Creating the future female tech talent

‘Bites per bug,’ stormy weather and silent cases: Taipei Medical University dengue research shows patterns that predict outbreaks

Taiwan – Most Taipei residents are greeting the winter with jackets and scarves, but Dr. Ting-Wu Chuang’s dengue mapping and prediction work may convince them to slap on some mosquito repellent too...

Read more on page 39

Robot with multi-legs paves way for drug delivery in the human body

Hong Kong – A novel tiny, soft robot with caterpillar-like legs capable of carrying heavy loads and adaptable to adverse environments has been developed by a research team led by City University of Hong Kong (CityU). The mini delivery-robot is capable of paving way for medical technology advances, such as drug delivery in the human body...

Read more on page 44

PolyU technologies back up moon landing and exploration

Hong Kong – Researchers at The Hong Kong Polytechnic University (PolyU) not only managed to break new ground on Earth but are also making bold advances in space. Expert teams at the PolyU have been creating sophisticated space tools and technologies to aid space adventures since the 1990s...

Read more on page 73

Scientists reveal the truth about Great Pyramid of Giza

Read more on page 60

Seeing through walls what scientists hope to achieve

Read more on page 74

GIK student Adeel Shaffi listed in Forbes ‘30 under 30’

Read more on page 77

Students of PSUT clubs reach for the stars

Jordan – One of the best ways to get involved in campus life and make the most of the university experience is to join a university club. It can open doors to new opportunities, and build connections that might help students land, or even create their dream job...

Read more on page 85

RMIT researcher named in top 10 young innovators for 2019

Australia – RMIT University researcher Dr Wenyue Zou was recently named among the 10 top innovators under 35 by MIT Technology Review for her work in developing wearable ultraviolet (UV) sensors...

Read more on page 68

‘Bites per bug,’ stormy weather and silent cases: Taipei Medical University dengue research shows patterns that predict outbreaks

Taiwan – Most Taipei residents are greeting the winter with jackets and scarves, but Dr. Ting-Wu Chuang’s dengue mapping and prediction work may convince them to slap on some mosquito repellent too...

Read more on page 39

Robot with multi-legs paves way for drug delivery in the human body

Hong Kong – A novel tiny, soft robot with caterpillar-like legs capable of carrying heavy loads and adaptable to adverse environments has been developed by a research team led by City University of Hong Kong (CityU). The mini delivery-robot is capable of paving way for medical technology advances, such as drug delivery in the human body...

Read more on page 44

PolyU technologies back up moon landing and exploration

Hong Kong – Researchers at The Hong Kong Polytechnic University (PolyU) not only managed to break new ground on Earth but are also making bold advances in space. Expert teams at the PolyU have been creating sophisticated space tools and technologies to aid space adventures since the 1990s...

Read more on page 73

Scientists reveal the truth about Great Pyramid of Giza

Read more on page 60

Seeing through walls what scientists hope to achieve

Read more on page 74

GIK student Adeel Shaffi listed in Forbes ‘30 under 30’

Read more on page 77

RMIT researcher named in top 10 young innovators for 2019

Australia – RMIT University researcher Dr Wenyue Zou was recently named among the 10 top innovators under 35 by MIT Technology Review for her work in developing wearable ultraviolet (UV) sensors...

Read more on page 68
Empowering parents of children with special needs

Malaysia – Children with special needs barely experience nature learning, especially after school due to parents’ lack of knowledge on how to help their children in a simple and cost-effective way. Therapies for children with special needs are often expensive and parents have no expertise to conduct these therapies themselves. Therefore, parents often leave their children with special needs at home.

As such, the Community & Sustainability Centre (UMCares), University of Malaya had recently organised a workshop on ‘Ecotherapy: Nature-Based Learning and Play for Children with Special Educational Needs’. The workshop witnessed the participation of 4 national primary schools, 73 parents and children with special educational needs and 25 special educational needs teachers. The projects’ Lead, Dr Donnie Adams, a senior lecturer at the Institute of Educational Leadership, Faculty of Education, UM, and Associate Professor Dr. Aznan Bin Che Ahmad, a senior lecturer at the School of Educational Studies, USM shared that the aim of the project is to provide exposure to parents with special needs children on the techniques and activities of Ecotherapy, and how parents will be able to help their children in the aspect of emotions, behavior, confidence, psychomotor and social skills.

This project focuses on the delivery of effective techniques and activities of Ecotherapy and educating parents of the Gross and Fine Motor skills via ‘hands-on’ experience while being monitored by expert trainers, so that these parents will be able to carry out ecotherapy sessions with their children at recreational parks and botanical gardens. The book on Ecotherapy for your child with special needs was published and distributed to parents at this workshop. This book included information on the types of special needs, step by step pictorial guide on effective ecotherapy techniques focusing on Gross and Fine Motor skills.

Scientists reveal the truth about Great Pyramid of Giza

Russian Federation – Researchers from ITMO University and the Laser Zentrum Hannover applied methods of theoretical physics to investigate the electromagnetic response of the Great Pyramid to radio waves. Scientists predicted that under resonance conditions the pyramid can concentrate electromagnetic energy in its internal chambers and under the base. The research group plans to use these theoretical designs to design nanoparticles capable of reproducing similar effects in the optical range. Such nanoparticles may be used, for example, to develop sensors and highly efficient solar cells. The study was published in the Journal of Applied Physics.

While Egyptian pyramids are surrounded by many myths, we have little scientifically reliable information about their physical properties. As it turns out, sometimes this information proves to be more striking than fiction. This idea found confirmation in a new study by the Russian and German scientists. The physicists took an interest in how the Great Pyramid would interact with electromagnetic waves of a proportional, or resonant, length. Calculations showed that in the resonant state the pyramid can concentrate electromagnetic energy in its internal chambers as well as under its base, where the third, unfinished, chamber is located.

These conclusions were derived by means of numerical modeling and analytical methods of physics. The researchers first estimated that resonances in the pyramid can be induced by radio waves with a length ranging from 200 to 600 meters. Then, they made a model of the electromagnetic response of the pyramid and calculated the extinction cross section. This value helps to estimate which part of the incident wave energy can be scattered or absorbed by the pyramid under resonant conditions. Finally, for the same conditions, scientists obtained the electromagnetic fields distribution inside the pyramid.

“The Great Pyramid attracted researchers while they were studying the interaction between light and dielectric nanoparticles. The scattering of light by nanoparticles is dependent on their size, shape and refractive index of the source material. Varying these parameters, it is possible to determine the resonance scattering regimes and use them to develop devices for controlling light at the nanoscale. We decided to look at the Great Pyramid as a particle dissipating radio wave resonantly. Due to a lack of information about the physical properties of the pyramid, we had to use some assumptions. For example, we assumed that there are no unknown cavities inside and the building material with the properties of an ordinary limestone is evenly distributed in and out of the pyramid. With these assumptions made, we obtained interesting results that can find important practical applications,” said Dr. Sc. Andrey Evlyukhin, scientific supervisor and coordinator of the research.

Now the scientists are planning to use the results to reproduce similar effects at the nanoscale. “Choosing a material with suitable electromagnetic properties, we can obtain pyramidal nanoparticles with a promise for practical application in nanosensors and effective solar cells,” says Polina Kapitainova, Ph.D., a member of the Faculty of Physics and Technology of ITMO University.