

NEWRI

Update

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The Kandy Lake Clean-Up

Read how this project got conferred the IES Engineering Award 2017

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A FEW WORDS FROM ADIL

Dear friends and my NEWRI family,

It is my pleasure to share a few thoughts with you. This is my first opportunity to have the privilege of writing this note on behalf of our organization, and before I start, let me take a moment to acknowledge the intellect, dedication, and perseverance of those who designed and built the home we live in. While he is always gracious about sharing credit, I think we owe a debt of gratitude to Prof. Ng Wun Jern, who, with his leadership team, has "Designed, Built and Operated" NEWRI since 2008. The best way for us to repay the debt we owe to Prof. Ng and the giants whose shoulders we stand on today, is to build on the foundation they have established.

If we look at Singapore's Scientific and Technological Roadmap, RIE2020, NEWRI has been designed as a microcosm of this blueprint. We have our bedrock of Research units (in alphabetical order ☺, AEBC, ECMC, EPMC, R3C and SMTC), the foundation of inventions on which we build our Engineering Innovation through our Applied Research and Translation (ART) units, with the intent of developing commercially viable Products and Processes which we bring to the world through NEWRITech, our Enterprise organization. Our NEWRIComm organization is justly recognized for its pioneering efforts in translating our technology to develop environmental self-reliance for needy communities, making a difference in their lives.

Let me also take a moment at this point of time to convey our heartfelt thanks to our unsung heroes, the Administration and Operations teams that make our lives so much easier because of their efforts. I am a firm believer in "doing the right things", but equally importantly, in "doing things right". A key part of this culture is protecting our Environment, maintaining our Health and performing our work with the highest Safety standards. We are all aware that these guidelines are for our own good, and we should adhere to them at all times. Let us anticipate and minimize risks in our operations, and continue to develop a culture of proactive compliance. In the rare events where there is a "near miss", or an unfortunate incident does occur, let us utilize the learnings to ensure that our safeguards are even more robust in future. There are no shortcuts to developing great innovations, or to ensuring work safety.

At the end of each day, we owe it to ourselves to go home safely, and spend time with our loved ones, family and friends.

With my best regards,

Adil



**EXCLUSIVE
LOOK**

PUB CHIEF EXECUTIVE VISITS NEWRI & **Start**



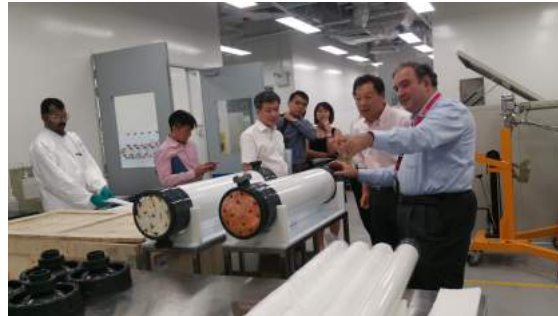
Mr Ng Joo Hee, Chief Executive of PUB (Singapore's National Water Agency) with Dr Adil Dhalla (NEWRI Executive Director (Interim)) in the START laboratories



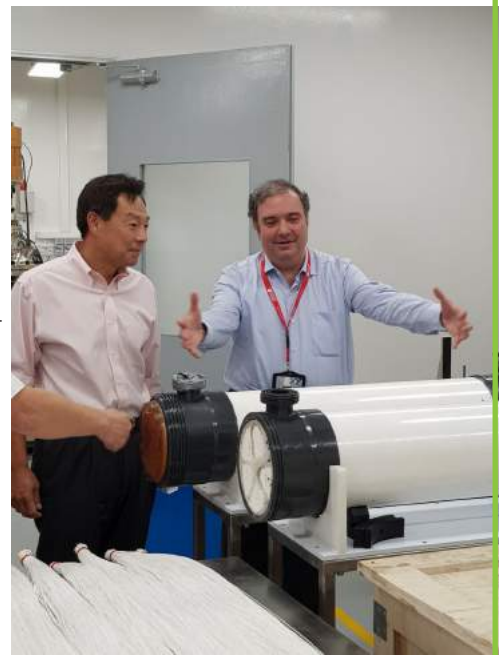
Mr Ng Joo Hee being shown the workings of START's heavy machinery



The delegation had a closer look at the flat sheet membranes machinery of START



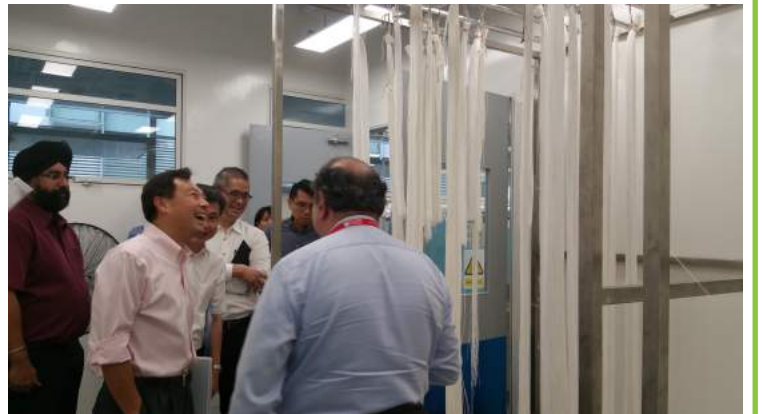
Membranes ready for industry



Dr Adil explaining membrane applications to Mr Ng



Mr Ng Joo Hee being shown the membrane spinning machinery and the membrane manufacturing process.



Mr Ng looking on drying membrane strands after they are manufactured .

Mr Ng Joo Hee, Chief Executive of PUB (Singapore's National Water Agency) visited NEWRI and START to get reacquainted with the technologies. Hosted by NEWRI, Dr Adil Dhalla (Executive Director (Interim)) of NEWRI and Managing Director of START) presented START's upscaling capabilities and membrane heavy machinery to an impressed PUB Chief Executive.



A BRIEF DIALOGUE

with an Expert

We catch up with Prof Richard Webster (Director of NEWRIEdu and Deputy Director of ECMC) to have a glimpse of the future of NEWRIEdu moving forwards, what he predicts is happening in the next half decade for NEWRI and the industry, and know a little bit more about him. In this interview segment, we get direct with our experts in the field.

In your opinion, please describe NEWRIEdu's development?

NEWRIEdu continues to streamline its performance in recruiting new students to join the organization as well as administrating the scholarship programs. We are particular interested in hearing from students any ways that they think that the organization can be improved in order to assist them meeting their goals.

What are some current difficulties affecting the pursuit of higher education today?

The length of time that is required to commit to a PhD can seem very daunting for many students and can discourage them from applying. However, it is important to realize that many positions in academia, industry and government require a postgraduate degree for full career advancement. Therefore, putting in the hard work to do a PhD will undoubtedly reward the students later when they graduate.

How would you describe the growth of graduates in relation to industry?

Only 1 out of every 200 PhD graduate students end up as University Professors, thus, it is important that the area of study does have industrial relevance so there are the most employment opportunities available at the successful completion of the degree. Certain areas of research are much better suited to industry and it is fortunate that all of the domains that NEWRI works within are highly relevant to industry. Our fundamental mission at NEWRIEdu is for students to do primary research that will lead to advances that will be taken up in the private sector in the form of new products or processes. Therefore, NEWRI graduate students are in a much better position when they graduate to obtain positions in industry. Other fundamental areas of research where there is currently enormous academic interest (such as nanotechnology and graphene) have not translated into significant industrial interest or employment.

How do you feel about the new graduates entering the industry and what prospects do they bring?

In the domains of water and environmental science, there are a large number of opportunities because these areas are highly important for many industries in most countries in the world. Therefore, graduates from NEWRI have good opportunities in Singapore as well as internationally.

What should we do to attract students to study at NEWRI?

NEWRIEdu welcomes students from all countries. Fortunately, Singapore has significantly improved its reputation as a research active country over the last 10 years, which means we are more visible as a high level research institute and would like to attract students from other top ranking institutes.

In your opinion, what can NEWRI offer our graduate students (our unique selling points, compared to other centres or universities in Singapore or around the world).

Our graduate students receive many opportunities to interact directly with industry. This is different to most other University based research centers where students tend to focus on their individual projects in isolation. In addition, NEWRI has outstanding facilities as well as access to many top professors working in their fields.



CONGRATULATIONS!



We would like to congratulate Dr Vinay Kumar Tyagi, Research Fellow (NEWRI) whom has recently published a full-text book under CRC Press entitled "Sludge Management". The book, co-authored by Prof. B.R.Gurjar from Indian Institute of Technology Roorkee (India), provides up-to-date comprehensive coverage of all issues related to sludge management with local through global coverage of all sludge management practices from engineering and technological perspectives.

Dr. Vinay Kumar Tyagi is a Researcher at the Advanced Environmental Biotechnology Centre (AEBC) at Nanyang Environment and Water Research Institute (NEWRI), Nanyang Technological University, Singapore. His research interest includes municipal wastewater treatment, advanced technologies for sludge pretreatment, biomass to bioenergy recovery and health related water microbiology. Dr. Tyagi has published two-digit refereed articles at SCI journals in the past several years. He has more than 90 publications to his credit including thirteen book chapters and manuals.

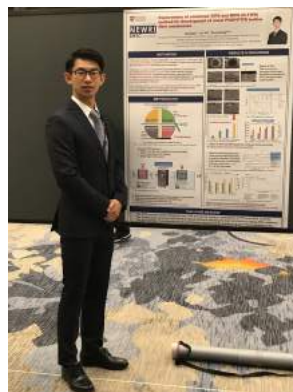
For more information on the book "Sludge Management"
<https://www.crcpress.com/Sludge-Management/Gurjar-Tyagi/p/book/9781138029545>



CONGRATULATIONS!



We congratulate Mr Zhao Jie on winning the Student Poster award at the recent ICOM 2017 (International Congress on Membranes and Membranes Processes), for his poster "Explorations of combined TIPS and NIPS (N-TIPS) method for development of novel PVDF/PTFE hollow fiber membranes, J.Zhao, L.Sh, R.Wang).





Prof Ng Wun Jern & Dr Shameen Jinadasa with Guest-of-Honour, Mr Masagos Zulkifli Bin Masagos Mohamad, Minister for Environment and Water Resources at IES Prestigious Engineering Achievement Awards (20 July 2017)



IES Prestigious Engineering Achievement Award bestowed on NEWRI-NTU Project (COVER STORY)

The Institution of Engineers Singapore (IES) bestowed the IES Prestigious Engineering Achievement Awards 2017 to 12 engineering projects for making outstanding contributions that improve the quality of lives and bring about engineering progress in Singapore. The project "Mitigation of pollution at Kandy Lake and Mid-Canal, Sri Lanka" by the Nanyang Environment and Water Research Institute at NTU was one of the winners under the Engineering Project category (one of 12 winners overall), for the significant contributions to society and environment.

Article continues on Page 7

MoU signed to establish a Centre of Innovation between NEWRI, NTU and JFE

17 July 2017, Nanyang Environment & Water Research Institute (NEWRI), NTU and JFE Engineering Corporation signed a Memorandum of Understanding (MoU) as part of both parties' current planning to establish a Centre of Innovation for Environmental Technology in order to conduct joint research collaboration leveraging the pilot NTU-NEA Waste-to-Energy Research Facility.

To read the article, please click here
[NEWRI NEWS \(17 July 2017\)](#)



Dr Adil Dhalla (NEWRI's Executive Director, Interim), Mr Satish Appoo (NEA's Group Director), Mr Goh Chee Kiong (Executive Director, Cleantech, EDB) Mr Eiichi Shibuya (Senior Managing Director, JFE) being briefed by Mr Ogawa (JFE).



In attendance at the MoU signing and the site inauguration was (left to right) Mr Yoshiro Abe (Managing Director, JFE Engineering), Mr Goh Chee Kiong (Executive Director, Cleantech, EDB), Mr Eiichi Shibuya (Senior Managing Director, Environmental Solutions Sector, of JFE Engineering Corporation), Prof Ng Wun Jern (NEWRI's Founding Executive Director), and Mr Satish Appoo (NEA's Group Director - Joint Operations & Technology).



Prof Ng Wun Jern (Founding Executive Director of NEWRI) and Mr Eiichi Shibuya (Senior Managing Director of JFE Engineering) concluding the signing of the MoU for establishing a Centre of Innovation for Environmental Technology.



Parties present at the symbolic ground-breaking ceremony of the NTU-NEA Waste-to-Energy Research Facility at Tuas South.



Prof Ng dotting the eye on a traditional Daruma doll regarded as a symbol of perseverance and good luck.

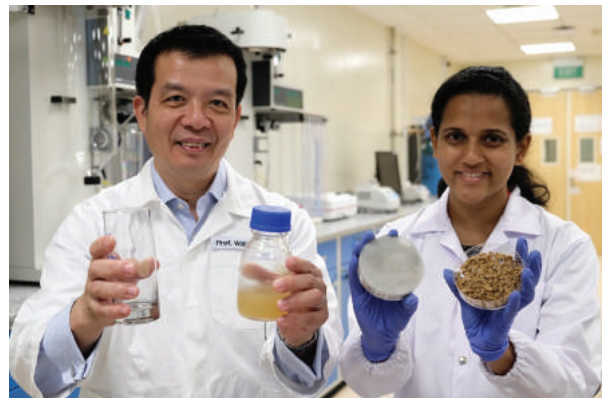
NTU scientists use brewery waste to grow yeast needed for beer making

Scientists from Nanyang Technological University, Singapore (NTU Singapore) have invented a new process to turn spent brewery grains into a valuable product that can grow beer yeast. In beer making, yeast is the key ingredient for fermentation, a process where sugars from the grains are converted into alcohol. The beer brewing process thus needs large amounts of yeast.

Spent grain amounts to as much as 85 per cent of a brewery's waste. This is of little value, so the discarded grain is often used as compost or for animal feed. Innovative approaches to extract value and re-use these discards are actively sought by the beer industry.

NTU's research findings were published recently in *AMB Express*, a peer-reviewed scientific journal in the area of applied and industrial microbiology by SpringerOpen.

Professor William Chen, Director of NTU's Food Science and Technology Programme, who is leading the research, said the new conversion process turns brewer's waste into a valuable liquid nutrient. As similar commercial liquid nutrients are sold for US\$30 per litre. The team's upcycled liquid nutrient is produced at only a fraction of the cost. This waste-to-nutrient technology took Prof Chen and his researcher Ms Sachindra Cooray, a AEBC-NEWRI PhD student from NTU's Interdisciplinary Graduate School, two years to develop.



Ms Sachindra Cooray, a AEBC-NEWRI PhD student from NTU's Interdisciplinary Graduate School, seen here with Prof William Chen, Director of NTU's Food Science and Technology Programme invented a new process to turn spent brewery grains into a valuable product that can grow beer yeast.

Full article, please click here
[NTU NEWS RELEASE \(29 Aug 2017\)](#)



VISITS AND EXCHANGES

NEWRI hosts a regular stream of visits from different universities and collaborators from around Asia and the world. These collaborations are essential to the continual growth of NEWRI's industry outreach.



Witteveen+Bos, Amsterdam / The Netherlands visits NEWRI (4 Sept 2017)



King Abdullah University of Science and Technology, Saudi Arabia visits NEWRI (4 Sept 2017)



Beijing Tai He Jie Yuan Technology Development Co., Ltd visits NEWRI (30 Aug 2017)



Prof Sharma, Virender K, Texas A&M University (TAMU) visits NEWRI (10 Aug 2017)



Meeting with TsingHua University in NEWRI (14 July 2017)



SRM University, India visits NEWRI (6 June 2017)

VISIT OUR MARKET PLACE @ NEWRI

New to our website is the Market Place that features our notable novel IPs from our 5 centres of excellence. In an effort to showcase our exciting technologies, we present the market place as a platform to reach out to industry creating an informative and concise technology display that is ever evolving. Visit us today to our latest, click the link below:

<https://tinyurl.com/y923mrc4>

NEW FEATURES :

- QUICK OVERVIEW
- IP KEY FEATURES
- ADVANTAGES AND BENEFITS
- APPLICATIONS AND MARKET OPPORTUNITIES



NEWRI's webpage is also optimised for your mobile phone viewing! Scan the QR code with your smart phones.

SEMINARS, WORKSHOPS & TRAINING

Enhancing staff knowledge and experiences, NEWRI holds regular in-house workshops and seminars by fellow researchers and visiting professors, scientists, institutes, and external visits; allowing knowledge to diffuse throughout the organisation.



	Recent Seminars / Conferences	Dates (2017)
1	Advance your skills – Agilent LC and Sample Preparation Techniques Seminar (Agilent Technologies)	22 September
2	Development, Commercialization and Applications of Polyketone - POKETONETM™ - Mr. Jun Hyoung Park, President of Chemical Performance Group Hyosung Corporation)	18 September
3	Current research in the Environmental Nanotechnology lab at University of Bath, UK – Prof David Matthia (University of Bath)	24 August
4	Real-time, adaptive, self-learning management of lakes - Dr. Jörg Imberger (University of Miami)	22 August
5	Fenton oxidation technology for the wastewater treatment: the challenges in lab research and engineering – A/Prof Zhou Tao (Huazhong University of Science and Engineering)	17 August
6	Gas Production by Steam Gasification of Polypropylene/Biomass Waste Composites in a Dual-bed Reactor – Prof Md Azhar Uddin (Graduate School of Environmental and Life Sciences at Okayama University)	16 August
7	One-stage shortcut bioprocess for efficiently treating high-ammonium organic wastewater: simultaneous carbon oxidation, nitrification, denitrification and anammox (SCONDA) – Assoc Prof Zhou Xin (Taiyuan University of Technology, College of Environment Science and Engineering)	7 August
8	Metocean Research at the University of Melbourne, Australia – Prof Alexander V Babanin (University of Melbourne)	13 July
9	Potential impact of climate change on the future streamflow and water levels of the Mackenzie River Basin of Canada – Prof Gan Tian Yew (University of Alberta, Edmonton)	15 June
10	PCSWMM hydrology & hydraulics modelling workshop for the Kurunegala Lake Catchment Study project - A/Prof Irvine Kim (NIE-NTU) & Dr Pennan Chinnasamy (NEWRI-NTU)	5 – 6 June
11	Investigating the Potential of A. Lesbiacum in Ni Phytoextraction from Soils - Dr Maria Aloupi (University of the Aegean, Greece)	11 May
12	Engineering With Membranes (EWM2017) Recent Advances in Membrane Science and Technology (International Conference)	26 – 28 April
13	Life Cycle Assessment of Processes for Resource Recovery from Waste-to-Energy Bottom Ash – Prof Thanos Bourtsalas (Earth & Environment Engineering, Columbia University, NY)	15 March
14	Oral Communication Skills – Prof Bill Krantz (University of Colorado Boulder)	21-22 / 27-28 February
15	Sustainable Landfilling: What is the status and what has to be changed? – Prof Rainer Stegmann (Hamburg University of Technology)	13 February
16	Treatment of contaminated soils, potentials and limits – Prof Rainer Stegmann (Hamburg University of Technology)	20 February
17	NEWRI Process Design Workshop – Dr Victor Sim (NEWRI-NTU)	5 January

BREAKING GROUND

NEWRI'S JOURNALS
& PUBLICATIONS



At NEWRI we do not forget our foundation which is deep scientific research. NEWRI's researchers and professors from our various Centres of Excellence publish frequently in journals, conferences and keynotes.

To view the catalog of titles, you can log on to the NEWRI webpage on PUBLICATIONS for more information.

Please click for NEWRI Publications [CLICK HERE](#)



(Left to right) Dr Yeoh Lean Weng, Deputy President of The Institution of Engineers, Prof Ng Wun Jern, Director of NEWRIComm, NEWRI, Dr Shameen Jinadasa, Senior Lecturer from the University of Peradeniya and Minister Masagos Zulkifli, Minister for the Environment and Water Resources



Dr Shameen Jinadasa, Senior Lecturer from the University of Peradeniya and Prof Leelananda Rajapaksha, Dean, Faculty of Engineering, University of Peradeniya

NEWRI-NTU Project achieves the IES Prestigious Engineering Achievement Award (COVER STORY)

A Confluence of Ideas, a New Leash of Life

Head source of Pollution
Known as the 'Sea of Milk' or Kiri Muhuda, the renowned Kandy Lake was built by the last monarch of Kandy and Sri Lanka. Sited in the UNESCO World Heritage city of Kandy, the ornamental lake has fallen into dereliction. Kandy Lake discharges to the Mahaweli River - the longest river and a major drinking water supply in Sri Lanka.

This pressing issue inspired a project to mitigate water pollution in Kandy Lake and the Mid-Canal. As a result, the Dr Shameen Jinadasa, a Civil Engineering Senior Lecturer from the University of Peradeniya (UOP), Sri Lanka, became one of the two first successful Lien Environmental Fellowship (LEF) Programme recipients.

Ground-Up Ideas, Empowered Communities

First launched in 2010, the Lien Environmental Fellowship (LEF) Programme is funded by the Lien Foundation and administered by Nanyang Environment & Water Research Institute Community Development (NEWRIComm). The LEF Programme reaches out to academics in the region passionate about improving water sanitation and environmental sustainability in their communities and is currently supporting six LEF projects in five countries — India, Indonesia, Laos, Myanmar and Sri Lanka.

As the community development arm of NEWRI, NEWRIComm partners local stakeholders to invest in a better shared future by integrating NEWRI's research and engineering capabilities, on-the-ground expertise of local universities and research institutions, and the community's contributions.

Holistic Solutions, Sustainable Changes

The project commissioned a wastewater treatment plant for the kitchens and toilets of the prominent Temple of Buddha Tooth (Sri Dalada Maligawa) to set an example for others. In addition, the team made up of members from NEWRI, UOP, and the local authorities in Sri Lanka, also came up with a green and simple solution to treat and purify the lake water – floating wetlands filled with a beautiful native flowering plant - Cannas. A holistic system package which included training, education and outreach.

The project proved to be a success, and was one of 12 engineering projects awarded the Institution of Engineers, Singapore (IES) Prestigious Engineering Achievement Awards 2017 for making exceptional contributions that enhanced the quality of life and bring about engineering progress in Singapore. For his scientific research in this project, Dr Shameen Jinadasa was also awarded the President's Award in Sri Lanka. The project was officially handed over on 10 July 2014, demonstrating an impactful collaboration between institutions and nations that helped the community in meaningful and lasting ways.

To catch the FULL article, please [click here](#)



Celebrations abound for the winners of the IES Prestigious Engineering Achievement Awards 2017

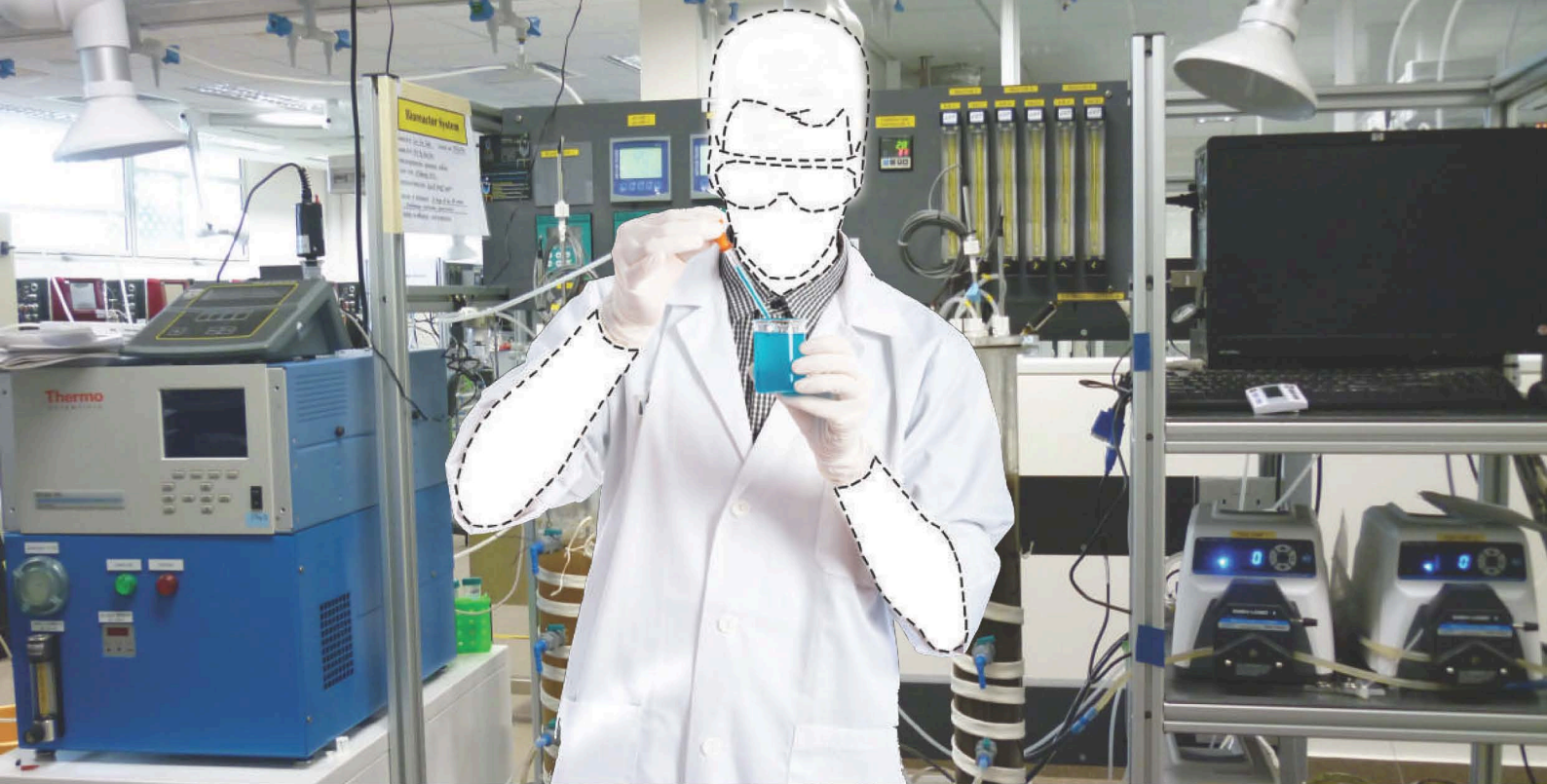


Dr Shameen Jinadasa, University of Peradeniya being congratulated by Minister Masagos (MEWR)



Representatives from NEWRIComm and University of Peradeniya (UOP)

THIS COULD BE YOU.



RESEARCH ASSISTANT needed!

A position is available for a **Research Assistant** who will focus on developing innovative bioprocess solutions to environmental problems observed in the field, this individual should specialise in Biotechnology/ Chemical/ Environmental/ Process Engineering to support projects with environmental biotechnology aspects.

Job Scope:

- Provide environmental biotechnology support to the team.
- Provide support in laboratory work.
- Required to interact with industrial partners for project work arrangements at times.
- Travelling may be required to project sites to support the progress of projects.
- Assist PI/Researchers in the team for tender document preparation, bid proposals evaluation and preparation of the team's proposals.

Requirements:

- Min. possess a polytechnic diploma or bachelor degree with honours in Biotechnology / Chemical / Civil / Environmental Engineering or related
- Good planning skills
- A motivated individual with good communication skills
- Working experience in wastewater/ solid waste treatment/biotechnology processes related field would be preferred
- Have interest in conducting and developing projects
- Good knowledge in wastewater/ solid waste treatment biotechnology processes

For more information regarding the positions above, please send your queries to NEWRI-HR@ntu.edu.sg