

## PRESS RELEASE

21 August 2009

### **SIXTEEN TECHNOLOGY COMMERCIALISATION PROJECTS RECEIVE S\$4 MILLION PROOF-OF-CONCEPT GRANT FROM NRF**

- *16 projects receive up to S\$250,000 each in this second POC grant call,*
- *2 projects came from the polytechnics*
- *Awarded projects are in the areas of engineering, info-comm technologies, and life sciences.*

1. The National Research Foundation (NRF), on the recommendation of an expert evaluation panel (see **Annex A**), announced today the award of the Proof-of-Concept (POC) grant to 16 projects from the institutes of higher learning (IHLs). S\$75 million has been set aside for this purpose under the NRF's Proof-of-Concept Scheme<sup>1</sup>. The 16 project teams will each receive up to S\$250,000 to develop their inventions into prototypes, bringing them closer to commercialisation.

2. The POC grant to researchers from the universities and polytechnics provides funding to enable them to carry out further development on their inventions or ideas that are technically feasible, with the aim of coming out with products or commercial applications. The resulting product or application could then be licensed to interested companies or be marketed by a new company. A successful proof of concept demonstrates not just technical viability but also a high degree of commercial readiness. It would give potential licensees of the technology confidence to take up licensing. It could also encourage the inventors to start-up a new company to commercialise the technology.

3. This second POC grant call received 91 proposals submitted by Singapore-based researchers from the local universities and polytechnics, including UniSIM. The proposals span a wide spectrum of science and technology areas. Twenty seven proposals were shortlisted by the POC panel for presentation, out of which 16 were recommended for award.

---

<sup>1</sup> S\$25 million of this S\$75 million is administered by SPRING Singapore through its Technology Enterprise Commercialisation Scheme, or TECS.

4. Of the 16 awarded projects, 9 were in engineering, 4 in info-comm technologies and 3 in the life sciences (see **Annex B**). Apart from NUS and NTU, awarded projects this round also came for the first time, from the Duke-NUS Graduate Medical School, the Singapore Management University (SMU), Singapore Polytechnic and Republic Polytechnic.

5. Dr Francis Yeoh, Chief Executive Officer of NRF, said: “The NRF has put in place a range of programmes and initiatives to advance research, innovation and enterprise in our institutes of higher learning. Besides POC, NRF has recently provided S\$22 million to the 3 universities to encourage academic entrepreneurship<sup>2</sup> and another S\$25 million to fund translational research & development in the 5 polytechnics. We expect that the POC scheme will encourage many more researchers to take the step of developing their ideas beyond invention into useful applications for the market.”

6. Dr Lerwen Liu, a member of NRF’s POC evaluation panel said: “It was very encouraging to see a number of very interesting proposals this round. The POC scheme provides a great incentive to encourage academics to pursue industry application of their research. As for the private sector, POC provides a valuable bridge and reduce risk for investors. I am particularly pleased to see some of the proposals prepared by young scientists.”

7. Ms Eunice Goh Shing Mei, PhD student of the School of Electrical & Electronics Engineering at NTU, the Principal Investigator of the awarded project on “Low Cost High Performance Anti Reflective Coating based on Si-nanocrystals Embedded in SiO<sub>2</sub> Film”, said: “I feel honoured to be awarded this opportunity to further develop my project and hopefully, this shall be a stepping stone for me to embark on the path to discovering technology commercialisation.”

8. The POC scheme is part of the National Framework for Innovation and Enterprise (NFIE)<sup>3</sup> announced by the Prime Minister at the 3<sup>rd</sup> Research, Innovation and Enterprise Council (RIEC) meeting in March 2008. Its objective is to facilitate the commercialisation of technologies developed in the IHLs (see **Annex C**). The NFIE is a comprehensive national programme to grow innovation and entrepreneurship in Singapore, especially through the formation of start-up companies to commercialise cutting-edge technologies developed out of R&D laboratories.

---

<sup>2</sup> Academic entrepreneurship is broadly defined as the involvement of academics, scientists and researchers in innovative activities with economic or societal impact.

<sup>3</sup> For more information on the National Framework for Innovation and Enterprise, refer to: [http://www.nrf.gov.sg/nrf/uploadedFiles/News\\_and\\_Events/RIEC%20Press%20Release%20%20\(FINAL\).pdf](http://www.nrf.gov.sg/nrf/uploadedFiles/News_and_Events/RIEC%20Press%20Release%20%20(FINAL).pdf)

9. The first POC grant call, which opened on 15 Sep 2008, received 138 submissions from the universities and polytechnics, from which nine proposals were eventually awarded the POC grant. The next POC grant call will open in Sep 2009. NRF aims to make two POC grant calls per year.

---

### **The National Research Foundation (NRF)**

The National Research Foundation (NRF), set up on 1 January 2006, is a department within the Prime Minister's Office.

The NRF sets the national direction for research and development (R&D) by developing policies, plans and strategies for research, innovation and enterprise, funds strategic initiatives, builds up R&D capabilities and capacities through nurturing our own and attracting foreign talent, and coordinates the research agenda of different agencies to transform Singapore into a knowledge-intensive, innovative and entrepreneurial economy. It provides secretariat support to the Research, Innovation and Enterprise Council (RIEC), chaired by the Prime Minister. A five-year budget of S\$5 billion has been allocated to the NRF in 2006 to achieve this mission.

The NRF aims to:

- Transform Singapore into a vibrant R&D hub that contributes towards a knowledge-intensive, innovative and entrepreneurial economy; and
- Make Singapore a talent magnet for scientific and innovation excellence.

For more information, please visit [www.nrf.gov.sg](http://www.nrf.gov.sg).

---

#### **For media queries, please contact:**

Ms Jaime Goh  
Manager, Corporate Communications  
National Research Foundation  
Tel: 6332 9141  
E-mail: [jaime\\_goh@nrf.gov.sg](mailto:jaime_goh@nrf.gov.sg)

## ANNEX A

### PROOF-OF-CONCEPT SCHEME EVALUATION PANEL

	<b>Name</b>	<b>Designation</b>
1	Dr Michael Khor	Director (Projects), NRF
2	Mr Douglas Abrams	Chief Executive Officer, Expara
3	Mr Damien Lim	General Partner, BioVeda Capital
4	Mr Eric Chan	General Manager, ST Electronics (Training & Simulation Systems)
5	Mr Chow Yen-Lu	Managing Director, WholeTree Technologies
6	Mr Tan Peng Yam	Deputy Chief Executive (Operations), Defence Science & Technology Agency (DSTA)
7	Mr Fong Saik Hay	Chief Technology Officer, ST Engineering
8	Mr Viktor Cheng	Deputy Director-General, Intellectual Property Office of Singapore (IPOS)
9	Dr Casey Chan	Chief Executive Officer & Co-Founder, WizPatent
10	Dr Lionel Lee	Director, Defence Medical & Environmental Research Institute (DMERI)
11	Dr Lerwen Liu	Business Development Manager, NanoStart Singapore; Founder, NanoGlobe Pte Ltd
12	Dr Ting Choon Ming	Chairman & Chief Executive Officer, HealthStats International Pte Ltd
13	Mr Rahul Harkawat	Consultant, Mobitila

**POC 2<sup>nd</sup> CALL: RESEARCH PROGRAMMES AWARDED FUNDING**

**1. A Human Monoclonal Biotherapeutic to Target the Dengue NS3 Protein**

In this project, the team aims to demonstrate a novel mechanism to deliver protein-based drugs into the nucleus of cells. Such drugs could prevent pathogens, such as the dengue virus, from replicating through the cell. A successful proof-of-concept will open the door for applications in a broad range of treatments for diseases.



**Dr Subhash Vasudevan**  
**Program in Emerging Infectious Diseases**  
**Duke-NUS Graduate Medical School**

Dr Subhash Vasudevan is an Associate Professor in the Program in Emerging Infectious Diseases at the Duke-NUS Graduate Medical School (GMS).

Prior to joining GMS, Dr Subhash was the Head of Dengue Research at the Novartis Institute for Tropical Diseases from 2003-2008. Dr Subhash has a PhD from the Australian National University and a BSc Hons from La Trobe University.

## **2. A Semantics-based and Service-oriented Framework for the Virtualization of Sensor Networks**

Wireless sensor network is a highly promising technology with a rapidly growing market and many important applications, such as industrial process monitoring and control, machine health monitoring and environment and habitat monitoring. At present, the sensor node platforms from different vendors cannot easily interoperate with each other due to compatibility issues between the equipment from different vendors. The objective of this project is to develop a sensor network virtualization framework that will enable the seamless interoperability and scalability of heterogeneous sensor node platforms. This framework is designed to support existing and future sensor node platforms.



**Dr Lim Hock Beng**  
**Programme Director, Intelligent System Centre**  
**Nanyang Technological University**

Dr Lim Hock Beng is Programme Director of the Intelligent System Centre, Nanyang Technological University. He received his BS in Computer Engineering, MS in Electrical Engineering, and PhD in Electrical and Computer Engineering from the University of Illinois at Urbana-Champaign, and his MS in Management Science and Engineering from Stanford University. His research interests include sensor networks and sensor grids, cyber-physical systems, cloud computing, parallel and distributed computing, wireless and mobile networks, computer architecture, embedded systems, performance evaluation, e-Science and high-performance computing.

### **3. Low Cost High Performance Anti Reflective Coating based on Si-nanocrystals Embedded in SiO<sub>2</sub> Film**

Existing anti-reflectance coating (ARC) such as Silicon Dioxide (SiO<sub>2</sub>) and Silicon Nitride (Si<sub>3</sub>N<sub>4</sub>) requires multiple coating. This results in a complex and more expensive production process. Through this project, the team will develop a low cost, high performance anti-reflectance coating that will overcome these disadvantages through a single-layer coating process. The application for this technology includes optical/optoelectronic devices and lenses such as reading glasses.



**Eunice Goh Shing Mei**  
**PhD student**  
**School of Electrical & Electronics Engineering**  
**Nanyang Technological University**

Eunice Goh Shing Mei received her B. Eng from the Malaysia Technological University in 2007. She is currently pursuing her PhD as a Research Student in Nanyang Technological University. Her PhD research work is on optical properties of semiconductor nanocrystals and its application on photonic devices.

#### **4. New Grid Array Antennas and their Integration Method for an Innovative Solution to 60-GHz Radio Devices**

The objective of this project is to demonstrate new grid array antennas designs and new ways to integrate them into radio devices. The technology will be applied to the design of 60-GHz radio devices; this will be important for future wireless device applications. The proposed project addresses challenging issues of packaging highly-integrated 60-GHz radios with integrated antennas in a low-cost manner. The antenna developed in this project will aid in the realization of applications like wireless transmission of high definition video streams from a Blu-ray player to a display device.



**Dr Zhang Yue Ping**  
**School of Electrical & Electronic Engineering**  
**Nanyang Technological University**

Dr Zhang Yue Ping is an Associate Professor and the Deputy Supervisor of IC Design Laboratories with the School of Electrical and Electronic Engineering, Nanyang Technological University (NTU). Trained as a radio scientist, Dr Zhang has contributed to Subsurface Radio Science, Antenna-in-Package Technology and Wireless Chip Area Networks.

Dr Zhang has published regular and invited papers in the IEEE Transactions and delivered scores of invited and keynote addresses at international scientific conferences. He also serves on the Editorial Boards of a number of international journals including IEEE Transactions on Microwave Theory and Techniques and IEEE Microwave and Wireless Components Letters. Since 2000, he has been awarded two IEEE Best Paper Prizes in the United Kingdom and one William Meng Fellowship in Hong Kong for his research work conducted at NTU.

## **5. Development and Demonstration of Silicon Carbide (SiC) Based Power Electric Converter for Motor-Generator Control in Hybrid Electric Vehicles**

Existing silicon-based power converters are limited in their capabilities to operate at high temperatures and high energy efficiency. Overcoming this limitation is particularly important in hybrid electric vehicle (HEV) applications. The aim of this project is to develop a type of power converter based on latest silicon-carbide technology in collaboration with industrial partners such as ST Kinetics for use in hybrid electric vehicles. The new converters will have higher operating temperature capability with less stringent cooling requirements, higher energy efficiency, and be more compact and lighter in weight, resulting in HEVs with better fuel economy.

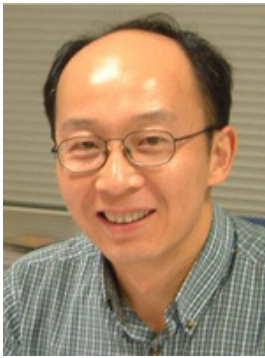


**Dr Tseng King Jet**  
**School of Electrical & Electronic Engineering**  
**Nanyang Technological University**

Dr Tseng King-Jet is an Associate Professor in the School of Electrical and Electronic Engineering, Nanyang Technological University. He is currently the Head of the Division of Power Engineering and the Director of Centre for Smart Energy Systems. He received his B.Eng. (First Class) and M.Eng. degrees from the National University of Singapore and his Ph.D. degree from Cambridge University, U.K. He is a Fellow of the Cambridge Commonwealth Society and the Cambridge Philosophical Society and a Chartered Engineer registered in UK. In 1996, Dr Tseng was awarded the Swan Premium by the Institution of Electrical Engineers (UK), for his work on gate turn-off thyristors for use in traction drives. He has held a number of major appointments in professional societies, including the Chair of IEEE Singapore Section in 2005 and was awarded the Region Ten Outstanding Volunteer Award. He was awarded the IEEE Third Millennium Medal for his contributions to engineering education and research.

## **6. High Efficiency Electrogenerated Chemiluminescence with Colloidal Quantum Dot Emitters in Ultrathin Cells for Display Applications**

Electrogenerated chemiluminescence (EGCL) is a kind of luminescence produced during electrochemical reactions in a solution. EGCL is bio-inspired and capable of self-regeneration in liquid form like bio-luminescence. The aim of this project is to develop a new EGCL technology with high efficiency and self-regeneration capability. EGCL has great potential in a wide range of applications, including consumable electronics such as smart phones and electronic wallets, interactive displays, flexible electronic devices, microdisplay products and indoor and outdoor decoration/lighting.



**Dr Sun Xiaowei**  
**School of Electrical & Electronic Engineering**  
**Nanyang Technological University**

Dr Sun Xiaowei is an Associate Professor with the Division of Microelectronics in the School of Electrical and Electronic Engineering, Nanyang Technological University. From 1986 to 1994, he studied at Tianjin University, China, where he received his B.Eng., M.Eng. and Ph.D. degrees all in photonics. From 1994 to 1998, he studied at the Hong Kong University of Science and Technology where he received his second Ph.D. degree in electrical and electronic engineering. His main research interest focuses on display/lighting technologies. Dr Sun is a Senior Member of IEEE and a Member of Society for Information Display (SID). He is the founding Chair of SID Singapore and Malaysia Chapter.

## **7. Photonic MEMS (Microelectromechanical Systems) Tunable Laser**

Currently, tuning the wavelength of laser beams require the use Gallium-Arsenide (GaAs) semiconductor technology, or the use of micro-mechanical devices. The latter is unreliable as it comprises many moving parts. This project will use a MEMS optical digital laser to achieve the wavelength tuning, doing away with the need for mechanical micro-actuators. The components are integrated into a single chip using the MEMS fabrication process, giving high cost savings, small size and high reliability and stability. The project will deliver the next generation of integrated MEMS tunable laser. It will potentially have wide-ranging applications in biomedical technology and telecommunications industry, for example, increasing the bandwidth for higher data rate transmission in internet communications.



**Associate Professor Liu Ai Qun**  
**School of Electrical & Electronic Engineering**  
**Division of Microelectronics**  
**Nanyang Technological University**

Professor Liu Ai-Qun received his PhD degree from National University of Singapore in 1994. He has been Associate Professor at the School of Electrical & Electronic Engineering, Nanyang Technological University since 2000. He is also an Associate Editor of IEEE Sensors Journal 2005-2008 and Guest Editor of Sensors & Actuators (A Physics) 2005 and 2006. He also published a book on "Photonic MEMS design, fabrication and control." He won the IES Prestigious Engineering Achievement Award in 2006 and the University Scholar Award in 2007.

## **8. Spin Wave Based Nondestructive Semiconductor Testing Tools**

Currently, random access memory (RAM) devices are tested using electrical testing tools or optical testing devices methods. Both face technical constraints. Electrical testing takes too long, while optical testing cannot be done on the completed device, after it has been packaged. Our project will develop testing technology based on magnetic waves, which will be much faster than the electrical method, and which is also usable at all stages of production (including after production has been completed). This addresses the limitations of existing technology. Moreover, this method is expected to give the best visibility of manufacturing conditions of the inside magnetic layers over the conventional testing methods.



**Dr Yang Hyunsoo**  
**Department of Electrical & Computer Engineering**  
**National University of Singapore**

Dr Yang is an Assistant Professor at the Department of Electrical and Computer Engineering at the National University of Singapore. He earned his M.S. and Ph.D. degrees in the electrical engineering department of Stanford University in 2003 and 2006, respectively. From 1988 he worked at a circuit and system design company, earning a patent award, until 2001, when he enrolled in Stanford's graduate school on a scholarship from the Korean Ministry of Information and Communications. He had been working on long-wavelength photonic devices at Stanford University. From 2004 to 2007 he had been at IBM-Stanford Spintronic Science and Applications Center. His recent research focuses on the metal spintronics, especially magnetic tunnel junctions for the magnetic random access memory application. He was awarded the fellowship in the conference on Magnetism and Magnetic Materials for 2005 and the American Physical Society (GMAG) outstanding dissertation award for 2006.

## **9. Single-coil Superconducting Miniundulator – The Next Step Towards High-Brilliance Synchrotron Radiation**

Electromagnetic wave is a premier tool for measuring and modifying the properties of materials. Most versatile of all is synchrotron radiation sources, which cover a wavelength range of 7 orders of magnitude, about 23 octaves, from X-rays (0.1 nm) over the ultraviolet and visible to the far infrared (1 mm). The powerful magnets inside the synchrotrons accelerate high-energy electron beams at high speeds to produce the radiation, and the size of these magnets is a crucial factor in determining the cost of the machine. At less than one third of the size of conventional undulators, our single-coil super-conducting miniundulator is about the ultimate in miniaturisation and field strength due to its superconducting wires. Besides improving performance, it can save facility cost of up to US\$100 million. The POC grant helps us to build and test a pre-prototype. We expect a market volume of US\$ 30 million per year and growing with the increasing number of facilities.

## **10. New Compact, Fast, Parallel-processing Fourier-transform Interferometer (FPP FTIR) Enabling Short-pulse Spectroscopy**

Infrared radiation enables the detection and identification of molecules in chemical, environmental, life sciences, medical, and pharmaceutical applications. The most powerful instruments for molecular detection are called Fourier transform interferometers. However, they are not so good at measuring single bursts or fast changes of infrared radiation. That is exactly where our instrument comes in. We use micromanufactured devices to capture the whole information at the same time. So, we can analyse what happens as a function of time. The POC grant helps us to build and test a pre-prototype of the complete instrument.



**Prof Herbert O. Moser**  
**Director of the Singapore Synchrotron Light Source**  
**National University of Singapore**

Prof Moser is the Director of the Singapore Synchrotron Light Source (SSLS) at NUS since 2000 and holds a joint appointment with Physics Department of NUS. SSLS is an international user facility for research and industrial applications. Its business partners range from big multinational companies to MSEs and prestigious research institutions.

In his former appointment with Forschungszentrum Karlsruhe in Germany, Prof Moser led the construction of the 2.5 GeV ANKA synchrotron light source and

pioneered the development of photonic microdevices and of the superconducting miniundulator. His research interests belong to the field of generation and application of synchrotron radiation in which he has 26 years of experience and include electromagnetic metamaterials, micro/nano optics and photonics, infrared spectro/microscopy, X-ray micro/nano imaging, accelerators and synchrotron radiation facilities. He has about 280 papers and 16 patents.

## **11. Development of a New and Precise Alignment System for Micromanipulation**

Micromanipulation processes often require precision in the alignment of parts relative to the tools, before the processes can proceed. When these processes are to be used for mass production, the cycle time for each manipulation becomes a critical issue and thus the relative alignment must be done not only accurately but also in a time-efficient manner. To facilitate these alignments, often mechanical or optical aligners are needed which are typically expensive, sensitive to vibrations and difficult to be controlled in the closed-loop. When multiple dimensions of alignment are needed, these ways of alignments will need to satisfy one at a time, leading to an unsatisfactory alignment time. This project aims to produce a prototype of an alignment system using an alternate and novel way. If successful, the new alignment system could enable new mass production techniques for new generations of electronic and nanoscale devices.

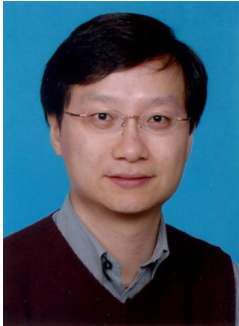


**Prof Tan Kok Kiong**  
**Department of Electrical and Computer Engineering**  
**National University of Singapore**

Prof Tan Kok Kiong is an Associate Professor with the Department of Electrical and Computer Engineering, National University of Singapore. Prior to joining the university in 1996, he was a research fellow at SIMTech. His current research interests are in precision motion control and instrumentation, advanced process control and autotuning, and general industrial automation.

## **12. A New Endoluminal Device for Duodenal Exclusion in Treatment of Type 2 Diabetes Mellitus and Obesity**

This is a collaborative research project between NUS Faculty Staff from the Yong Loo Lin School of Medicine and Faculty of Engineering as well as NUHS Clinicians to develop an endoscopic sleeve for creating a duodenal-jejunal (i.e. small intestine) bypass targeting the treatment of Type 2 diabetes and obesity. Type 2 diabetes has reached a worldwide epidemic fuelled by the increasing trend of obesity. Traditionally, this is a relentless progressive disease with no cure. However, gastric bypass surgery has been proven to be very effective for treating severe obesity and it also helps to cure diabetes in over 80% of patients. Our sleeve covers parts of the small intestine (the duodenum and proximal jejunum), acting as a barrier for the food, effectively creates a foregut bypass without surgery. This device has the potential to become a novel treatment for diabetes and obesity.



**Dr Jimmy So**  
**Associate Professor of Surgery**  
**NUS Yong Loo Lin School of Medicine and**  
**Senior Consultant, University Surgical Cluster,**  
**National University Hospital**

Dr Jimmy So is Associate Professor of Surgery at the NUS Yong Loo Lin School of Medicine and Senior Consultant, University Surgical Cluster, National University Hospital, National University Health System. His special interests are Upper Gastrointestinal Surgery, bariatric surgery and minimally invasive surgery. He received further training in Upper GI surgery in Japan and Hong Kong. He was appointed as visiting consultant in Esophageal and Gastric Surgery at the Royal Infirmary in Edinburgh. He established a multidisciplinary program for Esophageal and Gastric cancers. He also set up a bariatric and obesity surgery program at NUH. He was the Chairman, Organising Committee, 1<sup>st</sup> Asia-Pacific Gastric Cancer Congress in 2006.

His research interest include biomarkers discovery for gastric cancer, gastric carcinogenesis, and novel treatments for obesity and diabetes.

### **13. Anti-inflammatory peptide loaded micro emulsion gel formulation as potential therapeutic for post-operative adhesion**

This research project uses two proprietary components (a drug and a drug delivery system) to jointly develop the new micro-emulsion gel loaded with anti-inflammatory peptide. The gel will prevent the formation of fibrous bands, called adhesions, that tend to form between tissues and organs during and after surgical operations, causing complications. The combined formulation ensures a novel drug release action at the site of operation and hence useful as a novel anti-adhesion agent. The effectiveness of this new formulation will be assessed in this project through a relevant animal model. The results of the project will provide important data for subsequent clinical trials of the product, and is an important step in the commercialization process.



**Prof Gopalakrishnakone**  
**Department of Anatomy**  
**NUS Yong Loo Lin School of Medicine**

Prof Gopalakrishnakone is a professor at the Department of Anatomy, NUS Yong Loo Lin School of Medicine, holding an M.B.,B.S degree and a PhD and D.Sc from the University of London and NUS, respectively. Over the years, he has garnered a number of teaching and research awards - Outstanding University Researcher Award in 1998 and National Science and Technology Board Ministerial Citation winner in 2000. He also received the Faculty Outstanding Researcher Award in 2003 as well as the Teaching Excellence Award in academic year 2003/2004. His first patent “novel therapeutic and prophylactic agents” was awarded in 2003. A number of other patents have recently been applied for and some have been granted lately. An analgesic peptide was licensed to a company for further development for clinical use. He founded the Asia-Pacific arm of the IST in 1985, and organized the first Asia-Pacific Congress on Toxin as well as the World Congress of IST in Singapore. He is presently serving as the President of the prestigious International Society on Toxinology (IST) for a three-year term, and is also a member of the editorial board of *Toxicon*, the official journal of IST published by Elsevier, the world’s largest publisher of medical and scientific literature. He has more than 100 international publications on his venom and toxin research and drug discovery.

#### **14. Processing Full Range of Waste Grease into Renewable Energy**

This project aims to develop a robust and cost effective process that can convert mixed input waste oils (trap grease, animal oils, edible oil side-stream refining products), with high Free Fatty Acid (FFA) levels, to produce biodiesel. An on-line Near Infra Red (NIR) spectroscopic analysis method will be developed to monitor the conversion to biodiesel to ensure product quality. The significant improvement is the creation of an integrated process to manage waste oils which cannot be converted to methyl ester biodiesel using conventional technologies. This will help to produce high quality, low cost biodiesel while overcoming the 'food vs fuel' dilemma.



**Song Sin Nee**  
**Senior Academic Staff**  
**Republic Polytechnic**

Song Sin Nee is a senior academic member of staff in the School of Applied Science (SAS) at Republic Polytechnic (RP). She graduated from Nanyang Technological University with a Master of Science degree in Biomedical Engineering. Prior to joining RP, Sin Nee worked as a research and development engineer in multinational corporations in the areas of IC assembly and packaging design. Her major area of interest in research in RP is converting waste to renewable energy. She is currently working on biodiesel production using various feedstocks with a team in RP.

## **15. Hedge Funds and Structured Products Advisors (HedgeSPA.com)**

HedgeSPA.com aims to deploy award-winning, industry-proven and crisis-tested analytics to monitor hedge fund and structured products investments, with an emphasis on extreme risk scenarios, such as market and liquidity crises.

Its web-based platform will also allow analysts from both institutional investors and family offices to research, share as well as contribute qualitative information about hedge funds and structured products, and to analyze how these alternative investments may impact the risk and return profiles of their overall portfolios. In its subsequent phase, the platform will evolve into a risk rating agency that will pioneer the objective rating of alternative investments and improve their transparency to enable investors to make informed decisions.



**Dr Bernard Lee, PhD, CFA**  
**Visiting Practice Associate Professor**  
**Deputy Director, Sim Kee Boon Institute for Financial**  
**Economics**  
**Singapore Management University**

Dr Bernard Lee is Visiting Practice Associate Professor and the Deputy Director of the Sim Kee Boon Institute for Financial Economics at the Singapore Management University (SMU). He teaches MBA courses on alternative investments at both SMU and Stanford Business School. Prior to relocating to Singapore at the beginning of 2009, Dr Lee was a Managing Director at BlackRock in New York City.

Dr Lee is a contributing author to *Intelligent Hedge Fund Investing*, an industry reference from Risk Books (2004), and to *Sovereign Wealth Management*, published by Central Banking Publications (2007). In 2005, he won the "Intel Best Risk Analytics Initiative of the Year" Award from Incisive Media, the publisher of Risk Magazine. He earned a B.A. degree with a double major in the Woodrow Wilson School of Public and International Affairs and the School of Engineering at Princeton University, an M.S. degree in computational mathematics from Stanford University, and a Ph.D. from the Centre of Quantitative Finance at Imperial College London.

## **16. Development of a Hand-held Solid Dispenser Using a Motor-Driven Auger**

Solid materials' weighing and dispensing have always been very cumbersome in scientific experiments. Typically, a researcher needs to prepare materials of a similar mass into multiple containers where lots of time and effort are required to perform such chores. In some cases whereby the solid chemical is hazardous, this task can pose a significant safety concern. Presently, solid dispensing technology can only be found as integrated modules in large and costly automated instruments, render it unsuitable for generic lab use. Using an innovative solid dispensing technology (motor-driven auger), this project will design and develop a hand-held prototype. This portable device will benefit worldwide researchers from labs in drug discovery and development, pharmaceutical, nanotechnology, biotechnology, materials and polymers, traditional Chinese medicine (TCM), food industry, hospitals, research institutes, etc. The product will also be introduced to the relevant academic sectors where there are plans to conduct trials and training for relevant educators and lab officers to improve their scientific experiments.



**Dr Ken Lee**  
**Senior Research Scientist**  
**Centre for Biomedical and Life Sciences**  
**Singapore Polytechnic**

Dr Ken Lee obtained his B.Sc. (Hons) and Ph.D. degrees in Chemistry from National University of Singapore. Before his current appointment as a Senior Research Scientist in Singapore Polytechnic's Centre for Biomedical and Life Sciences, he has worked for a local R&D company as a medicinal chemist. The development of anti-cancer agents is his brainchild and his research activities are focused on "High-Throughput Organic Synthesis" – the development and implementation of efficient, robust and intelligent parallel synthesis technologies for the purpose of discovering "drug-like" chemical compounds.

## ANNEX C

### PROOF-OF-CONCEPT GRANT SCHEME

There are two parts to the POC scheme, both funded by the National Research Foundation. The NRF and SPRING Singapore administer the POC scheme, each addressing a different target group. The NRF administers the POC grant for IHL-linked researchers. SPRING Singapore administers the POC grant for Singapore based SMEs and individuals in the public sector research institutes under its TECS (Technology Enterprise Commercialisation Scheme).

	<b>NRF POC</b>	<b>TECS POC</b>
<b>Funding quantum</b>	Up to S\$250,000 per project	
<b>Eligibility for application</b>	<ul style="list-style-type: none"> <li>• Researchers linked to IHLs</li> </ul>	<ul style="list-style-type: none"> <li>• SMEs incorporated and operating in Singapore</li> <li>• Researchers in public sector research institutions</li> </ul>
<b>Frequency of calls</b>	Half-yearly	
<b>Technology areas</b>	All areas of science and technology	The following specific areas: <ul style="list-style-type: none"> <li>• Electronics, Photonics &amp; Device Technologies</li> <li>• Chemicals, Advanced Materials &amp; Micro/Nanotechnology</li> <li>• Information and Communications Technology (excluding Interactive Digital Media)</li> <li>• Biomedical Sciences (Excluding Biotechnology)</li> </ul>
<b>Evaluation process</b>	<ul style="list-style-type: none"> <li>• Researchers submit proposals through the technology licensing offices of their IHLs, which will evaluate the technical feasibility and novelty of projects and forward a shortlist to the NRF</li> <li>• An NRF Evaluation Panel will evaluate shortlisted projects and recommend awards based on commercial viability considerations</li> </ul>	<ul style="list-style-type: none"> <li>• Submitted proposals are evaluated by the respective technical panels for technical merit and feasibility</li> <li>• Proposals shortlisted by the technical panels will be evaluated for commercial merit and recommended for funding by a POC Grant Panel</li> </ul>