Gambang, March 25 - FIST in collaboration with the Science Technology Expert Society (ScITEKS) held a Creative & Innovative Annual Challenge. Eleven groups comprising 57 Industrial Chemistry and Industrial Biotechnology students participated. Science-based projects with practical applications were conceptualized under the guidance of lecturers at FIST. On hand to launch the Challenge was the Dean. The group, "Aqua Touch", won first place, followed by "Hot Ice" and "B.U.S.T.E.R."

1st Place (Aqua Touch)
Mohd Asyraf Deraman
Mohd Alias Ahmad
Cornelia Chin Siew Ling
Ng Yin Boon
Leong Siew Yin

2nd Place (Hot Ice)
Ong Foo Kheng
Tan Wee Yeong
Low Miao Ying
Goh Tok Mun
Lai Jin Fwe

3rd Place (B.U.S.T.E.R.)
Chat Kar Hoe
Calvin Lee Weng Leong
Ong Jee Jian
Gan Siew Mei
Tan Mei Yin

INDUSTRIAL LINK WITH KANEKA
Gebeng, Jan 14 - FIST's Industrial Chemistry and Material Technology groups met with KANEKA (M) Sdn. Bhd. to initiate academic and research collaborations. Assoc. Prof. Dr. Benjamin Lukas presented a proposal for recycling calcium phosphate from industrial waste. Saiful Kamaluddin Muzakir invited KANEKA to play a role in assisting the development of the Material & Food Technology Programs at FIST. KANEKA requested for technical support from UMP to conduct analytical services on their chemical samples. In concluding the meeting, KANEKA offered to receive UMP students for industrial training in the near future. Facilitating the meeting was Iskandar Abdul Aziz of UMP's University-Industry Centre.

FIST - RT BIOFARM SDN. BHD. COLLABORATION
Pekan, Jan 25 - An on-site visit was held at RT Biofarm Sdn. Bhd. to initiate research collaboration with FIST's Industrial Biotechnology Program. RT Biofarm Sdn. Bhd. is a company that currently supplies chicken to AYAMAS Sdn. Bhd. The main research areas will be focusing on increasing the productivity and maintainance of the chickens. Possible areas of collaboration would be on improving the quality of the feed and water supply, ability to resist or tolerate infectious disease, aeration and coop's general environment.

"Patin" (Pangasius hypophthalmus; Family: Pangasidae) is a highly commercial, edible, fresh water fish, constituting several varieties, namely, "patin kolam", "patin sungai", "patin buah", "patin mugung" and "patin jual". The "patin" inhabits rivers and mining pools in Pahang especially in Temerloh and Bera districts. Feasting on small fishes or fries, river vegetation, shrimps or animal carcass, it can reach up to 1 meter in length and weigh up to 20kg.
REUSING, REDUCING, AND RECYCLING WASTE - How Citizens Can Play A Major Role

Sewage and garbage coming from homes have major impacts on the environment. This is why monitoring and classifying the content of the wastes and adopting systems for grey water recycling becomes really important. The 20 million tonnes of municipal solid waste being produced in any city is buried in more or less controlled landfills or incinerated with consequent risks to the environment.

Landfills emanate carbon dioxide and methane gases that contribute to greenhouse gases and toxic substances leak into the soil and groundwater. Incinerators emit into the atmosphere heavy metals and dioxins, which are carcinogens (cancer causing). To reduce waste production, increase the volume to be recycled and composted organic matter (natural fertilizer). The three objectives can only be achieved with the collaboration of individuals and the involvement of higher authorities. A list of hazardous household materials which if properly recycled can be useful. Concerning water, the main problem is that drinking water is used for all household uses: shower, toilet, washing machine, etc. This means it is a mess and we waste too much water.

What can we do about this?

There are many steps that individuals can take at home:

I. **Using durable and necessary objects.** Consumerism and the 'use and throw' translates into an excessive amount of garbage. Only to realize that many things going to waste in fact could not have come at home. Furthermore, the assets needed to be designed to last and should be repaired whenever possible instead of pulling and buy.

II. **Reducing the use of packaged goods.** Wrappers and packaging account for a large part of solid waste and non-organic materials are often difficult recyclables for example, plastics. The alternative is to buy fresh produce and bulk, wrapped in paper and waxed paper, instead of plastic. The packs are suitable for wood, cardboard, and glass, if possible refillable or reusable. When going for shopping, we have to always use the same bag and reject those offered commercially. In several other countries, e.g. India, there is a strict ban on use of plastic bags.

III. **Sort the trash.** In the kitchen, you should have not only one but five containers for garbage, one for plastic and metal, another for paper and cardboard, another for glass, another for organic matter and another one for used batteries. In the long term, recycling waste and reducing environmental degradation produces large savings in raw materials and energy (to produce a glass bottle recycling requires only four percent of the energy needed to create a new one).

IV. **Make compost.** Collect organic waste mixed with soil in a container.

V. **Recycle.** Many objects can be restored or can serve other people such as furniture, clothes, books, computers, and other appliances. These can be delivered to non-governmental organizations that will give them new usefulness.

VI. **Using biodegradable materials.** Natural materials have no problem compared to plastic or metal alloys. You can keep in mind that there should be garbage bags made with biodegradable and compost materials.

VII. **Grey water reuse.** The water in the shower and the washing machine can be used to fill the tank of the toilet with a simple system. This means less pollution and save water. There should be systems to tap rainwater.

VIII. **Treating wastewater.** It is an option for homes that have a field: The grey water can be directed towards biological filters and scrubbers, sand, and then can be used for irrigation or for the pool to fill toilets.

IX. **Do not buy toxic products.** Many of the products that are normally used in the home contain toxic ingredients that pollute the air and that sooner or later end up in the water which cause serious damage to nature. Enamels, detergents, paints, cosmetics, and varnishes consist of these harmful chemicals. Aerosols are especially dangerous when they reach the landfill or are incinerated. The alternative is to use natural and organic products.

At present Malaysians on average generate **19,000 tonnes of waste per day** and the figure is set to rise to **30,000 tonnes daily** by 2020, in tandem with population growth.


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**Community Matters**

...The three biggest challenges we face with regard to environmental sustainability are environmental awareness, renewable energy and cost effective green technology.

We are one of the earliest nations in the world to have adopted a serious concern towards our environment by enacting the Environment Quality Act way back in 1974. Likewise the very concept of sustainability was an integral part of our Third Malaysia Plan, even before the idea of Sustainable Development was popularized in the late eighties by the Brundtland Report.

Only six days after taking office, I announced the formation of the Ministry of Energy, Green Technology and Water. The government continues to take cognizance of the growing need and urgency of green technology towards sustainable development.

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**PASSENGES**

Latest additions to the FIST family

- Nural Nadiah Hamdan, Industrial Chemistry (05465) 4 January 2010
- Muhammad Hossin Suleimen, Assistant Science Officer (E27) 4 January 2010
- Lee Chin Mel, Industrial Biotechnology (05465) 30 March 2010
- Assoc. Prof. Dr. Amin Basher Ahmed, Material Technology (05533) 16 February 2010
- Prof. Dr. Jose Rajan, Visiting Professor, Material Technology (VKT) 4 March 2010

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Dr. Norifiah Mohamed Noor has been appointed Director of the International Office effective 15 March 2010.
Ungku Omar Ungku Ahmad (1931-1969), was an influential Malaysian physician and clinical chemist. Born on 18 January in Johor Bahru, he attended Malay schools in Klunag, Segamat, Pontian and Tangkak in Johor between 1938-1944, and the Johor Religious School until he passed standard 6. Completing his secondary education at the Malay College in Kuala Kangsar, he entered directly into second year at the King Edward VII College (University of Malaya, Singapore) graduating with an MBBS in 1957. Dr. Ungku Omar began his career as a houseman in Johor Bahru in 1957 and then became a medical and research officer at the Institute for Medical Research (IMR) Kuala Lumpur until 1961.

He continued specialist training at the Royal College of Physicians, London and Royal College of Surgeons, England and passed as a pathologist in 1962. Becoming a Registrar in the Department of Pathology, Royal Free Hospital, School of Medicine, London in 1962 he was later promoted to Senior Registrar in the same department. He was accepted as a member of the College of Pathologists, London in 1964. Dr. Ungku Omar commenced writing of his Ph.D thesis in Clinical Chemistry entitled "Electrolytes in isolated human leucocytes" in 1965 and was accepted as a member of the Institute of Biology, London in the same year. He became an honorary member of the American College of American Pathologists, USA in 1967. Upon completion of his Ph.D, he was appointed the Director of IMR. He published more than 40 scientific papers in his research area during his lifetime.

Dr. Ungku Omar held many posts, among them, Director of IMR, Director of Anti-Malaria Campaign under Ministry of Health Malaysia, Director of Medical Laboratories and Health Malaysia, Director of the National Blood and Transfusion Services, Chairman of the Islamic College Council, Member of the Board of Directors of Yayasan Tunku Abdul Rahman, Board of Directors of Dewan Bahasa dan Pustaka (DBP), Executive Program Chairman of the Anti-Malaria Committee, Chairman of the Anti-Malaria Taskforce Committee, Chairman of Standards Institute of Malaysia (forerunner to SIRIM), Biological and Medicinal Industry Standards, Council Chairman of the Medical Terminology Committee recognized by DBP, Member of the Specialists Committee (Ministry of Health Malaysia), Member of the National Leprosy Committee, Board Member of Hospital Assistants, Chairman of Whitley Council Institutes of Research, Lecturer of the National Civic Centre (Ministry of Information), Chief of the Malaysian Delegates to ASA Technical Cooperation and Research Committee Meeting (Philippines, Thailand and Malaysia), Board Member of the Southeast Asian Medical and Educational Cooperation (SEAMEC) for Tropical Medicine, Member of the UNESCO Social Sciences Committee, Member of the Higher Education Council, Member of the National Administrative Development Committee (Prime Minister's Department), Board of Directors Institute of Standards Malaysia (Ministry of Trade and Industry), Member of the UKM Founding Committee, and Secretary General of the Association of Senior Government Officers.

Dr. Ungku Omar was accorded the medal Darjah Setia Mahkota (DSM) by the Yang di-Pertuan Agong in Jun 1967 and the Darjah Kerabat Yang Amat Dihormati (DK) by the Sultan of Johor in October 1967. He was bestowed the title of Professor by Universitas Indonesia. He died on 15 February 1969 at age 38 years. He is best remembered for envisioning a future where poor, rural youths may also participate in scientific and technological advancements.

(Condensed from http://www.medic.usm.my/)

"Every great advance in science has issued from a new audacity of the imagination."

John Dewey

FEATURE: BIOINFORMATICS

Bioinformatics is a field of science in which biology, computer science, and information technology merge to form a single discipline. The term bioinformatics was coined by Paulien Hogeweg in 1979 for the study of informational processes in biotic systems. Its primary use since at least the late 1980s has been in genomics and genetics, particularly in those areas of genomics involving large-scale DNA sequencing.

The ultimate goal of the field is to enable the discovery of new biological insights as well as to create a global perspective from which unifying principles in biology can be discerned. At the beginning of the "genomic revolution", a bioinformatics concern was the creation and maintenance of a database to store biological information, such as nucleotide and amino acid sequences.

Development of this type of database involved not only design issues but the development of complex interfaces whereby researchers could both access existing data as well as submit new or revised data. Ultimately, however, all of this information must be combined to form a comprehensive picture of normal cellular activities so that researchers may study how these activities are altered, for example, in different disease states.

The rationale for applying computational approaches to facilitate the understanding of various biological processes includes:

+ a more global perspective in experimental design;
+ the ability to capitalize on the emerging technology of database-mining - the process by which testable hypotheses are generated regarding the function or structure of a gene or protein of interest by identifying similar sequences in better characterized organisms.

(Condensed from NCBI, A Science Primer)
FACULTY PROFILE: PROFESSOR LIEW KONG YONG, Physical Chemist

Liew Kong Yong was born and raised in a small town in Perak in 1946. He received his early education in a Chinese medium school, went on to the big city of Ipoh to finish high school and then to Universiti Malaya to obtain his B.Sc. in mathematics and chemistry. After being a teacher for a year immediately after that, he then embarked on a research career beginning in Queen’s University of Belfast in Northern Ireland, obtaining a Ph.D. in physical chemistry in 1973. He then joined Universiti Sains Malaysia as a lecturer, became a senior lecturer, associate professor and professor until the ripe old retirement age. After that, he worked as a consultant to an electrolyte and liquid crystal display manufacturer in Penang for two years helping to develop their research and development laboratory. When offered a position as a professor on special appointment by South Central University for Nationalities in China in 2004, he decided that as a university professor is more his cup of tea and left Malaysia. He then returned to Malaysia as a professor in Universiti Malaysia Pahang two years ago as he thinks Malaysia being his home is forever greener.

Professor Liew loves and enjoys his work as a university professor and derives great pleasure in research and teaching, learning and exploring new frontiers. Moreover, being a Malaysian professor also has advantages such as visiting different places attending conferences, meeting and doing exciting research in engaging in meaningful discussions with fellow scientists of all kinds, working with the laboratories as well as in the company of young developing scientists and students, guiding and advising them on their future career. He worked as a research scholar, a teacher and visiting professor in a number of universities and research institutions around the world including USA, Canada, Australia, UK and China.

Professor Liew works as a physical chemist, beginning on the redox properties of oxide catalysts, went on to work on the physical properties of liquids, surface properties of solids, and the applications of surfaces in oils and fats as well as on wastewater treatments. He has diverse research interest and more recently is working on the synthesis of nanomaterials, nano-composites and their applications as catalysts for fuel production. Professor Liew published extensively in scientific journals, wrote a number of undergraduate texts as well as school textbooks. He has supervised and graduated a large number of M.Sc. and Ph.D. students.

GRADUATE STUDENT PROFILE: AINI NORHIDAYAH MOHAMED, MSc (Industrial Chemistry) Candidate

Aini Norhidayah Mohamed was born in Triang (Pahang) on October 6, 1985, the last child of six siblings. Aini completed secondary education at Sekolah Menengah Sains Sultan Haji Ahmad Shah (Pekan) and pre-university at Kolej Matrikulasi Pulau Pinang before going off to Universiti Kebangsaan Malaysia to study Plant Biotechnology. Upon completion of a Bachelor of Science degree, she enrolled at Universiti Malaysia Pahang in the M.Sc. in Industrial Chemistry program on a UMP fellowship. Supervised by Assoc. Prof. Azhari Hamid Nour and Prof. Masithah Mohd. Yusoff, she is investigating fatty acid composition in thermooxidised vegetable cooking oil.

“Believe in what you believe, work hard to achieve, focus and you shall receive.”

Aini considers Nik Aziz Nik Mat, her industrial training supervisor at the Malaysian Cocoa Board to be a mentor and an inspiration. “He is like a father figure to me. He’s the one who convinced me that I should be in research and patiently explained what it will take to be successful in this area instead of another field,” she said during our interview.

Her B.Sc. supervisor at UKM, Dr. Che Radziah, also influenced her decision to choose a career in research. “I used to prefer biology instead of chemistry, used to think that chemistry is just about chemical equation and putting something together in test tubes, but a project with Dr. Che Radziah on volatile compounds in *Pollenthes tuberosae* during my final year project has changed my perception about chemistry.” she added.

Eureka!

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