

6th Frontier Science Symposium
07 - 11 November 2005

Nanjing University
National Central University
National Taiwan University
National University of Singapore

Programme Sheet

Organised by
Faculty of Science, National University of Singapore

Advisory Board

1. Tan Eng Chye, Dean, Faculty of Science, National University of Singapore
2. Gong Changde, Dean, Faculty of Science, Nanjing University
3. Lo Ching-Hua, Dean, College of Science, National Taiwan University
4. Lii Kwang-Hwa, Dean, College of Science, National Central University

Organising Committee

1. Xu Guo Qin (Dean's Office): 6516 4234
2. Perry Hee (Dean's Office and Geosciences representative): 6516 1468
3. Lim Suk Hong (Dean's Office): 6516 2601
4. Yvonne Seah (Dean's Office): 6516 1308
5. Yuen Chui Ee (Dean's Office): 6516 7993
6. Hong Yunhan (Biological Sciences): 6516 2915
7. Toh Chee-Seng (Chemistry): 6516 3887
8. Shen Zuwei (Mathematics): 6516 6913
9. Chen Zehua (Statistics): 6516 6307
10. Ji Wei (Physics): 6516 6373

Monday, 7 November 2005

- 10.00am - Opening Ceremony
Venue: LT31
Speech by:
- Tan Eng Chye,
Dean, Faculty of Science, National University of Singapore
 - Gong Changde,
Dean, Faculty of Science, Nanjing University
 - Lo Ching-Hua,
Dean, College of Science, National Taiwan University
 - Lii Kwang-Hwa,
Dean, College of Science, National Central University
- 11.00am - Photo-taking session
Venue: Outside LT31
- 11.30pm - Lunch
Venue: Fratello's Fusion Ristorante (The Staff Club)
- 2.00pm - Departmental Sessions
Venue: please refer to departmental programme
- 7.00pm Dinner (Arranged by departments)

Tuesday, 8 November 2005

- 9.00am - Departmental Sessions
Venue: please refer to departmental programme
- 12.00pm - Lunch (Arranged by departments)
- 2.00pm - Departmental Sessions
Venue: please refer to departmental programme
- 7.00pm - Dinner (Arranged by departments)

Wednesday, 9 November 2005

- 9.00am - Departmental Sessions
Venue: please refer to departmental programme
- 12.00pm - Lunch (Arranged by departments)
- 2.00pm - Departmental Sessions
Venue: please refer to departmental programme
- 3.30pm Coffee & Tea Break

- 4.00pm - Closing Ceremony
Venue: LT31
Speech by:
- Tan Eng Chye,
Dean, Faculty of Science, National University of Singapore
 - Gong Changde,
Dean, Faculty of Science, Nanjing University
 - Lo Ching-Hua,
Dean, College of Science, National Taiwan University
 - Lii Kwang-Hwa,
Dean, College of Science, National Central University
- 7.00pm - Banquet
Venue: Brilliant Garden Restaurant Pte Ltd (The Chevrons)

2-Day Tour is arranged on 10 & 11 November 2005

Biological Sciences Programme

Biological Sciences Programme

Monday, 7 November 2005

Session 1: Neuroscience & Molecular Biology

Venue: DBS Conference Room, S3, Level 5

Chairperson: - Sheu Fwu Shan, National University of Singapore
- Yen Chen-Yung, National Taiwan University

- 2.00pm - 2.30pm Welcome Address:
- Hew Choy Leong (Head, Biological Sciences, NUS)
- 2.30pm - 3.00pm Yen Chen-Tung, National Taiwan University

Topic: Comparison of anterior cingulate cortex and primary somatosensory cortex in pain functions
- 3.00pm - 3.30pm Sheu Fwu Shan, National University of Singapore

Topic: Neurogranin: A critical molecule at the nexus of three major signalling pathways in the molecular basis of learning and memory
- 3.30pm - 4.00pm Wang Chien-Chia, National Central University

Topic: Mechanism of translation initiation in yeast
- 4.00pm - 4.30pm Coffee & Tea Break

Monday, 7 November 2005

Session 2: Molecular & Developmental Biology

Venue: DBS Conference Room, S3, Level 5

Chairperson: - Liou Yih Cherng, National University of Singapore
- Wang Chien-Chia, National Central University

- 4.30pm - 5.00pm Hong Yunhan, National University of Singapore

Topic: Medaka embryonic stem cells and male germ stem cells
- 5.00pm - 5.30pm Liou Yih Cherng, National University of Singapore

Topic: Pinning down the post-phosphorylation regulation: A novel mechanism in signal transduction

5.30pm - 6.00pm Shen Pingping, Nanjing University
Topic: Effects of Triptolide on oxidative stress, NF- κ B activation and multiple cytokines gene expression in macrophage

6.00pm - 6.30pm Yu Hao, National University of Singapore
Topic: Mechanisms for specifying floral meristem identity

7.00pm Dinner

Tuesday, 8 November 2005
Session 3: Microbiology and Pharmacy
Venue: DBS Conference Room, S3, Level 5

Chairperson: - Chou Hong-Nong, National Taiwan University
 - Hu Yiqiao, Nanjing University

9.00am - 9.30am Chou Hong-Nong, National Taiwan University
Topic: Evaluation of Molecular Biomarkers in Differentiating the Toxic Population of Microcystis in Environmental Samples

9.30am - 10.00am Pan Tzu-Ming, National Taiwan University
Topic: Application of red mold rice as functional food

10.00am - 10.30am Hu Yiqiao, Nanjing University
Topic: Floating matrix dosage form for phenoprolamine hydrochloride based on gas forming agent: in vitro and in vivo evaluation in healthy volunteers

10.30am - 11.00am Coffee & Tea Break

Tuesday, 8 November 2005
Session 4: Biodiversity and Ecology
Venue: DBS Conference Room, S3, Level 5

Chairperson: - An Shuqing, Nanjing University
 - He Zhenxiang, National Taiwan University

11.00am - 11.30am Li Daiqin, National University of Singapore
Topic: Ultraviolet (UV) vision and UV reflectance in sexual selection of jumping spiders

- 11.30pm - 12.00pm An Shuqing, Nanjing University
Topic: Reproductive phenology of a tropical montane rainforest in Hainan Island, South China
- 12.00pm - 12.30pm He Zhenxiang, Nanjing University
Topic: 盐土可再生能源的生产与转化
- 12.30pm - 2.30pm Lunch
- 2.30pm - 6.00pm Department of Biological Sciences Tour
Structural Biology corridor and Proteomics center
Mol Cell biology & fish facility
Plant development
- 7.00pm Dinner

Wednesday, 9 November 2005
Venue: DBS

- 9.30am - 12.00pm Individual interactions & free activity
- 12.00pm - 2.00pm Lunch
- 2.00pm - 3.30pm NUS Museum Tour

Chemistry Programme

Chemistry Programme

Monday, 7 November 2005

Session 1

Venue: S4A-03-09

Chairperson: Pan Yi, Nanjing University

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|-----------------|--|
| 2.00pm - 2.20pm | Welcome Address:
- Andy Hor (Head, Chemistry, NUS) |
| 2.20pm - 3.00pm | Wu Qiang, Nanjing University

Topic: Some Research Progress in Carbon Nanotubes and One-Dimensional AlN Nanostructured Materials |
| 3.00pm - 3.20pm | Coffee & Tea Break |
| 3.20pm - 4.00pm | Mou Chong-Yuan, National Taiwan University

Topic: Mesoporous Silica: Synthesis and Applications |
| 4.00pm - 4.40pm | Lii Kwang-Hwa, National Central University

Topic: High-Temperature, High-Pressure Hydrothermal Synthesis, Crystal Structures, and Properties of Metal Silicates |
| 4.40pm - 5.20pm | Ye Qiong, Nanjing University

Topic: In Situ Hydrothermal Synthesis of Tetrazole Coordination Polymers with Interesting Physical Properties |
| 5.20pm - 6.00pm | Valiyaveetal, Suresh, National University of Singapore

Topic: Functional Molecular and Nanoarchitectures - Synthesis and Fabrication |
| 7.00pm | Dinner |

Tuesday, 8 November 2005

Session 2

Venue: S4A-03-09

Chairperson: Mou Chong-Yuan, National Taiwan University

- 9.00am - 9.40am Pan Yi, Nanjing University
Topic: Novel palladium-catalyzed domino reactions of benzylic halides with dienes
- 10.10am - 10.30am Coffee & Tea Break
- 10.30am - 11.10am Leung Man-Kit, National Taiwan University
Topic: Chemical and Photophysical Behavior of Bis(triarylamine)s Derivatives.
- 11.10am - 11.50am Jaenicke Stephan, National University of Singapore
Topic: Direct Reaction of Hydrogen and Oxygen to Hydrogen Peroxide
- 11.50am - 2.00pm Lunch

Tuesday, 8 November 2005

Session 3

Venue: S4A-03-09

Chairperson: Lii Kwang Hwa, National Central University

- 2.00pm - 2.40pm Chang Bor-Chen, National Central University
Topic: Laser Excitation and Dispersed Fluorescence Spectra of Simple Carbenes
- 2.40pm - 3.20pm Xiong Rengen, Nanjing University
Topic: The Design and Asymmetric Catalysis of Novel Quaternary Ammonium Salts Chiral Phase-transfer Catalysts
- 3.20pm - 3.40pm Coffee & Tea Break

Geo-Sciences Programme

Geo-Sciences Programme

Monday, 7 November 2005

Session 1

Venue: LT31

Chairperson: Lo Ching-Hua, National Taiwan University

- 2.00pm - 2.45pm Xu Xisheng, Nanjing University
Topic: 中国东南部晚中生代—新生代玄武岩与壳幔作用
- 2.45pm - 3.30pm Lin Ho, National Taiwan University
Topic: Using Pentad Annual Cycle as the Foundation of Monsoon Forecasting (and Research)
- 3.30pm - 4.00pm Coffee & Tea Break
- 4.00pm - 4.45pm Wang Liangshu, Nanjing University
Topic: 中国西部天山造山带地壳上地幔结构的宽频带地震观测
- 4.45pm - 5.30pm Hu Jyr-Ching, National Taiwan University
Topic: Active uplift of Tainan Tableland in southwestern Taiwan revealed by geodetic measurements and SAR interferometry
- 7.00pm Dinner

Tuesday, 8 November 2005

Session 2

Venue: S16, Level 6 Seminar Room (06-118)

Chairperson: Xu Xisheng, Nanjing University

- 9.00am - 9.45am David Laurence Higgitt, National University of Singapore
Topic: Modeling Spatial and Temporal Dynamics of Riverine Sediment and Carbon Delivery to the South China Sea
- 9.45am - 10.30am Lo Ching-Hua, National Taiwan University
Topic: Short-lived deformation cycle in Taiwan Mountain Belt

- 10.30am - 11.00am Coffee & Tea Break
- 11.00am - 11.45am Matthias Roth, National University of Singapore
Topic: First results of energy and carbon fluxes over a tropical city
- 11.45pm - 2.00pm Lunch

Tuesday, 8 November 2005

Session 3

Venue: S16, Level 6 Seminar Room (06-118)

Chairperson: Hu Jyr-Ching, National Taiwan University

- 2.00pm - 2.45pm Jou Sue-Ching, National Taiwan University
Topic: Urban-Region Governance in Taiwan: Globalization, Democratization and Cross-strait Political Economy
- 2.45pm - 3.30pm Chiang Shan-Hsin, National Taiwan University
Topic: The Change of Rainfall Intensity in Taiwan
- 3.30pm - 4.00pm Coffee & Tea Break
- 4.00pm - 4.45pm Chiang Lan-Hung, National Taiwan University
Topic: Twenty Years of Taiwanese Settlement Experiences in Australia
- 4.45pm - 5.30pm Tang Tswen-Yung, National Taiwan University
Topic: Soliton in the northern South China Sea
- 7:00pm Dinner

Wednesday, 9 November 2005

Session 4

Venue: LT31

Chairperson: Wang Liangshu, Nanjing University

9.00am - 9.45am Geng Hongyan, Nanjing University

Topic: 粤西白垩纪火山-侵入岩浆活动及其地质意义

9.45am - 10.30am Dai Shuihan, Nanjing University

Topic: 浅层含水层中的弥散试验研究

10.30am - 11.00am Coffee & Tea Break

11.00am - 11.45am Sun Tao, Nanjing University

Topic: 华南中生代强过铝花岗岩成因：与构造域转换的地球动力学联系

11.45 - 2.00pm Lunch

2.00pm - 3.30pm NUS Museum Tour

Mathematics and Statistics Programme

Mathematics and Statistics Programme

Monday, 7 November 2005

Session 1

Venue: University Hall, Auditorium Room, Level 2

Chairperson: Chen Zehua, National University of Singapore

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|-----------------|--|
| 2.00pm - 2.30pm | Opening address:
- Lee Seng Luan (Head, Department of Mathematics, NUS) |
| 2.30pm - 3.00pm | Wang Chin-Lung, National Central University
Topic: K-Equivalence in Bi-rational Geometry |
| 3.00pm - 3.30pm | Wu Xinyuan, Nanjing University
Topic: On extended Rungr-Kutta-like methods for ODEs |
| 3.30pm - 4.00pm | Coffee & Tea Break |
| 4.00pm - 4.30pm | Liu Huixia & Bai Zhidong, National University of Singapore
Topic: Making Markowitz's Portfolio principle Practically Useful |
| 4.30pm - 5.00pm | Harald Niederreiter, National University of Singapore
Topic: High-Dimensional Numerical Integration |
| 7.00pm | Dinner |

Tuesday, 8 November 2005

Session 2

Venue: University Hall, Auditorium Room, Level 2

Chairperson: Ding Nanqing, Nanjing University

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| 9.00am - 9.30am | Jiang Huikun, Nanjing University
Topic: Approximation Identity Kernel of Vallee Poussin Type over a -adic Groups |
| 9.30am - 10.00am | Shi Weixue, Nanjing University
Topic: Certain Covering Properties and Regular Closed Subspaces |

10.00am - 10.30am	Coffee & Tea Break
10.30am - 11.00am	Lin Chin-Cheng, National Central University Topic: The Boundedness of Fractional Integrals
11.00am - 11.30am	Goh Say Song, National University of Singapore Topic: Wavelets, multiwavelets and wavelet frames
11.30am - 2.00pm	Lunch
2.00pm - 6.00pm	Departments Tour
7.00pm	Dinner

Wednesday, 9 November 2005

Session 3

Venue: University Hall, Auditorium Room, Level 2

Chairperson: Wang Chin-Lung, National Central University

9.00am - 9.30am	Ding Nanqing, Nanjing University Topic: Relative Cotorsion Modules and Relative Flat Modules
9.30am - 10.00am	Lee Pjek-Hwee, National Taiwan University Topic: On Maps Preserving Zeros of the Polynomial $XY - YX^*$
10.00am - 10.30am	Coffee & Tea Break
10.30am - 11.00am	Shieh Narn-Rueih, National Taiwan University Topic: Multifractals for Galton--Watson Trees
11.00am - 11.30am	Zhu Chengbo, National University of Singapore Topic: Coordinate Rings of Nilpotent Kc-Orbits
11.30am - 2.00pm	Lunch
2.00pm - 3.30pm	NUS Museum Tour

Physics Programme

Physics Programme

Monday, 7 November 2005

Session 1: Biophysics, Self-Assembly and Nanotubes

Venue: Physics Conference Room

Chairperson: - Lai Pik-Yin, National Central University
- Yan Jie, National University of Singapore

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| 2.00pm - 2.30pm | Liu Xiang-Yang, National University of Singapore

Topic: From interfacial structure to antifreeze mechanism of antifreeze protein” |
| 2.30pm - 3.00pm | Lai Pik-Yin, National Central University

Topic: Some Physical Aspects of the DNA molecule |
| 3.00pm - 3.30pm | Yan Jie, National University of Singapore

Topic: Single-DNA study of DNA-protein interaction and chromatin |
| | Hong-Da Chen, National Central University

Poster I: Shannon Information in Genomes |
| | Chu Hong-Yu, National Central University

Poster II: Traveling Bubbles in Dusty Plasma Liquids |
| 3.30pm - 4.00pm | Coffee & Tea Break |
| 4.00pm - 4.30pm | Wee Andrew T. S. , National University of Singapore

Topic: Cluster and Molecular Self-Assembly on Surfaces |
| 4.30pm - 5.00pm | Lin Minn-Tsong, National Taiwan University

Topic: From Magnetic Alloy Films to Self-Aligned Nanodots |
| 5.00pm - 5.30pm | Chuang Cheng-Hao, National Taiwan University

Topic: Electronic Structure Mapping on Patterned Carbon Nanotube by Scanning Photoelectron Microscopy |
| 7.00pm | Dinner |

Monday, 7 November 2005
Session 2: Superconductivity and Cosmology
Venue: Physics Resource Room

Chairperson: - Gong Chang De, Nanjing University
- Ong Chong Kim, National University of Singapore

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| 2.00pm - 2.30pm | Gong Changde, Nanjing University

Topic: The coexistence and competition between different orders in anomalous superconductors defected by inhomogeneity |
| 2.30pm - 3.00pm | Li Jianxin, Nanjing University

Topic: Renormalization of the quasiparticle dispersion in bilayer high-Tc superconductors |
| 3.00pm - 3.30pm | Bao Weizhu, National University of Singapore

Topic: Numerical simulation of quantized vortex dynamics in superconductivity and superfluidity |
| 3.30pm - 4.00pm | Coffee & Tea Break |
| 4.00pm - 4.30pm | Kao Ying-Jer, National Taiwan University

Topic: Anisotropic spin and charge excitations in superconductors: signature of electronic nematic order |
| 4.30pm - 5.00pm | Zong Hongshi, Nanjing University

Topic: The Wigner Solution of the Dyson-Schwinger Equation for Quark Propagator in the Case of Non-zero Current Quark Mass |
| 5.00pm - 5.30pm | Chang Yuan-Hann, National Central University

Topic: Search for Cosmic Antimatter and Darkmatter with the AMS Detector |
| 7.00pm | Dinner |

Tuesday, 8 November 2005

Session 3: Acoustics, Microwaves and Optics

Venue: Physics Conference Room

Chairperson: - Ong Chong Kim, National University of Singapore
- Wang Hui Tian, Nanjing University

- 9.00am - 9.30am Ong Chong Kim, National University of Singapore
Topic: Tunable HTS Microwave Bandpass Filter with Patterned Ferroelectric Thin Film
- 9.30am - 10.00am Qian Jian, Nanjing University
Topic: 高灵敏度微波非接触振动测量
- 10.00am - 10.30am Gong Xun, Nanjing University
Topic: Two-Dimensional Analysis of Trapped-Energy Vibrations of AlN Film Acoustic Wave Resonator
- 10.30am - 11.00am Coffee & Tea Break
- 11.00am - 11.30am Cheng Jianchun, Nanjing University
Topic: Homogenization of 2D Phononic Crystals at Low Frequencies
- 11.30am - 12.00noon Du Sidan, Nanjing University
Topic: Secure Chromatic Images Transmission Scheme Applying ICA and Watermarking
- 12.00pm - 12.30pm Wang Huitian, Nanjing University
Topic: Optical anisotropy in left-handed materials
- 12.30pm - 2.00pm Lunch

Tuesday, 8 November 2005

Session 4: Bulk and Nanostructured Semiconductors

Venue: Physics Conference Room

Chairperson: - Lin Minn Tsong, National Taiwan University
- Sow Chorng Haur, National University of Singapore

- 2.00pm - 2.30pm Gu Shulin, Nanjing University
Topic: ZnO based Materials and Devices

- 2.30pm - 3.00pm Lin Hsia-Yu, National Taiwan University
Topic: Carrier transfer in metal-semiconductor core-shell nanostructures
- 3.00pm - 3.30pm Fu Sze-Ping, National Taiwan University
Topic: Novel properties of InN epilayers
- 3.30pm - 4.00pm Coffee & Tea Break
- 4.00pm - 4.30pm Li Wen-Hsien, National Central University
Topic: Tuning the transport characteristics of nanoparticle compacts
- 4.30pm - 5.00pm Sow Chorng Haur, National University of Singapore
Topic: Controlled Growth and Applications of Nanoscale Metal Oxide Materials
- 7.00pm Dinner
- Wednesday, 9 November 2005
Session 5: Quantum Information
Venue: Physics Conference Room
- Chairperson: - Oh Choo Hiap, National University of Singapore
 - Goan Hsi Sheng, National Taiwan University
- 9.00am - 9.30am Englert Berthold-Georg, National University of Singapore
Topic: The Singapore Protocol for Quantum Cryptography
- 9.30am - 10.00am Goan Hsi-Sheng, National Taiwan University
Topic: Quantum Technology
- 10.00am - 10.30am Cho Kai-Sin, National Taiwan University
Topic: Investigation of quantum lifetime in semiconductor heterostructures by microwave-detected SdH oscillations
- 10.30am - 11.00am Coffee & Tea Break

6th Frontier Science Symposium

- 11.00am - 11.30am Chen Son-Hsien, National Taiwan University
Topic: Spin current in Rashba-Dresselhaus strip systems
- 11.30am - 12.00noon Wu Chunfeng, National University of Singapore
Topic: Quantum nonlocality of N-qubit W state
- 12.00pm - 12.30pm Wang Zisheng, National University of Singapore
Topic: Quantum geometric phase
- 12.30pm - 2.00pm Lunch
- 2.00pm - 3.30 pm Lab Tour

2 Day Tour (10 & 11 November 2005)

Day 01 (Thursday, 10 November 2005) - The City Experience

The City Experience Tour showcases the contrast between old and new and the blend of East and West. Experience the history, culture and the lifestyle of multi-racial Singapore, the exciting heart of New Asia-Singapore. We will visit the Colonial district for a view of Padang. The Esplanade - Theatres on the Bay and The Merlion - a mythical beast, Singapore's original half lion, half fish. Next stop, a visit to Little India, Chinatown and Gem Factory, admire the best of Asian craftsmanship. Visit the 52 hectares of primarily jungle and gardens, the famed Botanic Gardens.

Chinese set lunch will be served at Rekyo Inn.

The tour traces Raffles' vision of Singapore to become a vital international port and trading centre for the Far East. Your trip down memory lane begins with a visit to the Raffles Landing Site, where Sir Stamford Raffles is believed to have first set foot here in 1819, and then to an exhibition that traces the history of the Singapore River.

Next is a stop at Raffles Hotel, a hive of activity for the high-society in the 1800s. The tour continues with a bumboat cruise. These hardy vessels were once used to shuttle cargo but today, they steer us through a kaleidoscope of historic Singapore River and harbour images set against the towering skyline of the modern business district. Step off at Clarke Quay, a riverside festival village, and visit a Pewter Gallery to discover the history of pewter and role of tin in the development of Singapore as a trading port. A demonstration on pewtersmithing is also included.

Dinner will be served at Peony-Jade in Clarke Quay.

* No bermudas, sandals without socks and slippers for men.

* No bermudas, slippers, clogs and slip-ons for women.

Day 02 (Friday, 11 November 2005) - Sentosa Tour

All abroad! We'll enjoy a scenic Cable Car from Mount Faber across to picturesque Sentosa at Sunset. Stroll through the lush surrounds of the Butterfly Park and allow live butterflies to flutter about you as you enjoy the cool outdoor conservatory. You can also find up to 3,000 species of the world's most beautiful and rare insects at the Insect Kingdom, which includes a dazzling enclosure of over 5,000 fireflies.

Next, we'll bring you to The New Merlion - the Singapore's beloved tourism symbol. The "re-born" Merlion experience begins with a pre-show that introduces visitors to the mysteries of the sea. Mermaids, lake monsters, sea serpents, movie creatures - these and others will come to life in a series of musical walk-through dioramas. Experiential encounters combining animation with theatre effects enable visitors to personally experience the story of the Merlion and the good fortune that it brings to all who seek it.

Next, we'll bring you to Asia's largest tropical fish oceanarium - the Underwater World. Admire close-up awesome and fantastic sights of sea creatures as they swim past and over you in bigger than life-size.

Lastly, enjoy "Magical Sentosa Show" - an all-new S\$4 million spectacle that will take you to a fantasy world of fun, style with 10-tonnes of special effects to boot! Featuring a "live" vivacious actor interacting with a cheeky monkey called "Kiki" and five original musical scores. It is definitely a musical and visual extravaganza not to be missed.

Lunch will be served at Fragrant Palace Restaurant, Sentosa
Dinner at SEA Village restaurant in Sentosa