

STUDENTS



YES, you can!

The Young Educators in Science programme, or YES for short, launched by the Faculty of Science, will train future educators to be inspiring and effective in communicating technical concepts in an interesting and engaging manner.



Celebrating Science

The Faculty of Science recognises students' achievements and celebrates its first Science Day.



Game for international exposé

Life Sciences and Physics students get to enhance their all-round development from taking part in international competitions.

PRIME



By students, for students

The Science Club elects new 32nd Executive Committee members to promote a rich student life on campus.

Cause for celebration

Generations of alumni gather at the 'Science Alumni Specials' Dinner-cum-Alumni Award Ceremony to celebrate change and more.



ALUMNI/DONORS



NUS alumni couple sets up bursary at Faculty of Science

Two bursary recipients met, studied and courted on campus in the '60s. Thankful for the bursaries they received, they have made a gift to their alma mater to help the next generation.



Photo by Darren Soh

Here comes help

Financially-strapped Life Sciences students found relief, thanks to alumni couple John and Lydia Ewing-Chow.



In tune with industry

There is much alumni can offer students, and much for students to learn from alumni, as evident in the two events held at the end of last year.

Venus Transit @ NUS 2012

What's Up...

Check out the events held from March to August 2012!

RESEARCH



Better than batteries

Dr Xie Xian Ning and team have come up with a new way to store energy with a polystyrene-based polymer membrane – a world first – outperforming most batteries.



Discovering drugs, the novel way

The Department of Biological Sciences has been unravelling the mysteries surrounding protein-protein and protein-ligand interactions and developing small molecule inhibitors for drug discovery through an approach piloted by Dr Ganesh Anand.



Into French

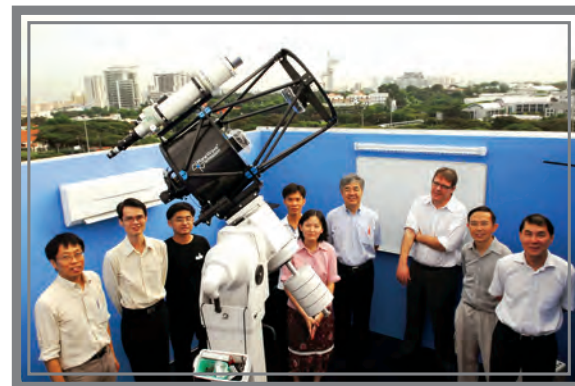
Scientists in Singapore and France can now connect through the new International Associated Laboratories.

DEPARTMENT



Tribute to excellence

The Faculty of Science recognises excellence in teaching, research and service with the presentation of the annual Faculty Awards to 189 deserving faculty members and support staff.



Star attraction

The Department of Physics welcomes its new Teaching Observatory, a facility that houses the largest-aperture telescope in Singapore used for the learning of advanced astronomy.



Three universities, one platform

The Department of Chemistry hosts the Chulalongkorn University-National University of Singapore-University of Malaya Trilateral Meeting Symposium as part of the 7th Mathematics and Physical Sciences Graduate Congress.



Of progress and peer bonding

Researchers from tertiary institutions in China, Taiwan and Singapore get together to discuss recent progress in Environmental Sciences, Life Sciences, Physical Sciences, Nanotechnology, Mathematics and Statistics.

Website: <http://www.science.nus.edu.sg/alumni/omniscience>

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PRIME

By students, for students

The Science Club elects new 32nd Executive Committee members to promote a rich student life on campus.



New team: The 32nd Executive Committee of the Science Club led by President Calvin Chia (1st row, 3rd from left) will work together to ensure students enjoy a vibrant life on campus.

"Given that every NUS Science student is automatically a member of the Science Club, I hope to promote greater interaction among fellow students with the events and outreach activities we organise. I am proud to have this opportunity to lead the Science Club," said Year 3 student Calvin Chia, the newly elected President of the Science Club.

Meet the new members of Science Club's 32nd Executive Committee (ExCo), comprising:

President –
Calvin Chia, Year 3, Life Sciences
Vice-President (Internal Affairs) –
Erika Ivana Halim, Year 2, Life Sciences

Vice-President (Freshmen Orientation Projects) –
Tan Kai Bin, Year 2, Statistics
Honorary General Secretary –
Cassandra Ng, Year 2, Life Sciences
Honorary Treasurer –
Yeo Huiqi, Year 2, Food Science and Technology
Welfare Director –
Joyce Fu, Year 1, Life Sciences
Sports Director –
Chng Yong Sheng, Year 1, Chemistry
Publications Director –
Javin Lim, Year 3, Chemistry
Dinner & Dance Director –
Alan Ng, Year 2, Chemistry

Science Volunteer Corps (SVC) –
Chua Sihao, Year 1, Life Sciences
Freshmen Orientation Project Assistant Chairperson (FOPAC) –
Tan Yi Sheng, Year 1, Chemistry
Assistant General Secretary –
Yvonne Boey, Year 2, Life Sciences
Science CAMP Director –
Clement Chua, Year 1, Chemistry
Science Orientation Week Director –
Tan Peijue, Year 2, Chemistry
RAG Director –
Tan Zhi Zhong, Year 3, Life Sciences
Flag Director –
Ang Rui Xiang, Year 2, Physics
Business Manager –
Yau Lai Kiu, Year 3, Statistics
Internal Committee Assistant Chairperson –
Don Poh, Year 3, Life Sciences
Project Angel Director –
Grace Choo, Year 3, Life Sciences
Publicity Director –
Elgin Ting, Year 3, Chemistry

A rich campus life

On what the new 32nd ExCo has planned for students, Calvin shared in his speech that he and his team will work hard to enhance the vibrancy of campus life. They will ensure quality in the events they organised and have more outreach activities.

The new ExCo will serve for a one-year term from September 2011 to September 2012.

A black and white affair

The Science Club's latest 32nd ExCo was officially set up in a symbolic handover ceremony held in conjunction with the 31st ExCo's Annual General Meeting on 8 September 2011.

The ceremony saw the ExCo's outgoing members dressed in all-white, handing over a chain with a key pendant, to the incoming members that are their respective counterparts. The latter were all dressed in black, turning the ceremonial handover into a black and white affair.

The outgoing Vice President Wong Jinfa, Year 3, Life Sciences (Biology), delivered a farewell speech, in which he thanked members for their support. He also highlighted the key events held during their term in particular Science Day and the Science Career Fair, both of which were held for the first time. He singled out too the setting up of a bursary where investment yield was channelled to students straddled with financial difficulties.

He also called on students to support Science Club, join the events organised by the club, and above all to come forward to make new friends. After all, university life is about establishing bonds with fellow students, forge lasting friendships and having memories that students could relate to long after they graduate.

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PRIME Cause for celebration

Generations of alumni gather at the 'Science Alumni Specials' Dinner-cum-Alumni Award Ceremony to celebrate change and more.



Kodak moment: Alumni, creating new memories, at the Science Alumni Specials' Dinner-cum-Alumni Award Ceremony.

Alumni from the Faculty of Science spanning six decades – from 1950s to 2011 – came together for a special get-together, celebrated with faculty, staff, students and friends.

The special event was organised by the Faculty of Science, and held on 26 November 2011, at the Seng Gee and Della Guild Hall, NUSS Kent Ridge Guild House.

Changing face of Science

The 200 or so attending the event were treated to a trip down memory lane, as well as taken up to speed on the developments being planned for NUS and the Faculty of Science.

Professor Andrew Wee, Dean, Faculty of Science, set the tone for the night with a nostalgic start when he quizzed alumni on the milestones linked to the transition of the faculty from Bukit Timah to the Kent Ridge campus. The correct answers were rewarded with prizes and applause.

Prof Wee also enlightened alumni on the changing face of their alma mater, highlighting the educational achievements of the Faculty of Science, as well as the infrastructural developments that were underway.

Being brought to attention were the launch of the new Bachelor of Environmental Studies programme; the overseas institutions the faculty has established partnership with to make its degree and exchange programmes more attractive; and the latest QS World University Subject Rankings for NUS in Asia and the world.

The faculty's infrastructural makeover that had begun two years ago was given an update. Soon to be built are lecture theatres and a new canteen, as well as the upgrading of existing facilities and equipment.

The latest addition to NUS, University Town, was singled out too, along with the Lee Kong Chian Natural History Museum. The latter replaces the faculty's Raffles Museum of Biodiversity Research, and will be built by 2014.



Happy family: Looking forward to some catching up, the alumni enjoy each other's company.

Science Strategic Development Fund

To see through the faculty's infrastructural development and upgrading, for enhanced teaching and student learning, Prof Wee launched the Science Strategic Development Fund.

The Fund will also go towards spearheading emerging and important areas of scientific research that fall outside regular funding agency focus areas; funding programmes for eminent professors, visiting researchers and scientists; providing scholarships for outstanding students; and the support of strategic areas of importance for the development and advancement of the faculty.

You can do your part and contribute to the fund by clicking [here](#).

Science alumni of the year

Ten exceptional alumni were honoured by Faculty of Science with the Science Alumni Award.

Of the 10 presented with the awards at the 'Science Alumni Specials' Dinner-cum-Alumni Award Ceremony, four were recipients of the Distinguished Science Alumni Award and six, the Outstanding Science Alumni.

Recipients of Distinguished Science Alumni Awards 2011

Dr Rayson Huang (DSc 1956)

An acclaimed scientist and scholar, as well as an academic leader and a perceptive legislator, Dr Huang started teaching chemistry at the University of Malaya in Singapore (now NUS) in 1951. In 1959, he was transferred to University of Malaya's Kuala Lumpur campus. He became a tenured professor of chemistry and later acting Vice-Chancellor and Dean of the Faculty of Science, NUS. His research centred on the chemistry of free radicals and his resulting publications had earned him three doctor of science degrees, from the Universities of Malaya (Singapore), Oxford and Hong Kong. To find out more, click [here](#).

Mr Koe Khoon Poh (BPharm 1966)

Founder and Managing Director of ICM Pharma Pte Ltd, Mr Koe has built a leading pharmaceutical products manufacturer in Singapore over four decades. His company now supplies both the public and private sectors, and manufactures for the export market. Apart from expanding his business as a major local manufacturer and marketer of pharmaceutical, personal care and health supplement products here and overseas, he also actively supports the advancement of alumni affairs. To find out more, click [here](#).

Mr Liak Teng Lit (BSc BPharm 1977)
A pharmacist by training, Mr Liak has been involved in the restructuring of major hospitals such as the National University Hospital, Kangar Kerbau Hospital and Singapore General Hospital. Now Chief Executive Officer of Alexandra Health System, Khoo Teck Puat Hospital, he was fully involved in the planning and commissioning of the new general hospital. Prior to this, Mr Liak was CEO of Alexandra Hospital, Changi General Hospital and Toa Payoh Hospital. To find out more, click [here](#).

Dr Ho Tat Kin (BSc (Hons) 1966)

Presently Executive Chairman on the board of Rowsley Ltd, Dr Ho was its Director from 2002 and board Executive Chairman since 2010. Dr Ho has 29 years of experience in general management and information technology. The management consultant, who specialises in the education business, digital media technology and business ventures, has had an illustrious career in the public sector prior to joining the private sector. He had served in the Ministry of Education, Singapore Economic Development Board and thereafter leading the Japan-Singapore Institution of Software Technology. To find out more, click [here](#).

Recipients of Outstanding Science Alumni Awards 2011

Dr Christopher Syn Kiu Choong (BSc (Hons) 1996 & PhD 2001)

Appointed Director of the DNA Profiling Laboratory at Health Sciences Authority in 2010, Dr Syn was instrumental in establishing a new off-site laboratory to cater to growing demands for the application of biological sciences in the criminal justice system. He was also responsible for growing his staff strength to over 70 scientists and technical officers. A molecular biologist by training, he embarked on his forensic science career in 2001, and has since conducted over 6,000 examinations for the Singapore Police Force, Central Narcotics Bureau, Singapore Armed Forces, hospitals, and other agencies. He has also served as a forensic consultant to the Brunei Darussalam Attorney General's Chambers, Royal Brunei Police Force, the US Embassy, as well as conducted forensic DNA and quality assurance systems training for scientists from Taiwan, Vietnam, and Thailand. To find out more, click [here](#).

Dr Lee Fook Kay (BSc (Hons) 1984 & PhD 1990)

Dr Lee is the Chief Science and Technology Officer in the Ministry of Home Affairs Singapore. He leads the technology development efforts of the ministry and the Home Team in counter terrorism and law enforcement. He has more than 20 years of experience in the Chemical, Biological, Radiological and Explosive (CBRE) domain and is instrumental in the strategic building and development of CBRE capabilities in Singapore. He is well regarded in the local and international scientific communities, including international bodies like the Organisation for the Prohibition of Chemical Weapons (OPCW), the Expert Group for the Biological Weapons Convention and the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC). To find out more, click [here](#).

Ms Ong Toon Hui (BSc (Hons) 1989)

Ms Ong, Deputy Secretary, Ministry of Community Development, Youth and Sports, oversees policies on social safety nets, family development, successful ageing, disability, social sector development, rehabilitation and residential services gambling safeguards. She has been with the Civil Service for about 18 years. Her previous postings included the Ministry of Health, Ministry of Education and Public Service Division (Prime Minister's Office). In PSD, she oversaw leadership development and human resource policies in the Singapore Civil Service. Ms Ong also serves on the board of institutions such as the National Council of Social Service, Housing and Development Board, Singapore Sports Council, Board of National Volunteer & Philanthropy Centre, and Casino Regulatory Authority Board. To find out more, click [here](#).

Ms Tung Soo Hua (BSc (Hons) 1997 & MSocSci 2007)

Ms Tung, award-winning MediaCorp news and current affairs presenter, fronts 'Money Week', a weekly financial programme on Channel U and co-hosts 'Evening News at 10 pm' on Channel 8. She has covered major events including APEC, ASEAN summits, World Bank-International Monetary Fund meetings and Singapore's General Elections between 2001 and 2011. The last 'Singapore General Election 2011' she hosted was a six-hour mega 'live' show telecast on Channel 8. In her 15 years' career, she has interviewed Prime Minister Lee Hsien Loong and over 70 CEOs and captains of industry, including Mr Sim Wong Hoo of Creative Technology and Ms Olivia Lum of Hyflux. The Mathematics graduate embarked on her journalism career as a Chinese-language news producer in 1997. To find out more, click [here](#).



Dr Marissa Teo Su Sien (BSc Pharm (Hons) 1999)

A researcher of National Cancer Centre of Singapore Pte Ltd, Dr Teo has been actively involved in researching nasopharyngeal cancer – one of the top 10 cancers in Singapore. The Dr Toh Han Chong's laboratory where she does her work has completed a phase 2 T-cell therapy trial. Dr Teo developed an initial interest in cancer research when she was studying for her master's and PhD at Georgetown University, Washington DC. There, she was doing research work that involved tumour biology. Since joining the laboratory, she has been awarded the Singapore Millennium Foundation scholarship, UNESCO-L'oreal International Fellowship for Women in Science and the Her World Award for Young Women in Science. To find out more, click [here](#).



Mr Mano Sabnani (BSc 1974)

Chairman and CEO of Rafflesia Holdings Pte Ltd, Mr Sabnani founded the company in 2008, leveraging his extensive knowledge and experience in journalism, publishing and finance. He contributed 18 years of his career to Singapore Press Holdings (SPH) where he began as a reporter and rose to be (Chief) Editor of *Business Times* for six years before switching to Managing Editor of the English/Malay newspapers in SPH. Later, for three and a half years, he was CEO/Editor-in-Chief of *TODAY*, Singapore's only English-language tabloid. Mr Sabnani also contributed to finance. He was a banker with Singapore's largest banking group and moved from Director of Research to assume the posts of Managing Director for Investments (Individual Banking) and Managing Director for Equity Capital Markets. To find out more, click [here](#).

Reactions to awards

Five Outstanding Alumni Award recipients present at the ceremony received the awards from NUS Provost and Deputy President (Academic Affairs), Professor Tan Eng Chye. They shared their reactions.

Dr Syn said: "It came as a surprise and in a way a nice birthday gift to be placed in the midst of such distinguished alumni." Dr Syn, who turned 40 two weeks after the award presentation, felt that the award recognises the behind-the-scenes works that he and his team does, for instance the identification of criminals and victims of mass disasters like the 2004 Asian Tsunami. Dr Syn, currently an Adjunct Professor at the Department of Biological Sciences, had contributed to designing the curriculum of the Forensic Science major offered to NUS students.

Equally elated was fellow recipient Dr Lee, who said: "I have spent 20 years of my career in defence science and the safeguarding of homeland security issues. I am proud that I am able to use Science to help the country, and getting the award affirms my belief that Science can touch lives."

A familiar face on TV, Ms Tung, 30s, cited the award as an encouragement, prompting her to contribute more to her alma mater. Asked if she had any advice to offer students keen to follow in her footpath, the affable news presenter said: "Be true to yourself; listen to your heart. I listened to mine and gave journalism a go, although I was a Math graduate. I have never regretted it!" Ms Tung shared that she started reading newspapers since Primary 1, and became interested in current affairs due to the influence of her dad.

Mr Sabnani, 61, offered an interesting perspective. He said: "Young people tend to go where the money is. You should go where your heart is. When I graduated, I knew my passion was journalism. My involvement with the then active student newspaper, 'Undergrad' helped me to discover my passion. Actually, my interests were many and varied. In university, when you are narrow, you will miss out on the chance to improve yourself."

And chances can be a catalyst, as Dr Teo, 30 plus, observed from her own experience. She said: "I took the chance to pursue postgraduate studies and while I was at it, I discovered my interest for research. I hadn't intended to go into research. Indeed, in whatever you pursue, it is important to have a genuine interest."

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YES, you can!

The Young Educators in Science programme, or YES for short, launched by the Faculty of Science, will train future educators to be inspiring and effective in communicating technical concepts in an interesting and engaging manner.



Common goal: Guest-of-Honour Mrs Tan Ching Yee (right), Permanent Secretary, Ministry of Education, and Prof Andrew Wee, Dean of Faculty of Science, NUS, look forward to training future educators with the launch of the Young Educators in Science (YES) programme.

Well-known Nobel laureate Richard Feynman had the uncanny knack of being able to bring notoriously difficult concepts into layman language. His now-classic Feynman lectures are used by generations of Physics students worldwide.

To turn out Feynman-like teachers with effective Science communication skills among its students, the Faculty of Science has in collaboration with the Ministry of Education (MOE) rolled out the YES programme.

YES aims to nurture young students passionate about Mathematics and Science to develop their communication skills so they can make these subjects come alive. Students will learn to communicate technical concepts to different audiences in a fun and engaging manner, using creative educational outreach tools. With interest piqued, audiences can be inspired to appreciate Mathematics and Science.

"The YES programme will allow us (Faculty of Science) to work with MOE to train future educators," said Prof Andrew Wee, Dean of Faculty of Science, in his opening address delivered at the launch.

Commending the faculty for doing its part to nurture inspired Science educators, Mrs Tan Ching Yee, Permanent Secretary of MOE, said: "YES is conceived with the aim of allowing our future educators to develop and hone their ability to inspire others in subject content at an early stage of their academic and professional careers. This in turn promotes and fosters an educators-driven culture of professional excellence within the community of future Mathematics or Science teachers in NUS."

The YES programme was launched last September at Faculty of Science by Mrs Tan, along with Prof Wee. She was Guest-of-Honour at the launch.

Show and tell

Year 4 Chemistry student Benny Ng and MOE scholarship holder believes in the YES cause.

He said: "There is a lack of genuine understanding of Science at the lay level; people are generally not motivated to appreciate Science because understanding it is a tough process. So, for scientists to be even produced, motivation is crucial, and teachers have the potential to create scientists."

The 24-year-old Benny, who took to the stage after the launch of YES to demonstrate an experiment, tapped the communication skills he has picked up from the Science Demo Lab of Faculty of Science. Presenting a somewhat 'magical' experiment in an engaging and fun manner, he drew laughter from the audience, obviously succeeding in piquing the interest of guests.

Benny noted that demonstrations and experimentation underpin the central idea of how Science should be taught. He said: "By using the 'Silver Tree' experiment to demonstrate, I find it easier to convince my audience that the chemical reactions they saw actually happened. Demos complement the



Show and tell: Student Benny Ng, demonstrating the 'Silver Tree' experiment to guests at the launch of the YES programme.

technical concepts they read about in textbooks."

"It is the 'show and tell' experience that will help teachers-to-be to develop confidence before we embark on our teaching career. YES is a platform for us to feel confident about exploring and demonstrating Science in front of students of different age," added Benny.

Ask and learn

Also highlighting the effectiveness of demonstration in Science communication at the launch was alumna Lim Jia Hui (Physics/Class of 2010), 23.

Jia Hui shared her experience in communicating Science to children and adults whilst she was a demonstrator at the faculty's Science Demo Lab, a part-time explainer at Science Centre Singapore and a contract teacher at Raffles Girls' School.

She said: "I find the communication skills I picked up at Science Demo Lab very useful; they complement the teaching pedagogy I am being trained in at NIE (National Institute of Education). NIE's training stresses on the importance of asking questions so as to facilitate understanding through the use of demonstrations."

Jia Hui is currently undergoing a year-long training at NIE and will graduate this June.

As YES members, both she and Benny have discovered a love for teaching and the sharing of Science, certainly with some help from the Faculty of Science and through their work with Science Centre Singapore, schools, enthusiastic educators and volunteer groups.

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STUDENTS Celebrating Science

The Faculty of Science recognises students' achievements and celebrates its first Science Day.

Year 4 Chemistry student John Ouyang Fengcon emerged top of his cohort and was presented a Gold Medal sponsored by GlaxoSmithKline. One among 300 in his cohort, John could not help being surprised to be awarded the medal.

He said: "I am ecstatic to receive the GlaxoSmithKline Gold Medal. I guess I am rather disciplined when it comes to studies, although I don't have a secret success formula. It helps that I am not a procrastinator, but I don't think I am any different from my peers."

John acknowledged that the medal will motivate him to excel in his studies and to advance his interest in research, adding that "...it feels good to be recognised with the medal."

The GlaxoSmithKline Gold Medal worth \$1,000 was not the only award given at the Faculty of Science Students Awards Ceremony. Other sponsored awards given out as well, included the Firmenich Best Honours Student and the Givaudan Food Excellence Prize.

Supportive sponsors

Among the sponsors who were there to present the awards to students were representatives from GlaxoSmithKline, Firmenich Asia Pte Ltd and Givaudan Singapore Pte Ltd.

GlaxoSmithKline has been sponsoring the Gold Medal for five years. Elaborating on its ongoing sponsorship, Ms Ng Peck Hear, Senior Human Resource Advisor, said: "We hope that by sponsoring the outstanding students of Chemistry and Applied Science, we will be able to create awareness; we would like students to know that GlaxoSmithKline is directly linked to the pharmaceutical industry. We also want to groom young talents as part of our Corporate Social Responsibility." Ms Ng is herself an alumna, Class of 1994.



One for the album: Students, faculty members and sponsors pose for a photo after the launch of the 'SCIENCE' icon of the Faculty of Science.

Of sponsoring the Firmenich Best Honours Student, Mr Philip Curran, Technical Director, Firmenich Asia Pte Ltd, explained: "We are a scientific company and we have a wide range of science disciplines. Also, we want to support science as that is the future. We certainly believe in education and have been a sponsor for several years now. It is important that we support the development of food science and technology in Singapore."

Sponsor Givaudan Singapore Pte Ltd has been a longstanding partner of the Chemistry Department's Food Science and Technology Programme for at least a decade. Sponsoring the Givaudan Food Excellence Prize targeted at top Year 2 Food Science and Technology students, it gives out a prize worth from \$1,500 onwards.

A representative of Givaudan Singapore, Flavour Science Manager Dr Low Mei Yin said: "We believe in sponsoring young talent and we want to keep a close relationship with the University. Here in Singapore, the NUS Food

Science and Technology programme is one of the few that caters to our niche industry. The NUS is also the only institution that does basic and applied research in flavour- and food-science related subjects. As the regional headquarters in Asia-Pacific, we are hoping to grow our collaboration with NUS – as a research partner and as a human resource pool for us to source for talent." Dr Low herself earned her bachelor and master's degrees from NUS, specialising in Chemical Engineering.

The Students Awards Ceremony coincided with Science Day, held for the first time by the Faculty of Science on 6 September 2011, to celebrate student life and achievements.

Science Day

Student life was celebrated throughout the day with students being treated to games, lucky draw prizes and a sumptuous buffet spread.

Bazaars were set up at the atrium of Lecture Hall 27 where students took

part in games not unlike the CSI TV programme, where they analysed 'evidence' by applying the different disciplines of Science to solve a fictitious 'murder' case. These were made possible by the faculty's student clubs and societies.

The students that could guess the 'culprit' was the winner of the competition, while two lucky students became the proud owner of an iPod touch and a HTC handphone given out in the lucky draw.

The Science Day celebration culminated to the unveiling of a new icon of the Faculty of Science, made up of the seven alphabets in the word 'SCIENCE'.



Chemistry student John Ouyang Fengcon (left), the recipient of the GlaxoSmithKline Gold Medal, seeing alongside Ms Ng Peck Hear, Senior Human Resource Advisor, who is representing the sponsor.

Professor Andrew Wee, Dean of Faculty of Science, unveiled the 'SCIENCE' icon by placing an orange heart on the structure, witnessed by students and sponsors who attended the Students Awards Ceremony.

Visible from the Lecture Theatre 27 bus-stop, the 'SCIENCE' icon will serve as a landmark for the Faculty of Science.

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Students being recognised at the Science Day Students Awards Ceremony were:

Lim Soo Peng Book Prize

Zhang Qiong
Wu Mengze

GlaxoSmithKline Gold Medal

OuYang Fengcong John
Heng Wee Kuan

Firmenich Best Honours Student

Hui Wei Bin

Givaudan Food Excellence Prize

Phebe Lim Lixuan

SIFST-NUS Best Student Award cum SIFST Scholarship

Tan Wen Jue Amelia

PJB Book Prize

Xu Xu

Sugar Industry of Singapore Book Prize

Luo Yusheng

Tan Siak Kew Gold Medal

Zulaiha Said

Jurong Shipyards Book Prize

Wang Sihao
Teo Meng How
Ang Ther Wey Jeysthur
Deng Jiawen
Zhang Song

Malayan Nature Society Silver Medal

Tan Kai En Calvin

Runme Shaw Book Prize

Goh Suat Pheng Amanda
Tan Ai Lynn Aurelia

Tan Teck Chwee Book Prize

Shi Xiaojie
Song Chaoran

Food Spectrum Prize Award

Toh Mingzhan

Schering Plough Gold Medal

Chong Che Chang

Singapore National Institute of Chemistry Book Prize

Gan Wei Kiat Vincent
Guo Jinlong
Kwan Yee Ching

Singapore Economic Review Book Prize

Song Qi

Raffles Prize

Zeng Yiwen

Outstanding Undergraduate Research Prize (Individual)

Le Phuc Thinh

GEK1535 Subject Prize (RP only)

Chen Ting

MA1100 Subject Prize (RP only)

Yu Jize

PC1222 Subject Prize

Yan Yan

MA1101R Subject Prize

Lu Shiyao
Zhou Jun

CM1101 Subject Prize

Li Chenyi

Mechanics and Thermodynamics (AP only)

Mei Wenjie

Computer Part I Prize

Jin Yuhang

Computer Part II (RP only)

Wang Yang

Good Performance for SM3 Bridging Course

Wang Honghao
Liu Yueyang
Hu Sang

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Game for international exposé

Life Sciences and Physics students get to enhance their all-round development from taking part in international competitions.



Fun time: Participants at Siemens Healthcare Innovation Think Tank summer camp enjoying a break from the competition. Singapore and NUS participant Raphael Ong is fifth from right.

Faculty of Science students took part in two rather unconventional international competitions – Siemens Healthcare Innovation Think Tank ‘Be an Inventor Opportunity’ and University Physics Competition – and benefited from a different experiential learning.

Innovativeness redefined

The Siemens Healthcare Innovation Think Tank competition saw Year 4 Life Sciences student Raphael Ong Lee Sheng, as the only participant from an Asian university to qualify as finalist. Raphael teamed up with Year 4 Bioengineering student Jonathan Ley Minghui.

They were among the 181 teams from 25 countries that had applied for the competition, after submitting their research works on new ideas and improvements in medical technologies and existing healthcare infrastructures.

Raphael made it to the competition finals, and was one of 16 participants to have flown to Germany to attend the fully-sponsored ‘Innovation Think Tank’ summer camp held at the Siemens Healthcare sites in Erlangen, Forchheim and Kempten. He and his team mate were picked after a rigorous selection process by a panel of 24 jury experts from the various Siemens Healthcare business units.

Whilst at the three-month innovation camp, from 15 June to 14 September 2011, Raphael’s team competed with an international mix of participants. They worked on several real-world innovation projects at Siemens Healthcare, and came up with innovative solutions that addressed medical imaging-therapy challenges.

The camp, introduced for the first time in the competition, yielded 16 finalists and eight projects being shortlisted by the judges. Their projects were evaluated based on innovativeness,

impact and commercial and technical realisation values.

Raphael’s team won the second prize for Most Innovative Project. The Singapore team was among finalists hailed from Egypt, Mongolia, Germany, the Netherlands, Sweden, Spain and Turkey.

All finalists were accorded the ‘Young Student Innovator Award’ for Innovation Think Tank Summer Camp 2011, and even received a share of the €16,000 prize money, to Raphael’s surprise. The jury had decided to divide the prize money equally among the participants in recognition of the collaborative spirit and project multiplicity of the competition.

Moving on to the final round of the competition, the 16 finalists were tasked to further develop solutions with the highest degree of realisation, as part of the challenges from the various Siemens Healthcare business units. Raphael’s team won the coveted top-rated 3i Award for being the highest-rated project of the competition, surpassing seven others.

“We are thrilled to take home the top-rated 3i Award for having the most implementable innovation project. Our project was about the development of innovative product features for a next-generation clinical medical device, and this endeavour was very well supported by Siemens Healthcare’s business units. The award proved that we were able to incorporate innovativeness from conceptualisation to development,” said Raphael.

Enthusiasm for Physics

Fifteen Physics students took part in the international University Physics Competition for the first time.

They formed five teams of three each and had to spend 48 hours to analyse an applied scenario using the principles

of Physics and write a formal paper describing their work. They could only discuss with one another, consult textbooks, internet sources and write simulations.

Throughout the two days over the weekend of 4, 5 and 6 November 2011, the five teams holed themselves up in separate locations on campus. These included the Special Programme in Science room and the Tembusu Residential College. One team even worked at the house of their team mates.

All five chose to tackle Problem B, one of two problems of the competition, namely, ‘Shooting a Basketball for Three Points’. They competed with more than half of the total number of participants, or 48 other teams.

The competition saw a total number of 77 teams from across the world submitting their papers for judging. Twenty eight teams tackled Problem A – Space Tower Launch Costs.

The results were announced on 19 December 2011: NUS’ teams of Year 1 and Year 4 Physics students won the Silver Medal, while the Year 2 Physics team won the Bronze Medal. Two remaining teams won in the Accomplished Competitors category.

“My team is very satisfied with our accomplishment because it was our teamwork that made it happen. We slept less than seven hours throughout the entire 48 hours and literally spent every single hour working on the problem! I also remembered that we only managed to submit our solution minutes before the deadline as we discovered a last-minute error on our report. It was definitely a worthwhile



Year 4 Physics students (from left) Kwong Chang Jian, Wong Songhan and Law Yun Zhi won Silver in the international University Physics Competition.

experience, and I encourage more Physics students to take part in the University Physics Competition.”

Silver Medallist Wong Songhan (Year 4, Physics)

“It was interesting to see how we could apply the simple Physics concepts that we have learnt to daily activities. Who would have thought that there could be so much behind a successful 3-point shot in a game of basketball. By applying approximations to make life easier, racing against time, and churning out our research paper, with cookies



Year 1 Physics students (from left) Kwang Siu Yi, Ng Kia Boon and Shawn Tang Wenjie won Silver in the international University Physics Competition.

from Subway as energy booster, the competition was good fun!

Silver Medallist Ng Kia Boon (Year 1, Physics)

“It (2011 University Physics Competition) was an intense learning and thinking experience. I love the way our team works, the friendship we forged and the joy we had along the way. All of these made the competition memorable.”

Bronze Medallist Aaron Guan (Year 2, Physics/team leader)

“The problems surfaced in the competition were open-ended, which meant we were free to explore every possibility. The time constraint imposed however forced us to come up with a strategy and let us be very efficient in what we do. All in all, it was a memorable experience for me.”

Bronze Medallist Nguyen Duy Quang (Year 2, Physics)

“I rarely have the opportunity to join such group work, as I am used to study on my own. Taking part in the competition helped me to realise my strengths and weaknesses. Besides that, I realised that the problems in real life are far more complicated than the problems found in textbooks.”

Bronze Medallist Lin Mao (Year 2, Physics)

Of the competition results, Mr Chang Sheh Lit, Teaching Assistant, Department of Physics, who supervised the students, said: “I believe such exposure will enhance their training in Physics, as well as analytical thinking. Being able to apply their theoretical knowledge and problem-solving skills to a real-life problem is something completely different from the kind of exam questions that students are used to seeing.”

Although the students did not win the Gold Medal, fellow supervisor Mr Andreas Dewanto, Physics Instructor, Department of Physics, felt that the students had benefited from taking part in an international competition. “They focused solely on finding the best solutions rather than being fixated on getting the right answers,” said he. Mr Dewanto and Mr Chang ensured that the students observed the rules of the competition throughout the 48 hours.

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2011 University Physics Competition: NUS’ Performance in Problem B – Shooting a Basketball for Three Points

Team	Student	Year	Course	Accomplishment
1	Ng Kia Boon, Kwong Siu Yi and Shawn Tang Wenjie	1	Physics	Silver Medal
2	Law Yun Zhi, Kwong Chang Jian and Wong Songhan	4	Physics	Silver Medal
3	Aaron Guan Yilun, Nguyen Duy Quang and Lin Mao	2	Physics	Bronze medal
4	Tan Hong Qi, Lee Kang Hao and Seah Yi-Lin	3	Physics	Accomplished Competitors
5	Wu Zhenzhou, Tan Da Yang and Liew Ji Shen	4	Physics	Accomplished Competitors

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ALUMNI/DONORS

NUS alumni couple sets up bursary at Faculty of Science

Two bursary recipients met, studied and courted on campus in the '60s. Thankful for the bursaries they received, they have made a gift to their alma mater to help the next generation.



Science alumni can do their part to help the next generation of students by making a gift to the Faculty of Science.

The year was 1963. He sat behind her in Lecture Theatre 1 in the NUS Bukit Timah campus for their very first lecture. They were both studying Zoology at what was then the University of Singapore (NUS' predecessor institution), she the daughter of a clerk, and he, the son of a missionary.

Both of them were receiving bursaries.

Forty-eight years later, Mr and Mrs Ewing-Chow have set up a bursary at the Faculty of Science to help students who are facing challenges similar to the ones they had once faced. The John & Lydia Ewing-Chow Bursary will be

awarded to Life Sciences students over approximately the next 10 years.

In the Academic Year 2011/2012, five students benefit from their gift.

The John & Lydia Ewing-Chow Bursary gift will also attract the matching government grant*, which will be channelled to the Science Student Overseas Exposure Fund (SSOEF), enabling more students who are financially strapped to take advantage of the many overseas opportunities that NUS offers.

"The bursary I received gave me the opportunity to study at university and if I can give someone else the same, I will be very happy," says Mrs Ewing-Chow, a retired biology teacher.

"Our families were poor then. My brother and I were entering university at the same time and my father could only afford to send one – the son. I wanted so much to go to university, so my father saved for my education by carrying a packed lunch to work instead of eating out. I am very grateful to my late father as well as for the bursary, which helped pay for my fees and pulled me through."

Mrs Ewing-Chow went on to win the Fulbright Scholarship to study at Columbia University, USA, graduating with a Master's degree in Education.

During his university days, Mr Ewing-Chow supplemented his bursary money by stacking books every night at the university library, which enabled him to contribute to his family's monthly expenses.

After graduation, he started working as a school teacher and then went on to be Acting Zoo Director and Director of the Civil Service Institute before joining the private sector. He retired as Vice-President, Training, OCBC Bank.

While at the Civil Service Institute, he was awarded the Colombo Plan Scholarship to study for a Masters in Administration at Monash University, Australia. "We were both doubly blessed," says Mr Ewing-Chow. "The bursaries helped us to go to university and that led to other opportunities."

The Ewing-Chows recently visited the Department of Biological Sciences (DBS) and the laboratories at the Kent Ridge campus.

"As students, we used to sit side by side in the lab in the Bukit Timah campus and we were looking forward to reliving those memories," says Mr Ewing-Chow.

"But what we saw was a different world. We were astounded by the curriculum, the equipment and the vision of the department. We came away feeling very excited by the future as painted to us by Head of DBS, Professor Paul Matsudaira. We feel confident that the bursary will nurture students who will make a contribution to society."

In talking about their life, Mr and Mrs Ewing Chow says, "Looking back to where we came from, we are thankful and very happy to be able to give to NUS."

*All eligible gifts to NUS attract the prevailing 1:1 matching government grant and endowed gifts for undergraduate studies receive the enhanced 1.5:1 matching.

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In memory of Professor (Mrs) Tan Sau Fun

The Faculty of Science and Department of Chemistry honour Professor Tan Sau Fun, an outstanding lecturer who is fondly remembered by students and colleagues alike.

Prof (Mrs) Tan Sau Fun passed away peacefully, at the age of 80, on 28 February 2011.

In an interview published to mark the 80th anniversary of the Department of Chemistry ('80 Years of Chemistry in Singapore: Making a Difference 1929-2009'), Prof Tan summed up her 35 years in NUS with "I had an enjoyable time!"

She joined the Chemistry Department of the then University of Singapore in 1960, and had the distinguished honour of being the first woman full Professor in Chemistry ever appointed in NUS in 1986.

Despite her many achievements as one of the pioneers in the department, she remained simple and modest in her attitudes and actions, words and ways. She advised students to cherish their youth and that they should not only take their studies seriously, but they must also set aside time to enjoy other aspects of their life.

Even 15 years after her retirement, she could still recall many of her students. Her satisfaction came from her knowledge of their success in their individual lives.

Prof Tan was outstanding as an academic and research supervisor. Acknowledging the helpfulness of non-academic staff, she said, "Without them, I wouldn't have been able to do any research work!"

She particularly treasured the comradeship with her colleagues – the encouragement, advice and discussions.

She readily credited her family as her pillar of strength, especially her husband. She was supportive of her husband, Col (V) Tan Wee Kian, PPA, in both his civil service career and his contributions to the nation. She saw her children through their successful student days and as they launched into their careers, social and family life.

Towards the later years of her life, much of her time and energy were channelled towards their six grandchildren, and in expressing her creative talent through painting.



Tan Sau Fun Bursary

The Faculty of Science has set up the *Science Students Fund-Tan Sau Fun Bursary* to support needy Chemistry students, with annual bursaries of S\$2,500 each.

Donors who are Singapore tax residents will receive a 250 per cent tax deduction, and donations are matched by government.

For more information on the Tan Sau Fun Bursary, email or call Chan Siew Ing on 65166318.

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March 2012

ALUMNI/DONORS

Here comes help

Financially-strapped Life Sciences students found relief, thanks to alumni couple John and Lydia Ewing-Chow.

Photo by Darren Soh



Students with financial problems can get help from the Science Students Fund.

Zhuo Guowei and Iffah are among five Life Sciences students that have received financial aid from the John & Lydia Ewing-Chow Bursary worth \$150,000. Named after the couple, the bursary was set up under the **Science Students Fund (SSF)** offered by the faculty.

Having the load lifted

Guowei encountered financial problems when his 64-year-old father had a knee surgery a year ago and was home bound since. His mother, 63, took to working as a cleaner and was the sole breadwinner; her meager earning goes to support their family of four.

To help out, Guowei, 23, works part-time. Last semester, he often had to dash off right after classes.

He explains: "Last semester, I had 16 hours of classes and I was working 22 hours on average every week. I worked on Saturdays too and even when I was having my exams."

Now in Year 2, Guowei's time-table for his current semester clashes with his work schedule, which means he is spending fewer hours working part-time.

"So I am thankful for the gift I received from Mr and Mrs Ewing-Chow. It helps to lighten my financial load and will be able to get me through my second year," says Guowei. Through the bursary, he will receive S\$1,000 every semester, for two semesters.

Guowei looks forward to specialising in Biomedical Science, and plans to work in research laboratories when he graduates. Someday, he hopes to pursue further studies and be a lecturer, imparting knowledge to others.

Guowei's study is also financed by the Tuition Fee Loan and the NUS Study Loan.

Getting closer to jellyfish

Just as grateful, Iffah, the other recipient of the John & Lydia Ewing-Chow Bursary, says: "Thanks to Mr and Mrs Ewing-Chow, my mother is now less worried about my daily expenses. Not only has their gift eased my parents' financial burden, it has also helped bring me a little closer to my dream of seeing the underwater world."

The Year 1 student comes from a family of six; as only her father works, there is often barely enough to go around.

Iffah, 19, has always loved the sea. She is immensely fascinated with jellyfish, so much so she hopes to someday go into research, involving the upside-down jellyfish.

"To get close to the creature of my fascination, I have to first learn how to dive, which also means expensive lessons before I qualify for a licence. I have been reluctant to take the plunge

because paying for the lessons would mean sacrificing months of my meal allowance. But, now I may be able to consider taking up diving sooner," said she.

Her sideline income is of help, too; Iffah works whenever she can as a camp facilitator at Underwater World Singapore.

Apart from the bursary, she also receives financial aid from the NUS Student Loan, while her study at NUS is financed by Yayasan Mendaki.

Iffah is encouraged and sees these financial aids as a blessing to pursue what she loves. She hopes to specialise in Environmental Biology and Marine Biology, as well.

To be considered for any of the faculty's bursaries, needy students ought to apply through the **NUS financial aid**. The University's Office of Financial Aid will refer them to the SSF.

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ALUMNI/DONORS

In tune with industry

There is much alumni can offer students, and much for students to learn from alumni, as evident in the two events held at the end of last year.



Banker material? Alumnus Mr Eric Sandosham, Regional Head of Decision Management, Citibank, enlightening students with his talk on 'Do I want to be a Banker?' at the 'Let's Hear it from the Industry Leaders' seminar.

The two events were 'Let's Hear it from the Industry Leaders' Seminar Series and Alumni-Student Networking Session.

The former was held by the Faculty of Science for the first time this academic year 2011/2012, whilst the latter was a collaboration between the faculty and the NUS Career Centre and Office of Alumni Relations.

'Let's Hear it from the Industry Leaders' seminar series

Alumni returned to their alma mater to share industry experiences with students at the 'Let's Hear it from the Industry Leaders' seminar series, held

to introduce industries to students, and to give them a chance to network with these leaders.

Five speakers, two of whom were alumni, hailed from the chemicals, banking, microelectronics, pharmaceutical and research & development industries, spoke on the uniqueness of their respective industries.

PhD alumnus Dr Chen Pu (1991), Vice President and General Manager of Rhodia Novacare Asia, got students thinking about what is really important. His sharing touched on 'Being a

Sustainable Supplier: Dimensions and Challenges.'

Mr Eric Sandosham (BSc 1994, MSc 2002), Regional Head of Decision Management at Citibank, on the other hand helped students to evaluate their career choices in his talk entitled 'Do I want to be a Banker?'

Students that participated in the seminar generally found the sharing by the alumni industry leaders useful, giving them a sense of what working life could be like. They also enjoyed the opportunity to network with their seniors.

Alumni-student networking session

Twenty alumni from all industries and various years came to participate in the networking session.



Network, network: Pharmacy alumnus Mr Kwan Yew Huat, surrounded by students, is sought after at the Alumni-student Networking Session.

Although most were from science-related industries and businesses, there was a good mix of industries like social services, law enforcement, and medical administration. Some were entrepreneurs, as well.

Indeed with the wide industry representation, students participating in the networking session found it useful. Many were seen enjoying themselves and shared that they look forward to more of such chances to approach their seniors.

The alumni-student networking session was held at the Shaw Foundation Alumni House on 21 October 2011.

Keen to give back?

Alumni can opt to be:

- Speaker of industry talks
- Speaker of career talks
- Provider of internship
- Mentor
- Participant at discretionary admission interviews
- Speaker in outreach talks to schools

To find out more, please **email** Associate Prof Chin Wee Shong, Vice-Dean (Outreach & Student Life), Faculty of Science.

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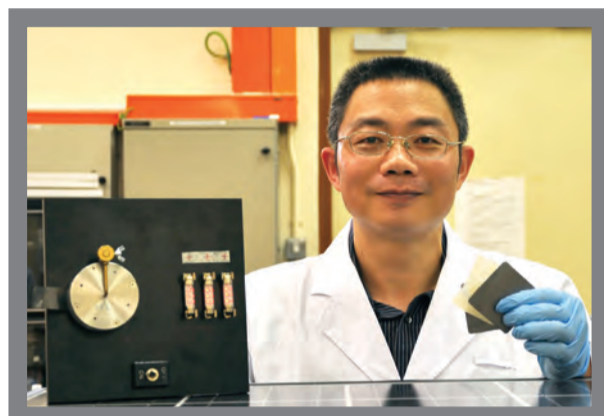
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RESEARCH

Better than batteries

Dr Xie Xian Ning and team have come up with a new way to store energy with a polystyrene-based polymer membrane – a world first – outperforming most batteries.



Energy marvel: Dr Xie Xian Ning sees key potential use in the polystyrene-based polymer membrane (held in his hand), especially for storing the energy produced by alternative technologies like solar and wind power.

While the technology of developing polystyrene-based polymer membrane capable of storing energy is not new, chemically converting plastic bags into paper-thin batteries with energy-storing and electric-conductivity capacities is.

The technology led by Principal Investigator Dr Xie, 44, from the NUS Nanoscience and Nanotechnology Initiative is believed to be the first in the world. It was published in the journal *Energy & Environmental Science* last August and highlighted in renowned British scientific journal *Nature*. It was published again this January in *Advanced Materials*.

From plastic to battery

Dr Xie and his co-researchers found that 1 kg of plastic bags could be converted into 1 kg of membrane by adding chemicals that dissolve the plastic bags. And when sandwiched between two metal plates, the polystyrene-based polymer membrane thus produced, can store up to 0.2 farads (a unit of charge) per square centimetre compared to a millionth of a farad for a standard capacitor.

The 0.01 cm storage membrane can store 10 watts of energy per hour. It is also chargeable up to at least 5,000 times, or five times the lifespan of

ordinary rechargeable batteries. What is more, it is four to eight times as cheap as lithium-ion batteries (see Table 1).

Challenges to commercialisation

Even though the energy-storing membrane has been developed, it is still some time away before it can be introduced to the market. Having spent a year and a half to perfect the technology, Dr Xie estimates that he still needs another year to make adjustments before the membrane can be marketed.

He pointed out that the main aim now is to explore ways to boost the electricity-storage capacity of the membrane and reduce the amount of energy loss. Another major challenge is to assemble the energy-storing membrane into easy-to-use battery units.

Dr Xie is working with some companies on further development of the energy-storage technology, along with venture capitalists from USA, Germany and Hong Kong.



Small wonder: This energy-storage membrane can deliver energy better than batteries, is cheaper and more environmentally-friendly.

He has received \$300,000 in funding from the Singapore-MIT Alliance for Research & Technology and National Research Foundation.

Environment protection

Dr Xie disclosed that he was in talks with the National Environment Agency on how to ship collected plastic bags to the laboratory to be made into energy-storing membrane. He surfaced too air-pollution issue caused by the burning of plastic bags in incinerators.

He summed up: "We are enhancing the technology and hope to succeed as soon as possible. We want to help people save energy and contribute to the protection of the environment."

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Table 1: A comparison of energy storage performances between the polarisable membrane of Dr Xie Xian Ning and commercially rechargeable batteries and supercapacitors. The parameters of batteries and supercapacitors are obtained from several websites.

	Membrane-Based Device	Double Layer Supercapacitor	NiM Hydride Battery	Lead Acid Battery	Li Ion Battery
Energy Density (W.h/kg)	5–20	4–8	60–120	30–50	110–160
Power Density (W/kg)	100–2000	1000–10000	250–1000	75–130	250–340
Voltage & Scaling	Single: 3.0 V In Series: 300 V	Single: 1–3.6 V In Series: 16 V	Single: 1.2 V In Series: 12 V	Single: 2.0 V In Series: 12 V	Single: 3.6 V In Series: 7.2 V
Charge Time	1–30 s	1–30 s	2–4 h	8–16 h	2–4 h
Cycle Life	5000 cycles	10000 cycles	300–500 cycles	200–300 cycles	500–1000 cycles
Working Temperature	– 40–80 °C	– 40–70 °C	– 20–60 °C	– 20–60 °C	– 20–60 °C
Self-Discharge	50%/24 h	3.7 V: 20%/week 16 V: 50%/24 h	30%/month	2–3%/month	8–31%/month
Energy Cost	10–20 W · h/USD	0.05 W · h/USD	2.8 W · h/USD	8.0 W · h/USD	2.5 W · h/USD
Environment Impact	Environmental friendly, recyclable & reusable	Flammable electrolyte	Flammable electrolyte	Heavy metal & acid pollution	Flammable Electrolyte

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March 2012

RESEARCH

Discovering drugs, the novel way

The Department of Biological Sciences has been unravelling the mysteries surrounding protein-protein and protein-ligand interactions and developing small molecule inhibitors for drug discovery through an approach piloted by Dr Ganesh Anand.



Dr Ganesh Anand, working on his research on protein-protein interactions, at his laboratory at NUS' Department of Biological Sciences.

Dr Ganesh Anand conducts cutting-edge mass spectrometry studies at his laboratory at NUS' Department of Biological Sciences, to discover drugs that can be applied to treat any disease or disorder including cancer, infectious diseases and metabolic disorders.

The 41-year-old adopts a Fragment-based Drug Discovery (FBDD) strategy using mass spectrometry, an area of interest he developed 11 years ago; then there were only a handful of experts around the world with a similar interest.

His laboratory was recognised as a Centre of Innovation by US-based Waters Corporation last October, making it the first such centre in Asia. He is one of 13 researchers recognised so far by Waters, a 50-year-old corporation that has been leading in complementary analytical technologies.

Of the FBDD approach, Dr Anand says that NUS Science students will benefit from accessing and applying the modern technology. His group has recently filed a patent titled 'Fragment-based Approach for Inhibitor Design by Amide Hydrogen/Deuterium Exchange Mass Spectrometry' last June.

The way forward

Before FBDD, the traditional way of drug discovery is to screen for compounds that bind to therapeutic target proteins from proprietary molecular compound libraries. Its success has been limited, evident from the decreasing numbers of novel classes of therapeutic drug molecules that were discovered in recent times.

Explaining the difference between the old and the new way of drug

discovery, Dr Anand says: "The new alternative FBDD approach works through fragments – smaller building blocks akin to 'Lego' blocks of traditional drug compounds found in the proprietary molecular compound libraries. These Lead Fragments can be joined by combinatorial chemistry, thus generating larger molecules with improved affinity and specificity."

He adds that the new FBDD approach has been highly effective in identifying Lead Fragments and their 'footprints' on the target protein. Having such knowledge will provide a powerful template for medicinal chemists to string fragments to generate novel drugs. What is more, the waiting time for new drug discovery can also be reduced.

Dr Anand sees the FBDD technology as revolutionary to drug discovery. He hopes NUS and Singapore could take the lead in tackling tropical disease targets that are relevant to this region and are less represented in existing drug discovery efforts.

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RESEARCH Into French

Scientists in Singapore and France can now connect through the new International Associated Laboratories.



A PhD student at CQT, Marta Wolak, enjoying Antibes, a resort town in France. She benefited from an agreement that promotes collaboration between two NUS Research Centres of Excellence and researchers in France.

A PhD student at the Centre for Quantum Technologies (CQT), Marta Wolak, spent a total of 14 months in Nice, France, during the first four years of her graduate degree. She had a co-supervisor there. "For me it is the perfect set-up. I like travelling, I have double the amount of friends, and I have been able to take on a project that I could not have done otherwise," says Marta.

Bess Fang, an NUS physics student who did her undergraduate honours project and Master of Science at CQT, visited

collaborators in France. She has since moved to Paris to start a PhD, studying quantum matter on atom chips.

Faculty of Science students and staff alike will have new opportunities to collaborate with researchers in France, thanks to two research agreements signed at NUS last November. The agreements created two International Associated Laboratories (LIA), each pairing an NUS centre with a consortium of French organisations led by the government-funded Centre National de la Recherche Scientifique (CNRS).

'Laboratory without walls'

An LIA is a 'laboratory without walls' – an institutional arrangement that facilitates the exchange of people and funds.

Through the agreements, one LIA was created with CQT and the other with the Mechanobiology Institute (MBI). Both CQT and MBI are Singapore Research Centres of Excellence hosted by NUS.

The France-Singapore Quantum Physics and information Laboratory (FSQL), established with CQT for four years initially, is backdated to January 2010. This reflects the close ties already in place: CQT has been hosting CNRS

researchers, and some CQT students have made research trips to France.

The LIA FSQI is co-led by Berthold-Georg Englert, CQT Principal Investigator and NUS Professor in physics, and Christian Miniatura, a Visiting Research Professor at CQT on secondment from CNRS.

The second LIA, established with MBI, is Cell Adhesion France-Singapore (CAFS). The agreement for this LIA, to be run by MBI Director Professor Michael Sheetz and CNRS Associate

Professor Virgile Viasnoff, will take effect 1 January 2012 for a period of four years. The partnership will open the path to new collaborations in the fields of mechanobiology, optics, modelling, surface chemistry and micro/nano fabrication.

The CQT and MBI were privileged to host for the signing of these agreements a delegation led by Mr Joël Bertrand, CNRS Director General for Science.

Students can learn more about the CQT and MBI graduate programmes at the centres' websites: www.quantumlah.org and www.mbi.nus.edu.sg.

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Mr Joël Bertrand, Director General for Science at the Centre National de la Recherche Scientifique (left) and Prof Michael Sheetz, Director of MBI, sealing the deal on the agreement to create the new International Associated Laboratory at MBI.

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DEPARTMENT Tribute to excellence

The Faculty of Science recognises excellence in teaching, research and service with the presentation of the annual Faculty Awards to 189 deserving faculty members and support staff.



Outstanding Service Award: Ms Teo Chwee Hoon (right), Senior Manager, Graduate Studies, Dean's Office, receiving the award from Prof Andrew Wee, Dean, for her exemplary delivery of service and superior commitment to work.

As many as 57 faculty members were honoured at the Faculty Awards Ceremony held on 16 November 2011 at the University Hall Auditorium.

Another 132 awards were presented to the recipients of the Outstanding Scientist, Young Scientist and Long Service Award.

The annual Faculty Awards pay tribute to academic and support staff whose outstanding achievements and contributions to teaching, research and service in their respective fields help realise the faculty's mission and uphold its mission of providing quality education, fostering the spirit of enterprise and a motivation for leading edge research.

The awards are given out to four groups of recipients each year. The first group comprises 10 per cent of the faculty's academic population that has received positive student feedback and peer reviews.

The second group includes those who have received research awards for achieving breakthroughs or outstanding accomplishments in his or her field.

The remaining two groups comprise non-academic staff who have delivered exceptional service or contributed a significant number of years to the faculty. They receive the Outstanding Service/Commendation and Long Service Award, respectively.

Glowing tributes

A Science student cited how the Department of Biological Sciences' Associate Professor K Swaminathan, one of the 22 faculty members being presented with the Faculty Teaching Excellence Award was able to make his lectures enjoyable despite Biology being a content intensive subject.

"Going to Assoc Prof Swaminathan's lectures is like eating salad. He makes his lectures palatable and makes us understand that the content is good for us. While most people do not like vegetables, they like salad because vegetables when mixed together as salad, they become tasty."

Faculty stalwarts

Deserving of highlight are the recipients of the Long Service Award.

Several staff were recognised for having crossed a major milestone in their respective careers, and in the process, contributed many years of continuous good service.

Mr Lim Bun Siang from the Department of Physics received the Long Service Award for his 35-year contribution to



Faculty Teaching Excellence Award: Recipient Associate Professor Chung Keng Yeow (right), Department of Physics, Faculty of Science, receiving the award from Vice Provost Professor Lai Choy Heng. Winners of the award are selected based on qualitative and quantitative student feedback and peer review.



Let's celebrate! Academic and non-academic staff who are recipients of Faculty Awards 2011, mingle with their peers over buffet held after the presentation ceremony.

the Faculty of Science. He joined the Department of Physics in 1977 when it was still located in Bukit Timah.

Recalling those years, Mr Lim said: "My colleagues and I would jog to the Botanical Gardens after work. We often organise pot luck dinners, too." When the Physics department was relocated to its current Kent Ridge campus, Mr Lim stayed on. He has been there since, for close to 31 years.

Ms Foo Eng Tin who has been working alongside Mr Lim also won a Long Service Award for her 40 years of service.

For a complete list of award winners, please click [here](#).

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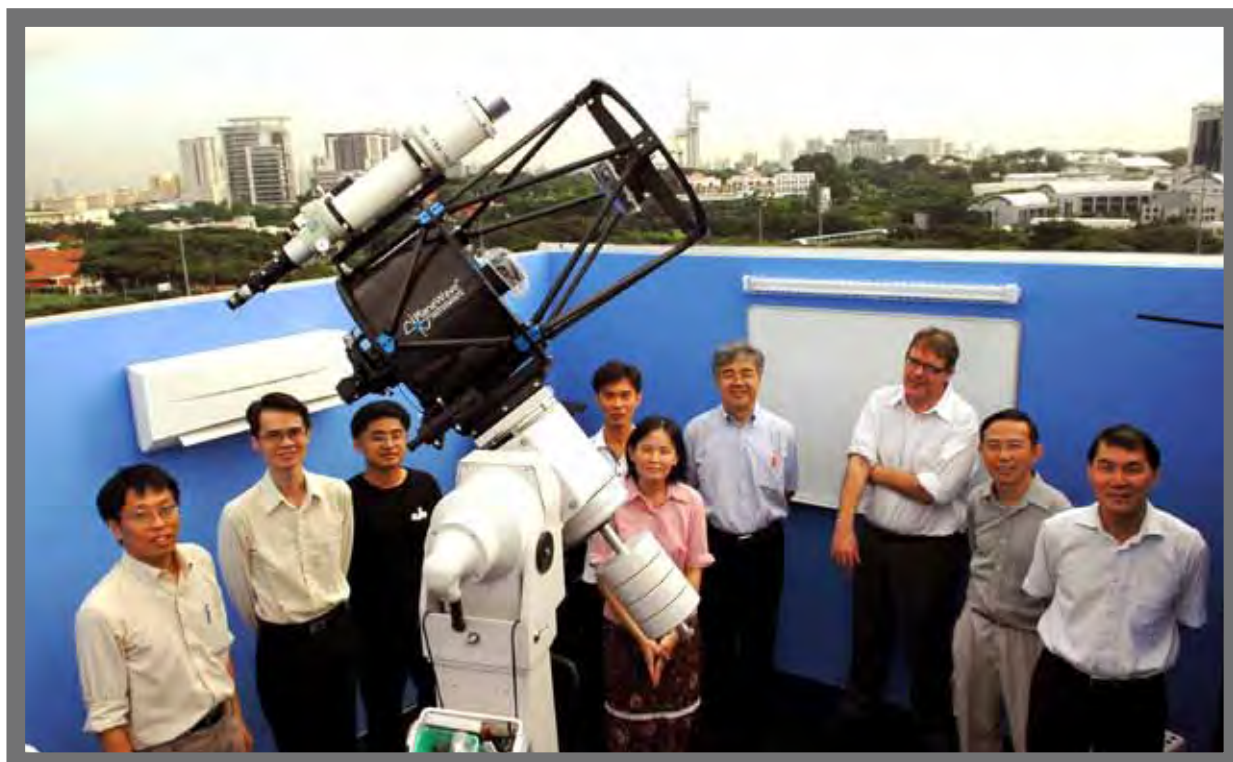
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DEPARTMENT

Star attraction

The Department of Physics welcomes its new Teaching Observatory, a facility that houses the largest-aperture telescope in Singapore used for the learning of advanced astronomy.



Team players: Associate Professor Phil Chan (far left), with his team of astronomy experts from the Department of Physics, is instrumental in the setting up of the new Teaching Observatory.

The new Teaching Observatory complements the Department of Physics' Bachelor of Science programme that offers an Astrophysics specialisation, as well as its two popular modules, *Understanding the Universe* and *Einstein's Universe*.

Built at a cost of S\$400,000, this roof-roll-off Teaching Observatory is located at the rooftop above the stairwell of Block S12 and S13.

Its main attraction, the celestial telescope housed there has an aperture of 17.5 inches, which is slightly larger than the only other similar apparatus found at the Science Centre Singapore. The latter's telescope for star-gazing has an aperture of 16 inches.

Remote teaching

Instrumental in setting up the Teaching Observatory is Associate Professor Phil Chan, who took the opportunity to involve four of his students from the start of the project.

Assoc Prof Chan worked closely with them in the setting-up, and is now working with them to prepare the celestial telescope for remote teaching, as part of the students' Undergraduate Research Opportunities Programme in Science (UROPS).

He said: "The Physics Observatory can accommodate a tutorial class, comprising 15 to 20 students so getting the telescope to be remotely controlled from the lecture theatre will ensure that the images captured of the Singapore sky can be beamed 'live', for more students to learn through viewing."

While carrying out their UROPS Astro-instrumentation project, the students being supervised by Assoc Prof Chan, had to first choose a software before putting it in place for testing using two PCs – one in the Observatory and one in the Lecture Theatre.

Of how he has benefited from the preparatory work, student Aw Chixiong, Physics, Year 3, said, "By doing, I obtain in-depth learning of remote instrumentation."

Assoc Prof Chan has incorporated remote instrumentation into the Astro-General Education Module he had introduced in Semester 2, commencing on 9 January 2012. More advanced astronomy General Education Modules are also in the pipeline.

Of 'First Light' and 'Venus Transit'

After the completion of the Teaching Observatory last June, Professor Andrew Wee, Dean, Faculty of Science, was invited to officially launch the new facility. As part of the launch, Prof Wee was invited to slew the celestial telescope southwest in the direction of the planet Saturn.

When night descended, the telescope was trained on a notoriously difficult-to-spot deep celestial object – the famous 'smoke ring' (M57, Planetary Nebula in constellation Lyra). The telescope was able to capture the smoke ring, which is 2,300 light years from Earth, and one of the most prominent examples of the gaseous remains of a red giant star that ended its life by expelling its materials into the surrounding interstellar medium.

Thrilled by the sighting, Assoc Prof Chan said: "The distinct sight of a pale, smoke ring, spotted amidst the light pollution of Downtown Singapore, was to our surprise." Faculty colleagues and over 50 amateur astronomers who joined in the launch also saw the ring.

The occasion to mark the launch held on 17 August 2011 was named 'First Light', to signify its importance.

"Plans are underway to ensure more rare sightings, with one of the rarest, predictable astronomical phenomena, being the last Venus Transit of our generation," said Assoc Prof Chan.



Sighting: The famous 'smoke ring', captured by the new celestial telescope during the launch of the Teaching Observatory. The 'smoke ring' is 2,300 light years from Earth and one of the most prominent examples of the gaseous remains of a red giant star that ended its life by expelling its materials into the surrounding interstellar medium.

Slated to take place before sunrise on 6 June 2012, the next Venus Transit will take place in December 2117. The previous one took place in 2004.

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March 2012

DEPARTMENT

Three universities, one platform

The Department of Chemistry hosts the Chulalongkorn University-National University of Singapore-University of Malaya Trilateral Meeting Symposium as part of the 7th Mathematics and Physical Sciences Graduate Congress.

NUS played host to delegates from the Chulalongkorn University and University of Malaya at the 7th Mathematics and Physical Sciences Graduate Congress held from 12 to 14 December 2011.

On the first day of the symposium, delegates took part in a full-day seminar, comprising three sessions of oral presentation and a poster presentation. The seminar and poster presentation were held in the Executive Classroom of the Department of Chemistry.

Six graduate students from the NUS Department of Chemistry also took part in the poster presentation, showcasing their work in areas such as physical, inorganic, organic and analytical chemistry.

Some of the students' posters piqued the interest of delegates, resulting in collaborative exploration and exchange.

Overall, the three universities contributed 10 oral presentations and 16 poster presentations.

The second day saw a meeting between the delegates of the three universities to discuss collaborative research and student exchange, after which, the delegates were also given a tour of the laboratory facilities within the NUS' Department of Chemistry, as well as its research institutes. This enabled them to acquire a deeper understanding of the activities within the department and NUS' research partners.

Professor Warinthorn Chavasiri, Head of Chemistry Department, CU, expressed his thanks to NUS' Department of Chemistry for organising the event. He said: "Everything is perfect! Faculty members were able to forge stronger ties with one another. My Chemistry department at the Chulalongkorn University will host next year's trilateral meeting." The university takes turn to host the event once every three years.

Indeed, the symposium came through as a platform dedicated to promoting advancement in Chemistry, including the development and sustenance of the academic and research relationships between the three universities.



Assoc Prof Lam Yulin (5th from left, standing) and Assoc Prof Chuah Gaik Khuan (4th from left, standing), with delegates from Chulalongkorn University (CU) and the University of Malaya (UM), after the CU-NUS-UM Trilateral Symposium Meeting.

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March 2012

DEPARTMENT Of progress and peer bonding

Researchers from tertiary institutions in China, Taiwan and Singapore get together to discuss recent progress in Environmental Sciences, Life Sciences, Physical Sciences, Nanotechnology, Mathematics and Statistics.



Close engagement: Researchers of Nanjing University, National Central University of Taiwan and National Taiwan University gather at the 12th Frontier Science Symposium held at NUS.

A robust exchange of knowledge across different fields saw the strengthening of ties between the universities participating in the 12th Frontier Science Symposium.

The National University of Singapore (NUS), Nanjing University, National Central University of Taiwan and

National Taiwan University collaborated to organise the 12th Frontier Science Symposium, held at NUS.

Hosted by the NUS Faculty of Science, the symposium gathered researchers from China, Taiwan and Singapore, as well as several NUS graduate students.

Research focus

The 12th Frontier Science Symposium was held from 14 to 16 November 2011. The three-day event provided a platform for researchers from Singapore and overseas to exchange ideas, explore collaborative research opportunities and foster ties. It rounded off with a tour of the Lion City for the participants.

Professor Andrew Wee, Dean, Faculty of Science, officiated the symposium and welcomed all participants during its opening ceremony. The deans from the participating universities shared an overview of their research focus and the student statistics of their faculty.

To get the symposium underway, the participants were divided into five sessions where they surfaced discussion in their respective fields of Environmental Sciences, Life Sciences, Physical Sciences, Nanotechnology, Mathematics and Statistics.

More than 80 researchers from all participating universities presented the latest findings and results. They also observed the recent progress and advances made in their fields and stimulated discussion among all participants.

The Frontier Science Symposium began in 1999 and was co-hosted by Nanjing University and National Taiwan University. NUS first participated in the symposium in 2004. NUS first hosted the symposium in 2005 and the second in 2008. These were the sixth and ninth instalments of the Frontier Science Symposium, respectively.

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Professor Andrew Wee, Dean, Faculty of Science, delivers his welcome address as host of the 12th Frontier Science Symposium.

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Venus Transit @ NUS 2012

Come and be part of an once-in-a-lifetime sighting of the Venus transit on 6 June 2012. Miss this and the next transit will be in 2117, 105 years away.

Transit of Venus: This rare image sighted on 8 June 2004 was captured through the Department of Physics' Nikon Coolpix 4500 camera, specially mounted on a 10" Showa (F11.8 Cassegrain) telescope.



Enjoyable get-together: Students, alumni, faculty and astronomy enthusiasts alike will get to enjoy the Transit of Venus on 6 June 2012, at the NUS Multi-purpose Field.

Students, alumni, astronomy enthusiasts, and the public are invited to view Transit of Venus, one of the rarest, predictable astronomical phenomena, and the last one of our generation. The next Transit of Venus will not be until December 2117, more than a century away.

To mark the special occasion, a sighting event will be held at NUS from 5 to 6 June 2012.

Visible from Singapore's sky

On 6 June 2012, the planet Venus will start transiting before sunrise, with the greatest transit expected at 9.33 am Singapore Standard (Local) Time.

The visibility of the Venus transit will be until 12.49 pm of the same day.

Schools, enthusiasts and the public can set up their telescopes on the NUS Multi-purpose Field from the late afternoon of 5 June to the morning of 6 June.

For those without telescopes, you can catch the Transit of Venus on a big screen in Lecture Theatre 27 via live streaming from the Physics Observatory of the Faculty of Science.

The Venus transit occurs approximately four times in 243 years, more precisely in pairs of events eight years apart. These pairs are separated by about 105 or 121 years.

Why the long intervals? This is because the orbits of Venus and Earth do not lie on the same plane. A transit can only occur if both planets and the Sun are situated exactly on one same line.

Two-day activities galore

To find out how you can be part of the last Transit of Venus of our lifetime, click [here](#). Those bringing their own telescopes and school groups will have to fill out a registration form that can be downloaded from the same website and mail it to us by Friday 30 March 2012.

Come and enjoy the rare sighting amid fringe activities and entertainment held throughout the two-day event.

Tuesday 5 June 2012

Time	Activity	Venue
4.00 pm	Registration of students and schools Astronomy Exhibition	Lecture Theatre 27 Foyer
7.30 pm	Registration of astronomy enthusiasts (with telescope)	Lecture Theatre 27 Foyer
8.30 pm to 9.30 pm	The Musical: <i>Venus Transit @ NUS 2012</i> (The first of its kind in Singapore and the region, the musical creates a sound dialogue in real time, combining cosmic rhythms captured via a radio-telescope with earthly, man-made live music performed by an orchestra of 203 brass instruments. The musical is the composition of renowned composer Dr Robert Casteels.)	Town Green @ U-Town
10.00 pm onwards	Star-gazing	NUS Multi-purpose Field

Wednesday 6 June 2012

Time	Activity	Venue
6.58 am	Transit of Venus begins	NUS Multi-purpose Field
9.00 am to 1.00 pm	Astronomy Exhibition	Lecture Theatre 27 Foyer
10.00 am	Public lecture on related astronomy topic	Lecture Theatre 27, Webcast to Lecture Theatre 28, Lecture Theatre 29

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March 2012

What's Up?

Check out the events held from March to August 2012!



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• 'Let's Hear it from the Industry Leaders' Seminar Series



• 4th International Singapore Lipid Symposium, Singapore



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• NUS Open House



• Faculty of Science Open House



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• Venus Transit @ NUS 2012



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• Science Camp 2012



>



• Faculty of Science Commencement Ceremonies

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