



First design iteration for a hand-held rapid detection dengue sensor chip for point-of-care deployment

### **RAPID DENGUE DETECTION WITH LIGHT**

Malaysia is one of several countries in tropical and subtropical regions with notably high mortality and morbidity cases of tropical disease especially of dengue fever. The Integrated Lightwave Research Group (ILRG), led by Prof. Dr. Faisal Rafiq Mahamd Adikan has developed a rapid dengue detection technology in partnership with the University of Ottawa to expedite the detection of the dengue virus in blood. The detection can be done within 30 minutes as compared to the current week-long laboratory diagnosis.

This important work of rapid dengue detection using light, which was spearheaded by the ILRG at the Department of Electrical Engineering, received yet another recognition recently when the researchers were awarded the prestigious Malaysia Toray Science Foundation (MTSF) Science and Technology Award. Prof. Dr. Faisal Rafiq received the award on behalf of co-winner Dr. Wong Wei Ru during the prize giving ceremony on December 7<sup>th</sup>, 2017. ILRG and its spin-off company Flexilicate Sdn. Bhd., were also the recipient of the reputable Newton-Ungku Omar Dengue Tech Challenge funding for the pre-commercialisation of the said technology.



The rapid sensing technology is based around the interaction between light with a functionalised sensor surface. The term "functionalised" in this case represents the chemical dynamics that take place when a virus is captured by the antibodies specific to the said virus. Such dynamics would cause certain changes to the characteristics of the light that propagates through the structure.

The research group formed its first spin-off company called Flexilicate Sdn Bhd in June 2015 and it is now in the process of integrating this biosensor into a hand-held device for medical practitioners to detect dengue at point-of-care. Besides, this technology can also be further implemented to provide a prognostic value on the severity of the dengue infection.

The group's research into rapid dengue detection received a lot of media coverage, highlighting its importance in the ongoing efforts in overcoming the infectious diseases' outbreak. The group's vision of producing disposable, cheap, rapid dengue detection kits, without compromising both selectivity and sensitivity, is both ambitious and impactful. Currently, the group is aiming higher by attempting to reproduce the sensing process in a cheaper, more sterile fibre based environment.

#### MTSF 2017 AWARD SCIENCE & TECHNOLOGY AWARD

WINNER : PROF. DR. FAISAL RAFIQ MAHAMD ADIKAN CO-WINNER : DR. WONG WEI RU

A magnified image of the dengue sensor chip

## ENHANCING SEAWEEDS INDUSTRY BY GENOMICS

Seaweeds, or marine macroalgae, are important components of marine ecosystems and valuable sources of food, cosmetics ingredients, fertilizers and hydrocolloids (e.g. agar and alginate). Due to their high industrial demands, seaweeds are commercially cultivated worldwide for a variety of products from macroalgae raw materials, contributing a total annual value of US\$ 5.5-6 billion according to Food and Agriculture Organization of the United Nation (FAO). Gracilaria seaweeds, an essential ingredient for agar production, are

valuable food source in Malaysia. Malaysia aims to produce 150,000 metric tons of high quality processed seaweed (worth RM1.45 billion) by 2020.

Seaweeds are well-known for their high morphological plasticity. Despite several molecular markers such as mitochondrial cox1 gene and plastid rbcL have been employed in the phylogenetic studies of seaweeds, they may not be fully congruent with morphological character. The complete mitochondrial genome of these seaweeds has also been analysed, and the red algal mitogenomes were reported to be highly conserved.

The advent of next generation sequencing (NGS) technologies is cost-effective and has enabled large volumes of data to be obtained in a short period of time. These high-throughput sequencing technologies are used in a wide range of applications, such as whole genome sequencing, metagenomics, target sequencing, gene expression profiling and small RNA sequencing. NGS technologies have also enabled simultaneous sequencing of both mitochondrial genome and chloroplast genome.



Dr Song receiving the Malaysia Toray Science Foundation (MTSF) Award

The research project is aimed at determining the chloroplast genomes of Malaysia's Gracilaria seaweeds and to resolve the taxonomic and phylogenetic relationships of these seaweeds with their congeners. It is hoped that the complete chloroplast genomes of Gracilaria seaweeds can be obtained by the end of the project, adding to the number of representative plastomes for the genus Gracilaria. The research team would also like to compare the phylogenetic relationship of these seaweeds based on chloroplast genome and mitochondrial genome. The outcome of this study will enable species or cultivar differentiations, which provide a database for future need to authenticate the seaweeds and their products for quality assurance of the seaweeds production in Malaysia.



### MTSF 2017 AWARD SCIENCE & TECHNOLOGY RESEARCH GRANT

RESEARCHER CO-RESEARCHER : DR. SONG SZE LOOI : PROF. DR. LIM PHAIK EEM

Dr. Song sharing her research work with YB Datuk Seri Panglima Wilfred Madius Tangau, Minister of Science, Technology and Innovation

## DEVELOPMENT OF FUNCTIONALIZED-GRAPHENE AS PROMISING NANO-CARRIER FOR DRUG DELIVERY APPLICATIONS

The use of nanomaterials in the drug delivery system has stirred significant interest among academia and pharmaceutical industry locally as well as abroad. With the rise of diseases especially malignant tumors, researchers are exploring new and innovative cure or therapy for cancer treatment. Nanotechnology has shown promising potential in the development of carrier for drug delivery.

Among nanoparticles available, the Research team focuses on investigating graphene usage for biomedical fields. However, pure graphene is deemed to be potentially toxic to human and environment for clinical or industrial applications. In view of that, it is important to modify the surface chemistry of graphene and to understand its interactions with biological systems (i.e; toxicology, biocompatibility, and biodegration) for the development of graphene–based nanomedicine.

The award-winning research is aimed at introducing a new method to functionalize graphene by using deep eutetic solvent (DES) as a novel fuctionalization agent. Compared with other solvents, DES is less toxic, lower in cost, has shorter interaction time, simpler route of synthesis and not as acidic and corrosive. The correlation between the surface structure of functionalized– graphene and thier biological behavoir will be investigated. The findings will enable the researchers to elucidate the potential of DES functionalizedgraphenes as a nano-carrier for future drug delivery system.

#### MTSF 2017 AWARD SCIENCE & TECHNOLOGY RESEARCH GRANT

RESEARCHER : MR. MOHAMAD HAMDI ZAINAL ABIDIN CO-RESEARCHERS :

- ASSOC. PROF. IR. DR. NGOH GEK CHENG
- DR. WONG WON FEN



Mr. Mohamad Hamdi receiving the Malaysia Toray Science Foundation (MTSF) Award



DES-Fuctionalized for Drug Delivery



### THE UNIVERSITY OF MALAYA LAW REVIEW (UMLR)

The University of Malaya Law Review ("UMLR") is a legal publication exclusively managed by the UMLR student committee of the Faculty of Law, University of Malaya with support from the staff at the Law Faculty. The journal is founded in September 2016 by a group of diverse, talented, and passionate law students with the encouragement of the Dean of the Law Faculty, Associate Prof. Dr. Johan Shamsuddin and the invaluable advice and guidance by senior lecturer, Dr. Sarah Tan Yen Ling.

The Law Review's primary purpose is to publish an annual academic journal of legal scholarship, featuring articles by keynote authors, which comprises esteemed members of the Malaysian legal fraternity and the best work of the students of the Law Faculty. The UMLR covers a wide scope of topics ranging from in-depth research and analysis on constitutional or jurisprudential legal issues, to discussions about recent legal developments.



Posing with their copies of the University of Malaya Law Review
(a) The Minister of Higher Education, Dato' Seri Idris Jusoh,
(b) Selangor State Speaker, YB Hannah Yeoh
(c) Tunku Abdul Rahman Professor of Law, Professor Datuk Dr. Shad Saleem Faruqi
(d) Former Federal Court Judge, Datuk Seri Gopal Sri Ram

The inaugural issue of the UMLR contained key contributions from esteemed members of the legal fraternity such as the former Federal Court Judge Datuk Seri Gopal Sri Ram, holder of the Tunku Abdul Rahman Foundation Chair, Professor Syed Saleem Faruqi, and Selangor State Speaker, YB Hannah Yeoh. The inaugural issue was published in July 2017 for fanfare significance, and received much positive feedback from the legal industry.

Besides the annual publication of the journal, the UMLR student committee also manages the UMLR website at www.umlawreview.com. This website contains a comprehensive database of academic references to aid the student body in their pursuit of academic excellence. It also highlights the achievements of students from the Law Faculty, publishes short articles on current legal issues, and provides a platform where students, academics and members of the legal fraternity can hone their critical thinking, writing and editing skills.



The Dean of the Law Faculty, Associate Prof. Dr. Johan Shamsuddin, former Editor-in-Chief Ting Kah Sing (Leeroy), and Editorial Advisor of the Law Review, Dr. Sarah Tan Yen Ling posing with the very first copy of the Law Review

The establishment of the UMLR will complement the Law Faculty in its pursuit toward academic excellence as it joins the ranks of top law schools with their own student-run law reviews such as Harvard, Stanford and Yale.

*Copies of the UMLR are available for sale at the Faculty of Law.* 

**TING KAH SING (LEEROY)** 

Faculty of Law University of Malaya

UMLR@um.edu.my

### STanD - PREPARATION OF 2018 TRAININGS BY SCHEME CALENDAR

The Staff Training & Development Division (STanD), University of Malaya is responsible for the promotion and support of employee development and organizational effectiveness. STanD provides dynamic learning and growth opportunities for UM employees through skill building and career development, both in the technical and professional development areas. Trainings are designed to meet individual, group or departmental, and institutional needs and objectives. It aims to enhance individual learning and development as the means for creating a better workplace environment, and thus building a competent UM community.

Recently, STanD organized a workshop for preparing the 2018 Trainings by Scheme calendar. Members of the Human Resource Planning have agreed on the trainings for employees should cover three main criteria: Competency (including Core-Competency), Generic and ICT.

The 2018 Trainings by Scheme Calendar is well planned to have more structured trainings by scheme and position grades, by taking into account the staffs' selfimprovement, efficiency in carrying out duties and promotion. These trainings are meant for non-academic groups, comprising the supporting and implementation group, as well as the administrative and professional officers.

Trainings by Scheme Calendar offers courses for core competency, generic and ICT. Seven schemes (N, Q, C, J, W, F, S) prepared the functional courses for staffs to improve their competency when carrying out their duties. The head for each scheme had been appointed to identify the relevant courses required and to propose training improvements for their respective schemes. Internal trainers were then selected and trained as certified trainers for the core competency courses.











Photos taken during the workshop

# UM RESEARCH ACHIEVEMENT

#### **MERDEKA AWARDS 2017**

- Outstanding Scholastic Achievement ٠ Prof. Ir. Dr. Masjuki Bin Haji Hassan (Faculty of Engineering)
- Outstanding Contribution to People of Malaysia Prof. Dr. Anthony Milner (Asia-Europe Institute)

#### **ANUGERAH AKADEMIK NEGARA 2017**

- Anugerah Tokoh Akademik Negara ke-10 ٠ Tan Sri Dato' Emeritus Prof. Dr. Khoo Kay Kim (Faculty of Arts and Social Science)
- Anugerah Anugerah Pengajaran (Kelompok Sains Kesihatan) Prof. Dr. Sim Si Mui (Faculty of Medicine)
- Anugerah Penerbitan Buku Dr. Mohamad Saleeh Bin Rahamad @ Ahamad (Faculty of Arts and Social Science)

#### **NEWTON PRIZE 2017**

Professor Dr. Phang Siew Moi Institute of Ocean and Earth Sciences (IOES)

#### Team Members:

- Assoc. Prof. Dr. Vengadesh Periasamy ٠ (Faculty of Science, UM),
- Dr. Ng Fong Lee (IOES, UM),
- Mr. Muhammad Musoddig Jaafar (Faculty of Science, UM),
- Dr. Adrian Fisher (University of Cambridge)
- Dr. Kamran Yunus (University of Cambridge)

Project: Integrating Algal Biophotovoltaics for Bioelectricity Production with Agro-Industrial Wastewater Remediation Using **Tropical Algae** 

#### MALAYSIA'S RESEARCH STAR AWARDS

- Prof. Dr. Goh Khean Jin ٠ (Faculty of Medicine)
- Prof. Dr. Sazaly Bin Abu Bakar (Faculty of Medicine)
- Dr. Ong Hwai Chyuan (Faculty of Engineering)
- Assoc. Prof. Dr. Juan Joon Ching
- (Nanotechnology & Catalysis Research Centre) Datin Prof. Dr. Indra Vythilingam
- (Faculty of Medicine)

#### **VENUS INTERNATIONAL FOUNDATION AWARDS**

Lifetime Achievement in Science for the contribution and achievement in the field of Biotechnology

> Prof. Dr. Rosna Mat Taha (Faculty of Science)

#### ACADEMY OF SCIENCES MALAYSIA (ASM) FELLOWSHIP AND TOP RESEARCH SCIENTISTS MALAYSIA (TRSM) 2017

#### ASM Fellows:

- Prof. Dr. Thong Meow Keong (Faculty of Medicine) Prof. Dr. Tunku Kamarul Zaman Tunku Zainol Abidin (Faculty of Medicine) Prof. Dr. Yvonne Lim Ai Lian (Faculty of Medicine)
- Prof.Dr Lim Shen-Yang (Faculty of Medicine)
- Prof.Ir. Dr. Ramesh Singh Kuldip Singh (Faculty
- Prof. Dr. Rofina Yasmin Othman (Faculty of Science)
- Associate Prof. Dr. Chan Kok Gan (Faculty of Science)
- Emeritus Prof. Datuk Dr. Shad Saleem Faruqi (Faculty of Law)
- Prof. Dr Shamala Devi K.C. Sekaran (formerly from Faculty of Medicine)
- Datin Dr Sri Nurestri Abd Malek
- (formerly from Faculty of Science)

- Prof. Dr. Chua Kek Heng (Faculty of Medicine)
- Prof. Dr. Shaliza Ibrahim
- (Faculty of Engineering)
- Prof. Ir. Dr. Mohd Azlan Hussain (Faculty of Engineering)

#### **CLARIVATE ANALYTICS 2017** HIGHLY CITED RESEARCHERS

- Prof. Ir. Dr. Masjuki Bin Hj. Hassan ٠ (Faculty of Engineering)
- Assoc. Professor Md. Dr. Abul Kalam ٠
- 4 (Faculty of Engineering)

#### **THE UNIVERSITY OF QUEENSLAND'S 2017 ALUMNI AWARDS**

**DISTINGUISHED YOUNG ALUMNI AWARD 2017** 

Dr. Retnagowri Rajandram (Faculty of Medicine)

#### THE YOUNG ASIAN **BIOTECHNOLOGIST PRIZE 2017**

Prof. Dr. Ling Tau Chuan (Faculty of Science)

Project: Recovery of Biotechnological Products Using Aqueous Two-Phase Systems

## **UM RESEARCH ACHIEVEMENT**

#### UTP INNOVATION COMPETITION IN CONJUCTION WITH UTP 20<sup>th</sup> YEAR ANNIVERSARY CELEBRATION CHAMPION

Prof. Dr. Ramesh T. Subramaniam & Team (Faculty of Science)

#### TEN OUTSTANDING YOUNG MALAYSIAN AWARDS 2017

ACADEMIC LEADERSHIP AND/OR ACCOMPLISHMENT

Dr. Chen Chee Dhang (Faculty of Science)

#### **THE HARRY ORTON MEMORIAL PRIZE**

Dr. Yasmin Kamarudin (Faculty of Dentistry)

#### NATIONAL TRAFFICKING INPERSONS (TTP) SPECIALLIST

Dr. Farah Nini Binti Dusuki (Faculty Of Law)

#### NIPPON- BEST MENTOR AWARD - ASIA YOUNG DESIGNER AWARD 2017

- Asrul Sani Abdul Razak
- (Faculty of Built Environment)
- Dr. Karam Mustafa Al-Obaidi (Faculty of Built Environment)

KESATRIA MALAYSIA (FOR THE MALAYSIAN BUSINESS EVENTS INDUSTRY AND ON BEHALF THE MALAYSIA CONVENTION AND EXHIBITION BUREAU, 2016-2017)

> **Prof. Dr. Azirah Hashim** (Faculty of Languages & Linguistics)

#### **ICIFE FELLOW (2015-2017)**

Dr. Nor'azzah Binti Kamri (Academy of Islamic Studies)

#### FELLOWSHIP (2016-2019) ROYAL SOCIETY - NEWTON ADVANCE FELLOWSHIP

Assoc. Prof. Dr. Adeline Chua Seak May (Faculty of Engineering)

#### 2017 ALBERT NELSON MARQUIS LIFETIME ACHIEVEMENT AWARD

Assoc. Prof. Dr. Hasniza Zaman Huri Faculty of Medicine MAN AND BIOSPHERE (MAB) YOUNG SCIENTIST AWARD

**Dr. Adeeb Hayyan** (Institute of Islamic Studies)

GOLD MEDALS FOR 'BEST DELEGATION' AND 'MOST INFLUENTIAL IDEA' AWARDS FOR THE UNITED NATIONS (UN) SUSTAINABLE DEVELOPMENT GOALS (SDGS)

> Dr. Donnie Adams A/I Paramasivam (Institute of Educational Leadership)

#### THE VENUS INTERNATIONAL WOMEN AWARDS (VIWA)

DISTINGUISHED WOMAN IN MANAGEMENT

Assoc. Prof. Dr. Noor Ismawati Binti Jaafar (Faculty of Business and Accountancy)

#### ROYAL ACADEMY OF ENGINEERING, NEWTON-UNGKU OMAR FUND THE LEADERS IN INNOVATION FELLOWSHIP (LIF)

- Prof Dr. Ir. Fatimah Ibrahim (Faculty of Engineering)
- Prof. Dr. Shaliza Ibrahim
- (Faculty of Engineering)
   Dr. Chong Wen Tong
- (Faculty of Engineering)
- Dr. Amirrudin Kamsin (Faculty of Computer Science and Information Technology)
- Prof. Dr. Miss Laiha Mat Kiah (Faculty of Computer Science and Information Technology)
- Dr. Ching Yern Chee (Faculty of Engineering)
- Prof. Dr. Sulaiman Wadi Harun (Faculty of Engineering)
- Prof. Dr. Ubagaram Johnson Alengaram (Faculty of Engineering)
- Dr. Vimala Balakrishnan (Faculty of Computer Science and Information Technology)

#### HIND RATTAN AWARD - 2017

Assoc. Prof. Dr. Sarinder Kaur A/p Kashmir Singh (Faculty of Science)

#### MAHATMA GANDHI SAMMAN AWARDS

Assoc. Prof. Dr. Vijayapandi Pandy Faculty of Medicine

#### YOUNG SOUTH-EAST ASIAN LEADERSHIP INITIATIVES (YSEALI) - UNITED STATE

Dr. Zul Ilham Bin Zulkiflee Lubes (Faculty of Science)

## **UM RESEARCH ACHIEVEMENT**

#### INTERNATIONAL CONFERENCE AND EXPOSITION ON INVENTIONS BY INSTITUTIONS OF HIGHER LEARNING (PECIPTA 2017)

 Dr. Amirrudin Kamsin & Team (Gold & Special Award)

(Faculty of Science Computer)

- Prof. Dr. Sulaiman Wadi Harun & Team (Gold & Bronze)
  - (Faculty of Engineering)
- Dr. Mohd Sayuti Bin Ab Karim & Team (Gold) (Faculty of Engineering)
- Prof. Dr. Mohd Hamdi Bin Abdul Shukor & Team (Gold)
  - (Faculty of Engineering)
- Ir. Dr. Lai Khin Wee & Team (Gold) (Faculty of Engineering)
- Assoc. Prof. Dr. Chong Wen Tong & Team (Gold) (Faculty of Engineering)
- Assoc.Prof. Dr. Subha Bhassu & Team (Gold) (Faculty of Science)
- Dr. Raja Jamilah Raja Yusof & Team (Silver) (Faculty of Science Computer)
- Assoc. Prof. Ir. Dr. Ching Yern Chee & Team (Silver) (Faculty of Engineering)
- Dr. Farazila Yusof & Team (Silver) (Faculty of Engineering)
- Dr. Azuddin Mamat & Team (Silver) (Faculty of Engineering)
- Prof. Dr. Loo Chu Kiong & Team (Silver) (Faculty of Science Computer)
- Assoc. Prof. Ir. Dr. Siti Zawiah Md Dawal & Team (Bronze)

(Faculty of Engineering)

- Prof. Madya. Dr. Bushroa Binti Abdul Razak Dawal & Team (Bronze) (Faculty of Engineering)
- Associate Prof. Dr. Kazi Md. Salim Newaz & Team (Bronze) (Faculty of Engineering)
- Prof. Dr. Misni Misran & Team (Bronze) (Faculty of Science)
- Assoc. Prof. Dr. Juan Joon Ching & Team (Bronze) Nanotechnology & Catalysis Research Center (NANOCAT)
- Dr. Chong Wu Yi & Team (Bronze) (Photonics Research Centre)
- Prof. Dr Hj Amir Feisal Merican bin Hj Aljunid Merican & Team (Bronze) (CRYSTAL Research Centre)

#### SUMMER INSTITUTE IN SURVEY RESEARCH

Dr. Lai Siow Li (Faculty of Economics And Administration)

#### **BIOMALAYSIA 2017**

MOST INNOVATIVE PRODUCT AND SILVER MEDAL

**Ir. Dr. Lai Khin Wee** (Faculty of Engineering)

Project: "ScolioS<sup>2</sup>- Portable device for preliminary diagnosis of scoliosis and shoulder symmetricity assessment"

#### VICTORIA HEALTH SUPPORT FOUNDATION AWARDS

COCHLEAR IMPLANT SURGEON OF EXCELLENCE AWARDS

> Professor. Dr. Prepageran Narayanan (Faculty of Medicine)

#### MARINE BIOLOGICAL ASSOCIATION, UNITED KINGDOM (FMBA)

Prof. Dr. Phang Siew Moi (Institute of Ocean and Earth Sciences (IOES)

#### 24<sup>th</sup> MTSF AWARD 2017

SCIENCE & TECHNOLOGY AWARD **Prof. Dr. Faisal Rafiq Mahamd Adikan** (Faculty of Engineering)

SCIENCE & TECHNOLOGY RESEARCH GRANT Dr. Song Sze Looi & Team (Institute of Ocean and Earth Sciences (IOES)

SCIENCE & TECHNOLOGY RESEARCH GRANT Mr. Mohamad Hamdi Zainal Abidin (Faculty of Engineering)

#### 28<sup>th</sup> INTERNATIONAL INVENTION, INNOVATION & TECHNOLOGY EXHIBITION (ITEX 2017)

- Prof. Ir. Dr. Ramesh Singh A/I Kuldip Singh & Team (Gold & The Best Invention) (Faculty of Engineering)
- Dr. Ahmad Sayuti & Team (Gold) (Faculty of Engineering)
- Prof. Dr. Mohd Hamdi Bin Abdul Shukor & Team (Silver)
  - (Faculty of Engineering)
- Assoc. Prof. Dr. Tan Chou Yong & Team (Silver) (Faculty of Engineering)
- Assoc. Prof. Dr. Hendrik Simon Cornelis Metselaar
   & Team (Silver) (Faculty of Engineering)

## **PPP SERVICES**

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## Strategies to Enhance Research Visibility, Impact & Citations

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