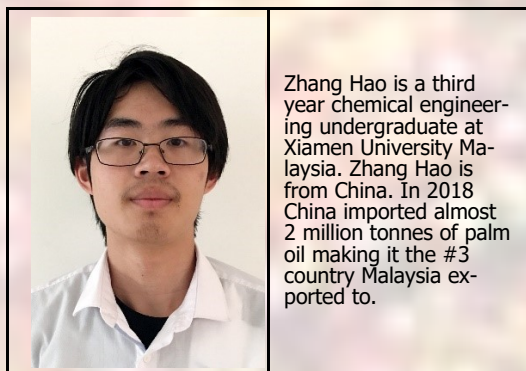
In day 2, only one session was held, where the topic is "Downstream Processing, Waste Management and Plant Automation". The specialists show the device diagram in a complete process plant, which allows me to have a better understanding of the complete process flow.

In the afternoon, there was a panel discussion about a SWOT analysis to palm oil as per below photo.



During this section, together with the audience, they discussed the steps required to move palm oil in the next industrial revolution. They have agreed with that the first step of palm oil towards the public is through the promotion and advertisement of the advantages of palm oil. What impressed me the most is the speaker who seated at the left side who presented that "palm oil is a gift from nature, not a threat". I agree that palm oil would be the next-generation mega production of vegetable oil. The most important steps on the current stage are to control the quality and mitigate the problem of minor contaminants like 3-MCPD and GE in the palm oil.

Author: Zhang Hao (co-authored with Assoc. Prof. Dr. Yong Wai Fen who is his Final Year Project supervisor)



Zhang Hao said, "After attending this workshop, I notice that there is progressive research and development in palm oil. Much effort is put into overcoming the challenges such as improving the quality, decreasing the minor contaminants and wastewater treatment. Everyone should take proactive actions to mitigate the threat and to enhance the opportunity for the gift from nature, palm oil."

If I have the opportunity to work in a palm oil company or conduct research activities related to palm oil, I would like to share my experience that I learnt from this practical workshop with my colleagues. I would let the company or research group understand the future direction and the needs of palm oil. Compared with the palm oil research in Malaysia, the research related to palm oil carried out in China is in an infant stage, more support and incentive from the China government to drive the research is required."

Zhang Hao is the first recipient of the POPSIG Student Bursary that provides financial assistance in a form of student bursaries to undergraduate and postgraduate students to attend scientific conferences, workshops or forums which are related to palm oil processing. For more information go to <https://www.icheme.org/membership/communities/special-interest-groups/palm-oil-processing/awards-and-bursaries/popsig-student-bursary/>

The Truth about Oil Palm—Palm Oil Milling Initiatives

A talk on “The Truth about Oil Palm - Palm Oil Milling Initiatives” was presented by Ir. Chew Chien Lye, Mervin on the 17th of June in Monash University Malaysia. The talk started with an overview of palm oil to provide listeners a better understanding towards the palm oil industry.

Highlight on the downstream operations on the palm oil depicts a refining capacity of approximately four (4) million metric tonnes worldwide. The negative perceptions that public have towards oil palm is also being refuted. It is stressed on further that palm oil should not be subjugated under the anti-palm oil campaigns where certain information may not necessarily be true. As a buyer or user one should practice unbiased judgement. Malaysia, have taken various means to change public’s negative perceptions by initiating events like “Love MY Palm Oil”, which shows the support that the government is giving to this industry.

Recent trend also indicates a raised in demand of vegetable oil, where the relationship between demand and supply is highly inter-relatable with the key driver being population growth. As continual growth in population is envisaged, 9.7 billion by 2050, global oils and fats consumptions are predicted to increase from 180 million metric tonnes to 250 million metric tonnes in the future, showing an immense opportunity of growth to the palm oil industry. As palm oil is considered to be one of the most efficient vegetable oil, it is envisioned that palm oil will account for 55% of the Global Edible Oil Consumption in the next thirty-five (35) years!

Challenges that Palm Oil Mills currently faced are as summarised, which needs to be improved or resolved in the near future to further support the growth of this industry:

- Stagnant process;
- Additional new requirements (New parameter: 3-MCPD and GE);
- High energy utilisation and carbon footprint;
- Stricter emission and discharge limit;
- Perception;
- Weather; and
- Labour issues.

Four (4) key areas where research or improvement opportunities lies includes:

- Economic;
 - Improved efficiency
 - Lower processing cost
 - High value products – oil quality improvement
- Environmental;
 - Greener mills
 - Environmentally friendly
 - Zero discharge
- Technology Advancement; and
 - Automation/ Mechanization
 - Compact mill
 - Minimal labour
- Standards.
 - High safety standard
 - Food grade factory

All those areas were being looked into and suggestions to work our way around it were proposed. High participation was observed among participants with quite a few tough questions being posed to Mr Mervin. But, being fully prepared, he was to give satisfactory answers to the questions asked.

The talk ended with challenging questions raised by participants of one which raised on the deforestation issue that palm oil is always being tied to. But, a roadmap to no deforestation is actually available and should be looked into to break the perception of people towards palm oil.



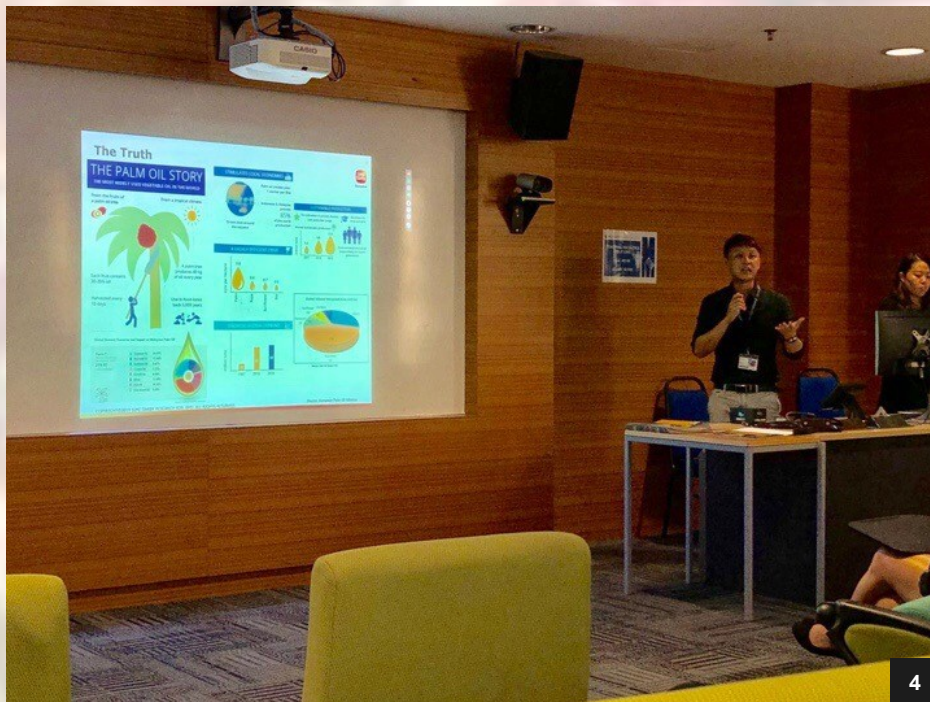
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1. Participants listening attentively to Mervin.
2. Part of the participants (including lecturers from UNM) who attended the talk.
3. Sin Lu presenting the Certificate of Appreciation to Mervin.
4. Mervin enthusiastically giving his talk

POPSIG University Roadshow 2019— 2020: Love MY Palm Oil Campaign



There is so much controversial issues and discussion around palm oil outside Malaysia that we forget to look within and appreciate what we have that we are truly blessed with. Our Minister of Primary Industries YB Teresa Kok is doing exactly that with the soft launch of the Love MY Palm Oil Campaign on 8th January 2019. Many Malaysians already use palm oil for cooking because it is the cheapest cooking oil in the market. What they do not realize is how good and healthy it is as well as the value for money they are getting. Then there is a another group who have a choice and they make a wrong one believing that what is imported is better, believing that what is more expensive is better and believing the foreign media streamed on their smart phones.

The crude oil glut of 2015 saw many people including chemical engineers in the oil & gas industry losing their jobs. While the oil & gas industry has recovered somewhat, it is not recruiting as many fresh engineering graduates. So chemical engineering undergraduates are no longer eyeing the oil & gas industry as the top employer. Should they consider the palm oil industry which is the 4th largest export revenue earner after the 2nd which is petroleum products?

Is the palm oil industry sustainable? Do we kill orang utans? Is it safe? What are the career prospects? What is the salary?

These questions will be answered at the POPSIG University Roadshow 2019 – 2020 where POPSIG members will visit the 24 universities in Malaysia offering chemical engineering degree courses. There will be a two hour highly interactive session with speakers from IChemE, the Malaysia Palm Oil Council (MPOC), the palm oil industry as well as academia.



There will also be a field trip to one of the sectors of the industry viz plantation, oil mill, crusher, refinery or oleo-chemical plant.



1. Jomalina Refinery
2. Emery Oleochemicals
3. Ulu Kanchong Palm Oil Mill

If you are interested for the roadshow to come to your university as soon as possible ask your lecturer in charge of the chemical engineering student chapter to contact IChemE Regional Business Development Manager South East Asia, Mr. Mohan Balasingam at mbalasingam@icheme.org

If you are a chemical engineer working in the palm oil industry and want to volunteer to be a speaker at roadshow please contact the POPSIG Secretary Assoc. Prof. Dr. Wu Ta Yeong at wu.ta.yeong@monash.edu



We are pleased to announce that MPOC has agreed to support the POPSIG University Roadshow. The MPOC is a corporate body with a mission to promote the market expansion of Malaysian palm oil and its products by enhancing the image of palm oil and creating better acceptance through awareness of various technological and economic advantages (techno-economic advantages) and environmental sustainability.

| No | Universities | ISC |
|----|---|-----|
| 1 | University Institute Technology MARA | No |
| 2 | UKM (University Kebangsaan Malaysia) | No |
| 3 | University of Nottingham Malaysia | Yes |
| 4 | Monash University Malaysia | Yes |
| 5 | UM (University of Malaya) | No |
| 6 | Taylor's University | Yes |
| 7 | UCSI University | Yes |
| 8 | UPM (University Putra Malaysia) | No |
| 9 | Heriot-Watt University Malaysia | Yes |
| 10 | International Islamic University Malaysia | No |
| 11 | SEGI | Yes |
| 12 | Xiamen University Malaysia | Yes |
| 13 | UTAR (University Tunku Abdul Rahman) | Yes |

Perak

| | | |
|----|--------------------------------------|-----|
| 14 | UTP (University Technology PETRONAS) | Yes |
|----|--------------------------------------|-----|

Pahang

| | | |
|----|----------------------------------|-----|
| 15 | UMP (University Malaysia Pahang) | Yes |
|----|----------------------------------|-----|

South

| | | |
|----|--------------------------------|-----|
| 16 | University Technology Malaysia | No |
| 17 | UniKL MICET—Ayer Keroh | Yes |

North

| | | |
|----|-------------------------------------|----|
| 18 | USM (University Sains Malaysia) | No |
| 19 | UniMAP (University Malaysia Perlis) | No |

East Malaysia

| | | |
|----|--------------------------------------|-----|
| 20 | Curtin University Sarawak | Yes |
| 21 | UMS (University Malaysia Sabah) | Yes |
| 22 | UniMAS (University Malaysia Sarawak) | No |
| 23 | Swinburne University (Kuching) | Yes |

Terengganu

| | | |
|----|--|----|
| 24 | TATIUC—Terengganu Advanced Technical Institute | No |
|----|--|----|

Biodiesel Production using Subcritical Water and Supercritical Methanol Treatment

By Universiti Teknologi Malaysia (UTM)

Each year, Palm Oil Processing Special Interest Group (POPSIG) provides the Best Final Year Design Award, up to RM2000, to a group of Final Year students, whose final year project design revolves around palm oil processing. In 2019, POPSIG presented this Award to a group of Final Year students from UTM, namely Agasthya Awli Mohanan (Team Leader), Janet Anne, Noor Aniszan binti Nazaruddin, Nur 'Amirah binti Husaini and Nur Syafinaz binti Zaizul Akmar. The title of their Final Year Design was "*Biodiesel Production using Subcritical Water and Supercritical Methanol Treatment*". This group of Final Year students was supervised by Dr. Nurfatehah Wahyuni binti Che Jusoh and Dr. Norhuda binti Abdul Manaf

This award was presented at Monash University Malaysia on 17 June 2019. The winning design was chosen by the POPSIG committees due to its originality as well as possible contributions of the design towards the development and sustainability of the palm oil industries. This newly formulated method, which used subcritical water and supercritical methanol treatment for the production of biodiesel, was greener and more efficient as compared to the existing approaches.

The award was presented by Ir. Qua Kiat Seng, who is the founder of POPSIG. Although the Chair of POPSIG, namely Mr. Hong Wai Onn, was unable to attend the ceremony, he is strongly supporting this award to be continued for the following years and encouraging more universities to send their students' Final Year Design to POPSIG for participation in this annual Design Award. Ir. Qua conveyed Mr. Hong's message to the attendees, "The main objective of this award is to encourage the universities to introduce palm oil processing design for their Final Year students. The selection of Best Final Year Design Award is based upon a palm oil processing design which reflects on efficiency, values inherent safety and mitigates environmental impacts, and demonstrates project viability to the palm oil industry."

According to the winning team, the participation in this award provided invaluable experience to them. The stu-

dents said: "The final year design competition provided us a platform to apply our engineering studies to develop a plant that produces biodiesel, which we are able to understand more on the palm oil industry. We learned about new technologies in palm oil refining processes. The designed biodiesel plant is produced at a yield of 73.89% with 97.87% purity which fulfils the requirement of Malaysia Standard for Automotive Fuels – Palm Methyl Esters (PME) for diesel engines which demands at least 96.5% purity."

Dr. Liew, who was also the coordinator of the Design Project, was very proud of his students' achievement. Dr. Liew provided reasons why he selected the design from this group of Final Year students for a participation in this year Best Final Year Design Award. Dr. Liew said: "The group is selected for this competition due to their novelty in process selection. They introduced sub-critical water hydrolysis and super-critical methanol esterification process for high yields of fatty acid methyl esters (FAME) for their biodiesel plant. We appreciate IChemE POPSIG for providing such a good platform for the students to get their design project to be examined by different professional judges."

POPSIG would like to thank all universities who have participated and sent their students' best Final Year Design for evaluations this year. Applications for the next year Final Year Design submission will be announced in October 2019 and closed in March 2020. In general, the design project will be evaluated based upon the structure and technical content of the proposed palm oil processing. Key criteria for the evaluation could be ranged from the comprehensiveness of the analysis until the applicability of the design to be applied in a real palm oil industry. Applications may be made by filling in and sending the form (which can be found in POPSIG website) to Mr. Hong Wai Onn (email: hongwaionn@gmail.com), Ir. Qua Kiat Seng (email: ksqua@hotmail.com) and Assoc. Prof. Wu Ta Yeong (email: wu.ta.yeong@monash.edu).



The Best Final Year Design Award was presented at Monash University Malaysia on 17 June 2019. Left to Right: Dr. Liew Peng Yen, Ir. Qua Kiat Seng, Mr. Agasthya Awli Mohanan, Nur 'Amirah binti Husaini, Dr. Roshafima binti Rasit Ali, Dr. Norhuda binti Abdul Manaf

Q3 Diary of Events (2019)

Evening Talk: **Oil Deodorising: New Technologies and Solutions to Improve Final Edible Oil Quality**

Speaker: Chia Ing Chuk, Desmet Ballestra (M) Sdn Bhd

Date: 29 July 2019

Time: 18:00—20:30 (GMT+8)

Location: Seminar Room 6-2-14, Monash University Malaysia, Subang Jaya, Selangor, Malaysia

Evening Talk: **Towards Industry 4.0 in the Palm Oil Mill**

Speaker: Ir. Dr. Tan Chee Fai, Agricultural and Food Engineering Technical Division, The Institution of Engineers, Malaysia

Date: 4 September 2019

Time: 18:00—20:30 (GMT+8)

Location: Seminar Room 6-2-14, Monash University Malaysia, Subang Jaya, Selangor, Malaysia

Evening Talk: **Journey to Implement Analytics**

Speaker: Ir. Mohd. Sabri Zakaria, AZ Sepakat Sdn Bhd

Date: 7 October 2019

Time: 18:00—20:30 (GMT+8)

Location: Seminar Room 6-2-14, Monash University Malaysia, Subang Jaya, Selangor, Malaysia

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