

# StarSpecial

THE STAR, TUESDAY 14 SEPTEMBER 2021

COURSE FOCUS



## Flying ahead with education

Education can open many doors for you. Read about how getting a degree can take you further than you could ever imagine.

# Food science and technology for a sustainable future

AS you devour a bar of chocolate, you may start to think of the calories you have indulged in. But have you thought about the science that goes into it? If you noticed that your chocolate is a little whitish, that is not mould. It is, in fact, a change in the size of

the fat crystals as they go through temperature fluctuation.

Head of Food Science and Physical Sciences Assoc Prof Siow Lee Fong has always had an insatiable curiosity for food and its processes. She was even more piqued when she realised she could improve human life by keeping food better and healthier through food science and technology.

Prof Siow, an academic at Monash University Malaysia's School of Science, is interested in researching more on microencapsulation, a technique to encase certain substances in capsule form. This method is not new, and many industries are already using it. However, Prof Siow is currently utilising it with an underutilised plant known as the drumstick tree, or moringa.

"Moringa is prized for its oils. Yet, many are not aware of the gem in the remaining seedcake. Others have extracted proteins from the seedcake. It has not been used as wall materials in microencapsulation before, making this research project current and innovative," she says.

"We have extracted the proteins from the seedcake, which remains after its oils are extracted, and have dried it into powder form. We are now studying its content and behaviour and

**"The main benefit of microencapsulation is protecting active compounds from the external environment so that they are not destroyed in a harsh environment. It acts as a shield, masking the taste of the active compounds, controlling their release and adding them to products."**

Assoc Prof Siow Lee Fong

testing its performance," Prof Siow adds.

Microencapsulation started with non-food materials like detergent, but a good example to explain how it works is by using chewing gum as an example. A chewing gum's sweetness emerges as you chew on it, but the longer you chew it, the less sweet it becomes.

This sweetness is microencapsulated and appears as you chew and break down the gum's microcapsules. When there are no more microcapsules left, the gum will taste bland.

"There are many benefits of microencapsulation. The main benefit is protecting active compounds from the external environment so that they are not destroyed in a harsh environment. It acts as a shield, masking the taste of the active compounds, controlling their release and adding them to products.

"Bioactive compounds are known to have antioxidant properties, which contribute to good health. Food products incorporated with these compounds are called functional foods. Consumers may easily accept them as they don't need to purposely buy a separate health supplement when their daily foods are added with these bioactive compounds.

"Utilising a new plant-based source opens up options for vegetarians. Plant-based proteins are also far more sustainable than animal proteins. This current work is matched with the United Nations Sustainable Development Goals to achieve food security and end hunger," says Prof Siow.

Monash University Malaysia has given out scholarships worth RM200mil to successful recipients for the past 10 years. If you are passionate about tackling core challenges facing the world, Monash University Malaysia is the perfect place for you.

■ For more information on Monash University Malaysia's postgraduate coursework and research programmes, visit [www.monash.edu.my](http://www.monash.edu.my).



Assoc Prof Siow Lee Fong.



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## Find your right fit

WITH the exception of the last couple of years due to the Covid-19 pandemic, studies conducted by the Higher Education Statistics Agency in the UK show that more and more students are going to the UK to further their studies. In fact, according to the UK Council for International Student Affairs, Malaysia is one of the top countries outside of the European Union to send students to the UK for higher education.

UK university programmes are so popular among Malaysians that over the last few decades, numerous UK branch campuses have popped up in our country. Even local private universities are offering twinning programmes with various UK universities.

For many of the UK academic programmes offered in Malaysia, you get the option to study locally, in the UK or both throughout the duration of your degree and be conferred a degree from that UK university upon graduation.

### Telling them apart

Upon researching on the various programmes on offer, you may come across programmes that denote a 2+1, 3+0, 1+2 arrangement. These digits refer to the

number of years you spend studying in a country.

For example, a 2+1 programme means that you spend two years studying in Malaysia and the final year in the UK. A 3+0 programme, meanwhile, means that you complete all three years of your degree in Malaysia, but still obtain qualifications from a UK university.

Below is a closer look at different types of programmes.

● **2+1 (Two years in Malaysia, one year in the UK)** – The 2+1 is arguably the most popular sort of UK programme among Malaysians as it gives students a chance to study in Malaysia and in the UK.

If you are keen on studying in the UK but want to save up before going abroad, this programme is for you. The credits that you accumulate in the first two years of your degree can be transferred so that you may finish the rest of your course in the UK.

With this programme, you can enjoy the experience of living there and partake in the vibrant activities to the fullest instead of having to survive by penny pinching for three years.

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# Engineering future-proof talents

IN line with Tunku Abdul Rahman University College's (TAR UC) mission to produce graduates who can contribute towards the nation's development, in this case being well versed in the Fourth Industrial Revolution (IR4.0) technology as well as its smart campus initiative, the Faculty of Engineering and Technology (FOET) offers engineering programmes in the fields related to IR4.0 transformation to meet the needs of the complex future.

With a research interest in power electronics and smart robotics, Dr Lum Kin Yun, senior lecturer at FOET's Department of Mechanical Engineering, currently heads the engineering role in TAR UC's Smart Agriculture project and research to incorporate new technologies to boost cultivation of Bentong ginger.

This project is an example of one of the many IR4.0 topics that TAR UC engineering students can get



Dr Lum with the mechanical rack which is used for vertical farming in TAR UC's Smart Agriculture project to incorporate new technologies to boost cultivation of Bentong ginger.

involved in to gain hands-on experience in smart agriculture.

"The project is in line with the UC's research direction of having smart agriculture. The project was initiated to cultivate Bentong ginger due to its medicinal benefits. The aim of incorporating vertical farming and robotic technology is to reduce human labour, reduce land

requirements and increase crop yield. Since there is no existing reference on the design of this automation process, we have to start from scratch to implement this initiative," says Dr Lum.

"Engineering is versatile. The foundation of IR4.0 still incorporates elements of electrical, mechanical, and mechatronic engineering

systems. These are the basis for all technology today and the future. These are the three main fields of engineering offered by FOET," he adds.

Dr Lum elaborates that TAR UC's syllabus not only focuses on theory, but practical experience and research skills are equally emphasised.

"Students can be good at studying theory, but they also need to be competent when it comes to practical works like design, prototyping and integration.

"Doing practical work in a laboratory is easy where every step is planned in a controlled environment. In practical projects, we try to expose them to real-life problems where they have to deal with many uncertainties and potential limitations.

"Students are put into groups to handle more challenging capstone projects once they have been equipped with a strong engineering background. This practical work requires them to build a prototype of a specific topic, enabling them to implement what they have learnt and at the same time sharpening their hands-on skills. Their final-year projects

are also based on recent research topics. This exposes them to the latest industry trends and newest technology, giving them the opportunity to continue a life-long learning process even after graduation," he says.

FOET's engineering programmes are professionally accredited by the Board of Engineers Malaysia and globally recognised through Malaysia's signatory membership with the Washington Accord. Graduates can register as a professional engineer after gaining three years of relevant work experience, professional development training and passing the professional exams.

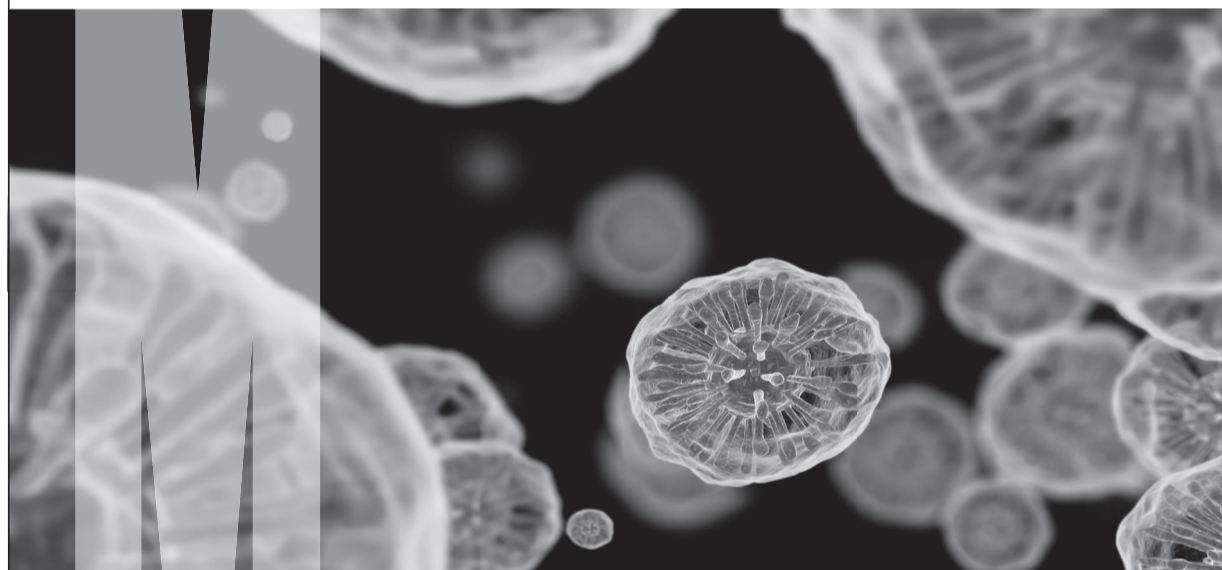
Application for the September and November intakes are currently ongoing. Prospective students are encouraged to apply online at [www.tarc.edu.my](http://www.tarc.edu.my). Attractive scholarships are also available at TAR UC based on academic merit and sibling discount for qualified students.

■ For more information on engineering programmes offered by FOET, call 011-1082 5613, visit [www.tarc.edu.my/foet/](http://www.tarc.edu.my/foet/) or visit TAR UC's virtual open day from Sept 20-24, 10am to 5pm.



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## Quality education made affordable

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### ● 3+0 (Three years in Malaysia, zero years in the UK)

– If you have a tight budget but still want to obtain a UK degree, this programme is the way to go. It is perhaps the least expensive option out of all UK programmes.

During this programme, you complete all three years of your degree in the comfort of your home country, surrounded by familiar environments and people. The best part is that you will still earn a degree and qualification from your chosen UK university.

● 1+2 (One year in Malaysia, two years in the UK) – Though uncommon, a few universities do offer a 1+2 programme where you can spend the first year studying in Malaysia and complete the rest of your degree in the UK.

Credits accumulated and modules covered in your first

year can be transferred so that you may finish your course in the UK.

This programme may cost a bit more than the 2+1 or 3+0 options as you will spend a longer time in the UK, but it is a fast-track option if you are eager to get there. It is still cheaper than completing your entire degree in the UK.

### At what cost?

For Malaysian students who feel ill-prepared to move halfway across the world for three years, a twinning programme with a partner university or studying at a branch campus can be a good alternative.

Such programmes appeal to many Malaysians because it makes a UK education a little bit more attainable. You get the same quality of education here as you would in the UK at a considerably lower fee.



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