

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

POPSIG

IChemE

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2019 Q1 POPSIG Newsletter



Palm Oil Processing Special Interest Group

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Editor's Message

The start of 2019 was packed and extremely happening with the first talk of the year by Dr. Mohamad Rizza on “Application of Dividing Wall Column for Improved Oleochemical Fractionation: From Conceptual Design to Pilot Plant Validation in February. It was closely followed by the talk delivered by Ir. Qua in Wisma IEM on “Revolution X.0 in the Palm Oil Industry”. We apologize for having to defer the article on Dr. Rizza’s talk to the second quarter of the newsletter.

We are also extremely proud of our founder, Ir. Qua Kiat Seng on his published article “Make MY Palm Oil a Great Brand” in The Edge, week 25—31 March 2019, which was very well received by players in the palm oil industry.

Another interesting and mind-opening talk was delivered recently by Ir. Shyam on “Heat Recovery using Vent Economizers”, which shows how a simple approach could unexpectedly be such a great solution!

Focus was also placed in terms of process safety for palm oil processing. As can be seen by our Chairman, Mr. Hong Wai Onn’s participation in the 8th RPSS as well as our Chief ICT Manager, Mr. Oscar Ting’s being the recipient of the Pfizer Niall J. Condon Process Safety Award.

We hope that palm oil players could provide support to YB Theresa Kok’s effort on the Love MY Palm Oil campaign. Enter the Love MY Palm Oil contest on the last page and win fantastic Apple iPhone iPads, GoPro Cameras and more.

Health issues related to palm oil are highlighted in Dr. Kalyana Sundram’s article “Is Palm Oil A Cancer Risk? Let Truthful Science Prevail!”. People tend to draw incorrect conclusions and with this fast-paced, internet-savvy generation, one should be cautious on information received. One should not be biased as there is usually two-side of the story for whatever we hear or read. Do keep an open mind and not be too quick to judge. We would also like to thank Dr. Kalyana for his permission to print.

Lastly, there will be two (2) talks that will be held in Monash University Malaysia in the second quarter. Do join us! On behalf of the committee, I would like to thank you all for your support to POPSIG.

Chief Editor
Tan Hui Min

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

POPSIG speaks at 31st SOMChE 2018

The 31st Symposium of Malaysian Chemical Engineers was held from 5-6 December 2018 at Hotel Istana, Kuala Lumpur. Universiti Putra Malaysia together with IChemE in Malaysia organized the symposium aptly themed “Innovative thought for chemical engineering practice.”



Meeting of organizers and plenary speakers.
 L to R. Ir Dr Shamshul Izhar bin Siajam (UPM), Dr Toshihiro Miyao (University of Yamanashi), Assoc. Prof Dr Mohamad Amran Mohd Salleh (UPM), Ir Qua Kiat Seng (POPSIG), Prof Dr Zulkifli Idrus (Deputy VC, UPM), Shahrul Azman Zainal Abidin (PETRONAS) and Prof Dr Robiah Yunus (UPM).

POPSIG was invited to deliver the Plenary 1 paper. Ir Qua Kiat Seng, its Exco Member and board member of IChemE in Malaysia, spoke on “Preparing for Industry Revolution 4.0.”

Ir Qua commenced his presentation by giving an overview on IChemE and POPSIG. The presentation was divided into 3 sections namely; The Industrial Revolution; Why Revolution X.0; Developments in the Palm Oil Industry and how do we respond to it. Industrialization marked a shift to powered, special purpose machinery, factory and mass production from IR 1.0 to IR 3.0. Now, the fourth industrial revolution is linked to the cyber physical production system. Ir Qua also explained that the benefits of IR 4.0 included increased productivity, reduced risk and smart manufacturing in the process industry.

Next, he introduced the idea of Generation C, or the connected generation where most people are digitally connected eg. via their smart phone. The digital world is moving at an exponential rate, evolving beyond IR 4.0 in the near future to be the combination of many different technologies and innovations such as cyber physical production, smart devices, connected workers and artificial intelligence. Hence IR X.0 which could be 5.0 or 6.0. Or it could be a smaller number.



Ir Qua Kiat Seng as Plenary 1 speaker gave examples of IR 4.0 in the palm oil industry

Ir Qua envisaged that the future of the oil palm plantation could foresee the usage of embedded microchips in the nursery, drones to identify ripe fruit bunches and autonomous 24/7 harvesting vehicles enabling continuous mill operations. The mill of the future is said to have unit operations that understands the characteristic features and biology of the fruit with sensors enabling real time operations. At this juncture he paid tribute to Prof Dr Robiah Yunus for her work “Micrones” which is a more efficient palm oil extraction method where an up-scaled plant is now being built with extensive SCADA oversight. Top quality crude palm oil will be the product: safe, energy efficient and zero waste mill.

Downstream oleochemicals will utilize 3D visualization and VR training which brings greater control over quality of products. Besides, an automated hazard and operability analysis that emulates HAZOP has been developed to overcome the repetitive and time-consuming nature of the technique.

In conclusion he urged participants not to fear IR 4.0 but to embrace it as it is serendipity to liberate us from routine jobs and become “a thousand engineers.”



Participants at the 31st SOMChE 2018

Make MY Palm Oil a Great Brand

First appeared in *The Edge* week 25—31 March 2019

Someone recently suggested that “it is time to migrate from palm oil cultivation” because there’s so much competition in the production of palm oil and the selling price has been on a downward trend. But, it is actually time to differentiate ourselves.

My father worked for *Harrisons & Crosfield*, which later became *Golden Hope* and today is part of *Sime Darby*. I started my career with *Lever Brothers* in 1974 as a management trainee and my first position was as a refinery manager. It was at *Lever Brothers Malaysia* (today known as *Unilever Malaysia*) that I realised the power of branding. In those days, you did not say toilet soap, you said *Lux*, as it was synonymous with soap. In my two decades there, I saw many examples of the influence of branding on the bottom line.

What we need to do with our palm oil is to make it a great and outstanding brand – sustainable without a doubt, of the highest quality and perfectly safe to consume. We have a head start, having celebrated a century of commercial planting of oil palm in 2017, and we can ride on that. Work needs to continue on the health aspects, which I am confident will in due course be properly documented and substantiated, but it will be generic to palm oil.

Sustainable

This is ongoing work with *Malaysian Sustainable Palm Oil (MSPO)* and the team is working hard to achieve the 100% certification target by the end of this year. The next challenge is getting *MSPO* recognised and internationally accepted. I will not dwell on it here as this is already acknowledged.

A vital point to note is that the production of palm oil in the country has stagnated over the last five (5) years. Further, *Primary Industries Minister Teresa Kok* has reiterated the government’s commitment to maintain 50% forest cover in Malaysia. So, we are looking at high-yielding breeds and increasing the extraction of oil during processing.

Renowned edible oil brands

I can give you three examples of highly successful seed oil branding.

The first is olive oil. Virgin olive oil is made only from cold extraction of oil from the olives and is mostly used as a salad dressing. Refined olive oil is suited for deep frying. Olive oil is renowned for its culinary versatility, flavour and health benefits. The various grades are certified by the *International Olive Council (IOC)* and by the *United States Department of Agriculture (USDA)*. Olive oil is expensive due to relatively low production and it is considered a luxury food.

As a result, olive oil is one of the most adulterated food products in the world. In 1981, more than 600 people died in an epidemic that spread across Spain. “Olive oil”, adulterated with industrial colza oil (from rapeseed), was blamed. In 2016, *The New York Times* warned, “Much of the extra-virgin Italian olive oil on the market is not Italian or virgin.”

To protect this high-value oil from fraud, Spain is introducing blockchain technology to trace all stages of extra virgin olive oil production and distribution.

The second example is canola oil. World War II caused a high demand for rapeseed oil as a lubricant for steam engines and Canada began limited rapeseed production of rapeseed. After

the war, when rapeseed oil was put on the market as a food product, it was unacceptable, with a distinctive taste (due to glucosinolates), disagreeable green colour and high erucic acid levels. Erucic acid caused heart damage in some rat studies.

In the 1970s, canola was bred from rapeseed cultivars and is a trademark name of the *Rapeseed Association of Canada*. It is a condensation of “can” from Canada and “ola” from oleic acid. It has less than 2% erucic acid and 30 micromoles of glucosinolates. In processing, only a minor portion of the production is cold-pressed without using hexane as a solvent. Since 1995, *Monsanto* has manufactured rapeseeds that are genetically engineered to be resistant to the herbicide *RoundUp*.

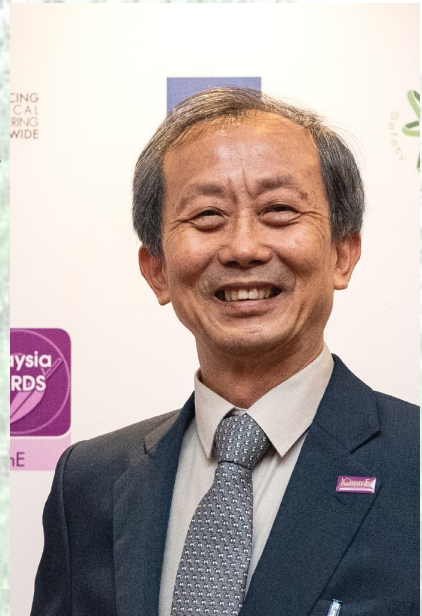
Today, canola is a generic term and is no longer associated with rapeseed oil. It is heavily marketed as a healthy cooking oil.

The third example, which is more recent and closer to home, is virgin coconut oil. It is made from coconut milk or *santan* as we Malaysians know it and can also be cold pressed from freshly dried coconut meat. Unlike the olive oil industry, there is no industry standard for virgin coconut oil. Coconut oil appears to have many health benefits and has become a trendy and popular fat. The benefits are attributed to its medium chain triglycerides (MCT), which are caprylic and capric fatty acids (C8 – C10). Most coconut production, especially in the Philippines, is now channelled to virgin coconut oil because it is more profitable. Traditionally, it was mainly used for fatty alcohol (an oleochemical) production.

Coconut oil was vilified for many years, until the 2000s because of its saturated fat content. But today, it has made a turnaround. Of the two examples, only canola oil was intentional branding. And that is what we should do with Malaysian palm oil.

Distinguishing quality

As a refinery manager, I had to bleach crude palm oil for saponification to produce *Lux* soap. At times, despite the *CPO* meeting the specification, I could not achieve the desired light colour for *Lux* soap. We investigated, and with other industry players we agreed we needed another specification. Finally, in 1982, the *Malaysian Palm Oil Board (MPOB)* came up with the *Deterioration of Bleachability Index (DOBI)*.



.DOBI is the numeric ratio of the spectrophotometric absorbance at 446nm to that at 269nm. Free fatty acid, and moisture and impurities alone, are not enough. Only Malaysia uses this in CPO specifications and it is a key indicator of quality. The Malaysian Standard MS 814:2007 is the second revision since it was first published in 1983. There are two grades—special quality (SQ) and standard quality (STD). DOBI is specified and this is a key differentiation. The industry is also looking at other quality differentiators.

Safe to consume

Food contaminants, such as 3-monochloropropane diol (3-MCPD) and glycidyl fatty acid esters (GE), are found in soy sauce, cookies, pastries and cakes, infant and follow-up formulae, fried or baked potato products and certain meat and fish products. They are present in vegetable oils and are higher in palm oil. The European Food Safety Authority (EFSA) has concerns, especially for consumers in the younger age group, and has set limits.

The Malaysian palm oil industry is working hard to meet these limits. MPOB is collating the information and it is clear that we need to have robust agriculture practices as well as excellent processing at all stages. This affects the entire supply chain and it needs the various palm oil industry sectors, in the national interest, to break down the silos they mostly work in. It is reassuring to know that some companies have already resolved the issue. MPOB, too, needs to stand firm on what it believes is the way forward. As a next step, we may well move from the common STD grade to the SQ grade of CPO in tightening its specifications.

The issue with food contaminants that has surfaced should not be viewed only as a challenge, but as an opportunity to stand out in the global palm oil community as being able to exceed the expectations of EFSA as another point of differentiation.

The way forward

Once MSPO is firmly entrenched, it will be time to raise the bar to remain ahead of the other players and to build on the MY palm oil brand. Specifications can be elevated to the next level as the industry improves. In branding, image is paramount and it is also emotive. Palm oil-processing plants must look like food-processing plants to reassure consumers of quality, and this can be done right away, particularly in palm oil mills.

I have given several presentations on Industrial Revolution 4.0 (IR 4.0) and how the palm oil industry can take advantage of it. In Budget 2019, the government has allocated RM5 billion to propel industries in the wake of IR 4.0. One of the benefits of IR 4.0 is that it can not only help to improve quality but consistently maintain it. For example, in harvesting, only ripe fruit bunches are picked at the right time, and in refining, with the help of big data analytics, the most optimum processing conditions are sustained.

Most of all, we need to start building the brand now, as it takes years. For a start, what concept do we want to market? I have suggested sustainability and quality. As an illustration, higher quality crude palm oil should result in end products of a lighter colour, less odour, more bland flavour, longer shelf life, longer frying life, better shipping resilience and so on. These attributes can be measured and substantiated.

How do we protect the concept? This cannot be adequately covered in this article but I would like to leave you with the marketing history of Canola oil. Canola oil is made from the seeds of the unfortunately named rape plant, so, they re-

named it. The plant belongs to the mustard family, as do choy sum, turnip, cabbage, watercress and radish, and rapeseed oil originally had a substantial amount of erucic acid.

To address this problem, the industry developed a low erucic acid rapeseed oil and obtained GRAS (generally regarded as safe) status from the FDA. Launched in the 1980s, the marketing stressed the oil's high level of mono-unsaturated fat and its considerable amount of health-enhancing omega-3 fatty acids. However, in the 1990s, canola oil's reputation was affected by an article which said that rapeseed was the source of the mustard gas used in chemical warfare and causing serious illness. It was an unfounded accusation that had to be dealt with. This sounds familiar.

I hope I can see the day when there is a vigorous certification process for "MY Palm Oil" that will be in great demand for its quality and sustainability. I am excited to find out what name will be chosen. US brand consultant Larry Light said, "A brand is more than a trademark. It is a trustmark. A brand is a covenant between the company and the consumer. A trusted brand is a genuine asset."

Qua Kiat Seng

"Well written Qua. Very few understand the power of Brands. Let us hope MPSO and MY Palm Oil makes a distinct difference. It will not happen without concerted and high visibility global marketing campaigns."

-Mr U R Unnithan (Founder & CEO of Sumwin Solutions)

"You have given me a good recollection of palm oil industry."

-Mr GC Tan (former MD Pacific Oleochemicals)

"Very well written! Fully agree with your points. In my presentation at IChemE's 2nd RPOPS regarding mill-refinery integrated complex, this could be the future concept for Malaysia palm oil industry to adopt in rebranding Malaysia palm oil."

-Mr Daniel Ng (Vice President, Food & Water Division, South East Asia)

"A good read. There is a long way to go before we can overcome the negative perception of palm. But, I am confident that it can be done."

-Dato' Carl Bek-Nielsen (Chief Executive Director, United Plantations Bhd)

Heat Recovery using Vent Economizers

By Ir. Shyam Lakshmanan

We were very pleased and grateful for being able to invite Mr Shyam Lakshmanan for a talk on the 4th of March in Monash University Malaysia. IOI Edible Oils Sdn. Bhd. has recently won The Palm Oil Award from IChemE Malaysia in 2018 through the team lead by Mr Shyam. In addition to the palm oil award, considering only the Year 2018, IOI Edible Oils Sdn. Bhd. had also won four (4) other awards! Which is quite an impressive achievement.

The plant commenced operation and started the exporting activities since 1998. Main processing plant includes physical refinery plant, dry fractionation plant, palm kernel crushing plant and the biomass plant. Through energy management audit, it was found that there is a high potential of energy recovery.

Thus, a vent economiser is proposed to be added to the condensate tank for steam recovery where steam recovered could be utilised for other uses in the plant. The vent economiser was mounted on top of the condensate tank, at the intersection of the hot water and steam vapour. The vent economiser was installed in November 2016 and has shown significant cost and steam savings ever since. Total cost savings have exceeded the total project invested cost on top of significant steam consumption reduction by 5 kg/MT just within a short period of 3 years. Based on the trend, steam consumption would reduce further and is a highly desired outcome.



From the good track record, a second stage implementation was imposed and the vent economiser installed was modified for improvement in the following year. Amazing results was attained observing an incredibly short payback period just within (16) days!

However, this is just a warm up for the highly motivated energy committee in IOI Edible Oils Sdn. Bhd. Continuous improvement is on-going via attending trainings by UNIDO on instrument training for thermal energy audit, sharing of knowledge during energy meeting through technology supplier, joining energy efficiency training conducted by university lecturers, theory and practical trainings by supplier (Spirax Sarco) on steam trap monitoring instrument and not forgetting the steam trap surveillance conducted by TLV.

This was a short and sweet presentation by Mr Shyam and well received by the audience. Interesting questions were raised by the excited and curious audience for seeing such an impressive results. As it was hard to believe a simple solution as such was able to give so much savings and yet it was never thought of. As quoted from Miss Sin Lu "Sometimes the simplest method is the best engineering practice, and not one which is complicated".

"The best engineering practice is one that gives the best solution and may not need to be complicated."



1. Ir. Shyam started on his talk by first presenting on the awards that were attained by IOI Edible Oils Sdn Bhd in 2018.
2. Audience listening attentively to the presentation.
3. Ir. Shyam giving a brief explanation on the plant process to audiences physically present and also to those listening via the webinar.
4. Dr. Ramanan listening to the explanation made by Ir. Shyam.
5. Ir. Shyam listening and addressing the questions posed by the audience.
6. Ir. Qua presenting the Certificate of Appreciation to Ir. Shyam.

Reach and Remind

Friends of The Industry Seminar 2019, Dialogue

Tuesday 8th January 2019, The Majestic Hotel, Kuala Lumpur

The Reach and Remind seminar is an event held annually by the Malaysian Palm Oil Council (MPOC), with the objective of bringing together stakeholders of the Malaysian palm oil industry in order to share and discuss the important issues faced by the industry recently.

In conjunction with this year's seminar, the "Love MY Palm Oil" campaign, initiated by the Minister of Primary Industries YB Teresa Kok, was also launched. The campaign aims to educate the public on the benefits of consuming palm oil and on the scientific facts that oil palm is overall the most sustainable oil crop amongst others, as opposed to the politically driven and ill-informed information presented in various movements launched against the use of palm oil in European countries. One of the highlights of the "Love MY Palm Oil" campaign is that roadshows with fun filled activities promoting the use of palm oil in daily cooking and various grassroot programs will take place in schools around the country. A group of "palm oil ambassadors" will lead the roadshows, to educate Malaysians and school children on the healthy use of palm oil in everyday food, the importance of palm oil towards the country's economy, and to not purchase any consumer products that has the discriminatory "no palm oil" label.

For this year's Reach and Remind seminar, three technical papers were presented, followed by an opening remark by YBhg Dato' Lee Yeow Chor, Chairman of MPOC, and a keynote address by YB Teresa Kok. The seminar concluded with an open dialogue with YB Teresa Kok, supported by a panel of experts from the palm oil industry.

The first paper titled "Assessing New Markets for Malaysian Commodities in 2019 – Challenges and Opportunities", was presented by Dato' Wan Latiff Bin Wan Musa, Deputy CEO of MATRADE. In his presentation, it was highlighted that the value of Malaysia's total exports stood at MYR 999.5 billion for FY 2018, in which palm oil exports (i.e. agriculture and manufactured) accounted for MYR 63 billion. It ranked amongst the highest in terms of trade balance, and is considered by MATRADE as a high value export focused product. However, export growth has been underperforming in recent years primarily due to the anti-palm oil sentiment taking place in western countries and also increasing competition arising from other neighbouring countries.

In the second paper, En. Zulazwer Bin Hassan from Bank Negara Malaysia provided an update on the implications of the "Foreign Exchange Administration Act". This was followed by the third paper titled "Creating Drivers for Enhanced Global Outreach of Malaysian Palm Oil" presented by Datuk Dr. Kalyana Sundram from the MPOC.

Datuk Dr. Kalyana Sundram pointed out that Malaysia is facing a treat from emerging countries such as Thailand and Africa rising as producers of palm oil. In particular, Africa could be the next frontier in palm oil production as they are reported to have 22 million hectares of grasslands suitable for oil palm planting. United States which uses palm oil imported from Malaysia for hydrogenated fats replacement, is also gradually importing more from Indonesia and South America. Indonesia, the worlds largest producer of palm oil, has seen an increase in stockpile lately and to add to that, MPOC also found that there has been an increase in stockpile on shore of importing countries. Other major importers of palm oil are China and India, but again the negative campaigns launched by the European Countries on palm oil, pointing out that palm oil contains cancer causing agents and carcinogenic chemicals, has also

taken their toll on the image of palm oil. "A battle is ongoing and we are fighting it. Unfortunately, industry players are not playing a bigger role." said Datuk Dr. Kalyana Sundram. The one positive outlook for Malaysian palm oil though, is the mandate on blending conventional fuel with biofuel derived from palm oil produced locally.

During the Q&A session for the papers, a participant from World Wildlife Fund (WWF) Malaysia said that he is against the "No Palm Oil" labelling on food products because the move is counterintuitive, as WWF and the industry is working very hard and have put in lots of efforts to ensure the sustainability of palm oil. An oil palm planter from Sabah also made the comment that the number of orang utans in Sabah has "stabilised", however MPOC is not doing enough to shout the work done on the conservation of Sabah's forestry across to the European counterparts.

YBhg Dato' Lee Yeow Chor presented an opening remark soon after the arrival of YB Teresa Kok. The Minister of Primary Industries then presented the keynote address for the Reach & Remind seminar, where similarly she voiced her concerns over the unfair campaigns and policies introduced by European countries, such as the impact of indirect land use change, which she laments as an attempt to phase out Malaysia's palm oil.

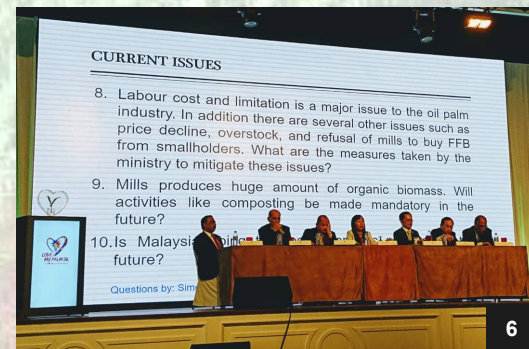
In response to all these concerted efforts aimed at demoting palm oil since early 2010s, Malaysia had back then established MPOCC (Malaysia Palm Oil Certification Council) to administer the MSPO (Malaysia Sustainable Palm Oil) certification. However, there has been a serious lack of participation from planters and refiners, resulting in only one quarter of the stakeholders subscribing to the certification as of 2018. As a result, the government had made it mandatory for all stakeholders to obtain the certification by 2019. "The challenge we see is for small stakeholders to obtain the MSPO certification, and the government is committed to assist them through the process." said YB Teresa Kok. She reiterated that Malaysia's palm oil is a "five-star oil", and hoped that CPO (Crude Palm Oil) price will reach MYR2,700 per tonne this year. Before the end of her keynote address, she played a pre-recorded video showing Malaysia's Prime Minister Tun Dr. Mahathir voicing out his concern and support on the fight against the ban on Malaysia's palm oil.

The "Love MY Palm Oil" campaign was then launched, accompanied by a musical performance led by Professor Dato' Wah Idris, who is an academician, celebrity and composer well-known to Malaysians.

The final session of the event was a dialogue between the participants and YB Teresa Kok, complimented by a panel of industry specialists. One of the issues discussed were concerns on the difficulty to educate and certify smallholders, in particular suppliers of FFB (fresh fruit bunch) to palm oil mills. Even though the government had agreed to borne the cost associated with obtaining the MSPO certification, including the cost for PPE (personal protective equipment), documentations and others, it is also hoped that the mills can assist on other aspects in order to streamline the entire certification process. On a separate discussion, YB Teresa Kok mentioned that her ministry has also brought Malaysian Timber Board into the picture to assist with MPOC's forest conservation programs, to conserve the population of wildlife and in fighting against illegal logging.

Before concluding the event, YB Teresa Kok reiterated the hope that the "Love MY Palm Oil" campaign will successfully disseminate the actual facts and benefits of palm oil to all Malaysians, in schools and neighbourhoods via "palm oil ambassadors", children and housewives, and in social media via internet bloggers. There should also be self-awareness among

Malaysian importers, in particular high-end grocers to stop importing products with the "no palm oil" label. If as planned, the "Love MY Palm Oil" campaign could at least reinstate Malaysian's confidence in palm oil products, before similar campaigns are launched overseas.



1. The speakers: Dato' Wan Latiff Bin Wan Musa (Left), Datuk Dr. Kalyana Sundram (Centre), and En. Zulazwer Bin Hassan (Right).

2. YB Teresa Kok, Minister of Primary Industries, presenting the keynote address for the Reach and Remind Dialogue 2019.

3. Professor Dato' Wah Idris on the piano, performing the theme song for "Love MY Palm Oil" campaign.

4. YB Teresa Kok, YB Datuk Seri Shamsul Iskandar (Left), YBhg Dato' Lee Yeow Chor (second from right), and Datuk Dr. Kalyana Sundram inspecting a palm oil derived product.

5. Launching of the "Love MY Palm Oil" campaign.

6. Dialogue with YB Teresa Kok supported by a panel of palm oil specialists.

7. Palm oil industry veteran Qua Kiat Seng from POPSIG of IChemE Malaysia, presenting his viewpoint to YB Teresa Kok on the current issues faced by the Malaysian palm oil industry.

8. Members from IChemE Malaysia and Institution of Engineers Malaysia "Agricultural and Food Engineering Technical Division", met during coffee break while enjoying some finger food made with palm oil.

9. Qua Kiat Seng with Palm Oil Ambassadors.

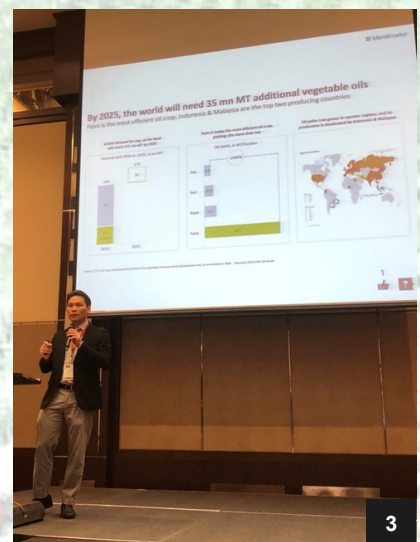
POPSIG participates in 8th RPSS

The 8th RPSS (Regional Process Safety Seminar) was held by IChemE Malaysia from 19-20 March 2019 at InterContinental Hotel in Kuala Lumpur. The theme was The Future of Process Safety. There were 75 participants and 8 papers were presented, including keynote presentation. At the end of seminar, there was an interactive case study workshop conducted by Trish Kerin, Director of IChemE Safety Centre, focusing on the principles of Inherently Safer Design.

IChemE POPSIG chair, Hong Wai Onn, was one of the keynote speakers, and he spoke on “Process Safety Next in Palm Oil Processing Industry”. His paper was presented with real-time feedback that enabled participants to feedback and response to questions anonymously. In one of the live interactive sessions, it’s was no surprise that “cooking oil” was the most opted answer to the question of what comes to mind when you think about products containing palm oil?

Hong covered not only the palm oil industry outlook, but also process safety landscape across palm oil processing value chain, from upstream to downstream. He also shared the principle of C³ to explain why incidents still happen: poorly maintained condition, low level of competence, and lack of commitment. Hong stressed also the need of Process Safety Next framework which could help the palm oil processing processors stay agile and accelerate, and put process safety front and center, by leveraging the strength of internet of things.

There’re coupled of reflections received throughout the session and Hong will address these in a separate article.



1. Welcome speech by IChemE Malaysia Chairperson—Ir. Dr Christina Phang.
2. Welcome speech by 8th RPSS Chairperson—Trish Kerin, Director of IChemE Safety Center.
3. Hong explaining palm oil industry outlook.
4. A very successful and well run event with excellent speakers and very engaging and eclectic participants.

Oscar Ting named the Recipient of Pfizer Niall J. Condon Process Safety Award

Excellent Together – Born in Sarawak, Malaysia, Oscar Ting – the Chief Manager of Communications and IT, IChemE Palm Oil Processing SIG – is undertaking Chemical and Biopharmaceutical Engineering in Ireland. Oscar completed his professional industrial placement at Pfizer API Ringaskiddy, Ireland and was responsible for Safety and Quality Excellence at Organic Synthesis Plant 3, where he highlighted the safety management, psychological safety and good manufacturing practice of API pharmaceutical production on plant.

With a great dedication, Oscar is enthusiastic to apply engineering and industrial biotechnology knowledge in biopharmaceutical and palm oil industries. Oscar is interested in the manipulation of DNA of oil palm to address the sustainability concern and water footprint. His innovation and determination drive him to explore different field of industries with his valuable assets and diverse skills.

Oscar holds Lean Six Sigma Black Belt certificate accredited by the Council for Six Sigma Certification on project managements. He was also awarded two professional certificates qualified by Harvard University on climate change study and business improvement management. Under the leadership of Professor Ir. Dr. Sharifah Rafidah Wan Alwi, their team was named as the winning team of APEC Green Port Award System 2017.

Oscar believes that: *“Creative thinking and innovation on chemical engineering and biotechnology drive biopharmaceutical manufacturing and palm oil production towards the excellence of process safety, biotechnology, manufacturing efficiency and sustainability.”* A Senior Communication Associate of UNICEF complimented on Oscar’s contribution that: *“His shining characteristics and diligence make him a great asset to the worldwide communities. I believe Oscar will continue to strive and illuminate himself at global stage.”*

On behalf of IChemE, we would like to share Oscar’s tremendous achievement to all professionals around the world. Oscar would like to send his appreciation to: Niall J. Condon (Vice President) and his former colleagues at Pfizer API Ringaskiddy. As a passionate learner, he is currently seeking opportunity to be a prospective Doctor of Philosophy (Ph.D.) candidate.



Lastly, Oscar would like to comment:

“I appreciate to all those who have a good understanding and continuously deliver their confidences and supports to me.”

Left to Right: Oscar Ting (IChemE) and Eamon Judge, European Project Planning Leader, Global Facilities Delivery (ISPE, Eli Lilly and Company)



Is Palm Oil A Cancer Risk? Let Truthful Science Prevail!

In addition to the Nutella / Palm oil cancer link streamed extensively in the media, there have been accompanying reference associated to a study in Nature (doi:10.1038/nature20791; G. Pascual et al. 2016) that is also cross-quoted by some sources but not all, to support their claims against palm oil.

We opinion the Nature publication as follows:

- The publication by G. Pascual is indeed an important scientific output that allows better understanding of the underlying mechanisms of some human cancer metastasis. This is the process whereby cancer cells spread from the place where they first formed to another part of the body. The cancer cells break away from the original (primary) tumor, travel through the blood or lymph system, and form a new tumor in other organs or tissues of the body.
- Metastasis of some human cancer cells were reported to particularly rely on dietary lipids to promote metastasis.
- A very high fat diet (60% as fat calories) was shown to promote metastasis and information was generated that when palmitic acid, a common dietary fatty acid that occurs throughout nature was tested, it promoted metastasis.

This was highlighted in a PR / media release initiated by Worldwide Cancer Research and was extensively carried and promoted by ScienceDaily (www.sciencedaily.com). Both parties took undue liberty by extrapolating the findings to raise an alert that palmitic acid is a main component of animal and vegetable fats and present in high levels in palm oil which is used in many house hold products. Incidentally, palmitic acid is the major fatty acid that our body makes to sustain life.

Such reference to palmitic acid in palm oil triggered consumers concerns with some concluding that palm oil could be cancer promoting.

Does the Pascual et al. study support this conclusion? We examined the underlying details as follows:

- The study reported a metastasis promoting effect in mice fed a high fat diet containing 60% as fat calories. We then examined the source of this high fat diet. It was a lard-soyabean oil combination fat source in the test diet. Lard is a rich source of saturated palmitic and stearic acids, the monounsaturated oleic acid (which is also present in European rapeseed oil, Canadian Canola oil, high oleic varieties of sunflower and soya oils as well as olive oil). The soybean oil in this case provided a source of the polyunsaturated fatty acids.

- The high fat diet tested by the researchers was 37% saturated (contained both palmitic and stearic from the lard source). It also had 47% monounsaturated oleic acid and 16% polyunsaturated fatty acids.
- Any of these fatty acids on their own or in combination could have contributed to the increased metastasis of the cancer cells in the mice model used.
- Interestingly PALM OIL was not a source of fat or fatty acids in the test regime.

The researchers furthered their evaluation by testing saturated palmitic acid. They used a pure, free form of palmitic acid (source unidentified and we therefore conclude not likely from palm oil). They reported that palmitic acid was taken up by the cells and it helped promotion of metastasis of the cancer cells.

Although the researchers did not in any way implicate palm oil, Worldwide Cancer Research and ScienceDaily were quick to unjustifiably associate palm oil with cancer due to its high palmitic acid content.

Why did the researchers themselves not draw this conclusion? We believe that their unbiased scientific assessment prevailed. It is postulated that they were aware that there were limitations to their study interpretations that they recognized. These could be:

- The data on palmitic acid was instrumental in allowing them to correctly draw a conclusion that individual fatty acids were involved in metastasis of the cancer cells.
- However, this also presented the possibility that other commonly occurring fatty acids including oleic, linoleic and linolenic could also exert similar effects
- The above mentioned fatty acids which are regular components of our daily diets, were not tested or elucidated in the study. This is a big gap in the data that surely will be corrected by the scientific community in the future.
- These conclusions thus do not support a role for palm oil and cancer as far as the findings are concerned.

One can only conclude that the conclusions of World Cancer Research and ScienceDaily were unsubstantiated when they associated palmitic acid with palm oil and this helped portray / create a consumer scare about palm oil and cancer.



Dr. Kalyana Sundram, Chief Executive Officer of the Malaysian Palm Oil Council (MPOC), with over 35 years of research experience. Research experiences includes research on various aspects of oils and fats process technologies, nutrition and technical marketing. He is a fellow of the Malaysian Academy of Sciences and Fellow of the Nutrition Society of Malaysia on top of several other international professional associations.

Reference: Targeting metastasis-initiating cells through the fatty acid receptor CD36 Gloria Pascual et al., Nature 2016, 541,41–45; doi:10.1038/nature20791 Article Credit: Dr. Kalyana Sundram Chief Executive Officer Malaysian Palm Oil Council (MPOC) Email: kalyana@mpoc.org.my

Aspiring together for the advancement of engineering - IChemE speaks at IEM

As the result of the meeting of IEM and IChemE members at the MPOC event on 8th January 2019 (see page 9) IEM AFETD (Agriculture and Food Engineering Technical Division) Chairman Ir Vasan Mariappan invited POPSIG to give a talk at IEM.

On Saturday morning on 16th February 2019 Ir Qua Kiat Seng delivered his regular talk "Revolution X.0 in the Palm Oil Industry" at the brand new Malakoff Auditorium which can seat a 100 people. It is located at Wisma IEM.

IChemE in Malaysia board member Rafil Elyas was present as well as other O&G participants such as Trisystems and AS Sepakat who

could support analytics for process management data. IR 4.0 is relatively unknown in the palm oil industry unlike O&G. Teoh Beng Chuan, CEO of PORAM (Palm Oil Refiners Association of Malaysia) was also present as well as Ir Chew Gim Cheng from IEM CETD (Chemical Engineering Technical Division).

Since 15th April 2013 there has been an MOU signed between IChemE and IEM. POPSIG is pleased to be working with AFETD for the advancement of engineering the the palm oil industry. POPSIG is looking forward to a talk to be delivered by AFETD at POPSIG's evening talk/webinar in the later part of 2019.



1

Ir Qua Kiat Seng CEng FIChemE delivering his talk at Wisma IEM



2

Ir Qua receiving a Certificate of Appreciation from Ir Ooi Ho Seng, past chairman of AFETD. Looking on is Ir Mariappan, the current chairman

Q2 Diary of Events (2019)

Evening Talk: **Systematic Tools for Sustainable Palm Oil Plantation Development: A Response to European Union Resolution on Palm Oil**

Speaker: Dr Viknesh Andiappan Murugappan CEng MIChemE

Date: 29 April 2019

Time: 18:00—20:30 (GMT+8)

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

Evening Talk: **The Truth about Oil Palm—Palm Oil Milling Initiatives**

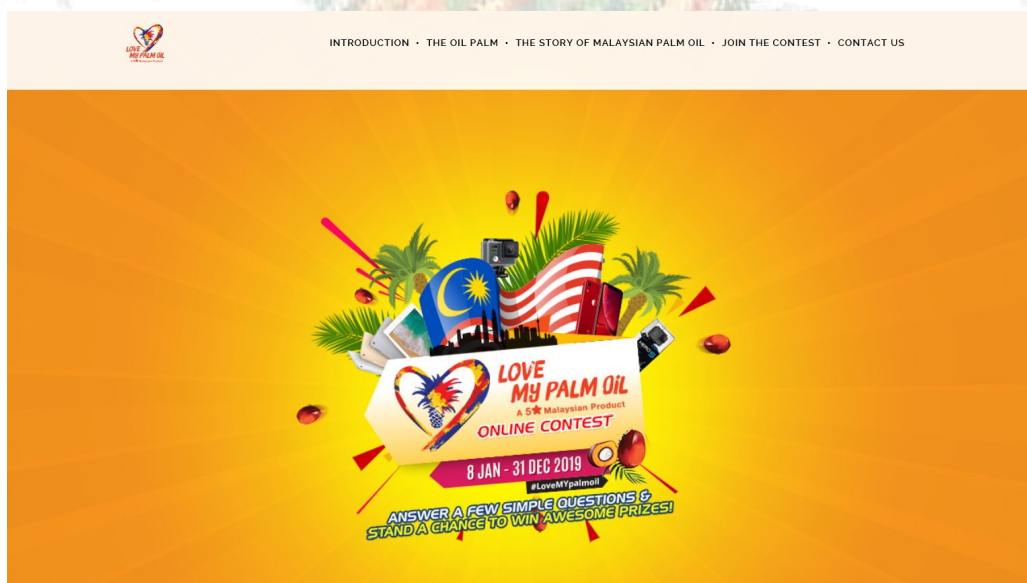
Speaker: Ir. Mervin Chew Chien Lye PEng, AMIChemE

Date: 17 June 2019

Time: 18:00—20:30 (GMT+8)

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

For further information about POPSIG including how to join our events please contact the Secretary Assoc. Prof. Dr Wu Ta Yeong at wu.ta.yeong@monash.edu



<https://lovemypalmoil.com.my/contest/>

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