出國報告（出國類別：學術交流）

國立雲林科技大學與馬來西亞博特拉大學環境研究學院師資交流計畫

服務機關：國立雲林科技大學
姓名職稱：洪肇嘉 教授
派赴國家：馬來西亞
出國期間：97.01.20~02.02
報告日期：97.03.31

摘要

國立雲科技大學環安衛工程系洪肇嘉老師暨防災所研究生王勇勝先生於 2008 年 1 月 20 日至 2 月 2 日於馬來西亞博特拉大學進行學術交流。該大學爲第一所馬國教育部核准第一所正式與台灣大專院校簽署合作協議，國立雲林科技大學於 2005 年 6 月 19 日由校長 林聰明先生赴博大簽署學術交流協定。

本校環安衛工程系洪肇嘉教授至博特拉大學由該校 環境研究院 Mohamad Pauzi Zakaria 教授接待，希望透過與國立雲林科技大學的緊密合作關係，進一步提升國際學術水平。洪教授於學術交流期間除參與數門課程之教學外，也於大學部及研究所演講，主題包括「環境災害之緊急應變」、「環境化學之新趨勢」等，加強兩校學術交流。此外並與院方(FES)討論及未來學生交流之安排，並與該院教師合寫研究計畫，現正向其政府部門申請中，若能獲通過將可更進一步促進兩校之合作研究及學術交流。

關鍵字: 馬來西亞博特拉大學（Universiti Putra Malaysia），學術交流合作協定

目次

表目錄

一、目的

雲科大環安衛工程系洪肇嘉教授受馬來西亞博特拉大學（Universiti Putra Malaysia UPM）應邀至馬國進行學術交流，並於數門該校環境研究學院(Faculty of Environmental Studies, FES)授課，也針對未來合作之『環境科學』課程內容進行討論，學生交換及未來可能之研究合作計畫。

二、過程

（一）邀請函

馬國博特拉大學國際合作辦公室主任 Suhona Md Chairi 函邀雲科大環安衛工程系 洪肇嘉教授依雲科大與博大合作協議(MOU)雙方人員交流計畫，於 2008 年 1 月 20 日至 2 月 2 日赴馬國博大 FES 之環科系交流，並由 Mohamad Pauzi Zakaria 教授負責接待。

UPM
UNIVERSITI PUTRA MALAYSIA

BAHAGIAN ANTARABANGSA
INTERNATIONAL OFFICE

Our reference : UPM/IO/7.4.3

Date : 17 January 2008

Dr. Jao-Jia Horng
Department of Safety, Health & Environmental Engineering
National Yulin University of Science & technology
123, University Road Sec. 3,
Touliou Yulin,
Taiwan

Dear Sir,

BILATERAL STAFF EXCHANGE PROGRAM AT UNIVERSITI PUTRA MALAYSIA (UPM)

We are pleased to inform you that your application for a bilateral staff exchange programme at UPM has been approved. Details of the programme are as below:

Faculty	:	Faculty of Environmental Studies
Venue	:	Department of Environmental Science
Supervisor	:	Assoc. Prof. Dr. Mohamad Pauzi Zakaria
Duration	:	20th January – 3 February 2008

We hope you will gain a fulfilling experience during your bilateral attachment at UPM.

Thank you.

"WITH KNOWLEDGE WE SERVE"

Yours sincerely,

Suhana Md Chairi
For Head
International Office

c.c Deputy Vice Chancellor (Academic & International)
Dean, Faculty of Environmental Studies
Head, International Office
Administrative Officer, Visa & Pass Unit

Bahagian Antarabangsa, Bangunan CII, Lorong Pongamia 1, 43400 UPM Serdang, Selangor Darul Ehsan, Malays
603-8946 6004 / 8946 6048 603-8656 3539 iro@admin.upm.edu.my www.upm.edu.my

（二）行程

本次交流國家爲馬國，由國立雲林科技大學洪肇嘉老師於 97 年 1 月 20 日至 2 月 2 日進行訪問，共 13 天，其行程表如表 1，每日與博大老師共進午餐並交流研究心得，與會人員如表 2。參訪馬來西亞博特拉大學（Universiti Putra Malaysia），並交流研究發展心得。

表 1. 馬來西亞之行程

Day	Date	Activity	Note
Sun	20~Jan-08	Arrival at KLIA-Check-in at Ford Flat, UPM	Pauzi
Mon	21	Morning：	
		8.30 am Meeting with Dean, FPAS (環境科學院院長 Nasir)	Pauzi、Kamil
		11.00 am Back in FPAS	
		Afternoon：	
		Preparation of Lecture Notes 課程準備	
Tue	22	Morning：	
		11.00 am Visit the Campus	Kamil、Firuz
Wed	23	National Vacation 馬國假日	
Thurs	24	Morning：	
		08.15 am Meeting with VC (校長 Mustapha)	Nasir、Pauzi、Kamil
		10.00 -12.00 noon ESC 4001 Class (Carbon Cycle I 講題：Environmental Chemistry and Soil Remediation)	Pauzi
		Afternoon：	
		2.00~5.00 pm ESC 4001 Lab (Chemical Oxygen Demand)	Pauzi
Fri	25	課程準備	
Sat	26	課程準備	
Sun	27	課程準備	
Mon	28	Morning：	
		9.00 am Meeting with faculty members	註
		Afternoon：	
		2.00-5.00 pm Undergraduate Student Seminar 大學部專題報告	Firuz

		(講題：Environmental Chemistry and Changing World)	
Tue	29	Morning：	
		9.00-12.00 am Graduate Student Seminar (講題：Environmental Emergencies and Chemistry)	Pauzi
		Afternoon：	
		2.00-3.00 pm ESC 4001 Class (講題：Environmental Emergencies and Water Quality)	Ismail
		3.00-5.00 pm (Meeting with Graduate Student)	Pauzi
Wed	30	Afternoon：	
		4.00-5.00 pm ESC 4001 Class (講題：GHS and Labeling)	Hanidza
		8.00 pm Farewell Dinner 由院長 Nasir 招待	
Thurs	31	Morning：	
		10.00-12.00 am ESC 4001 Class (Carbon Cycle II 講題：Environmental Chemistry and Soil Remediation)	Pauzi
		Afternoon：	
		2.00-4.00 pm Test 課程考試	Pauzi
Fri	1	計畫討論與撰寫	
Sat	2	Departure to Taiwan	

表 2. 每日中午與會人員

Timetable for FPAS Staff to Accompany Prof. JJ

Day	21	22	23	24	25	28	29	30	31	1
Date	Mon	Tue	Wed	Thur	Fri	Mon	Tue	Wed	Thu	Fri
	MPZ	MKY	ZZI	MFR	AM	RH	PAL	MSI	NRH	MBI
	MBI	WNA	MNS	RA	AMA	TH	MIY	LAM	SK	DHARMA

Legend:

MPZ- Pauzi	ZZI- Zelina	AM- Azizi	PAL- Puziah	MSI- Shahrin
MBI- Bakri	MNS- Nasir	AMA- Makmom	MIY- Ismail	LAM- Latifah
MKY- Kamil	MFR- Firuz	RH- Rosta	WNA- Wan	NRH- Rasidah

DHARMA- Dato Rashid
TH- Tengku
SK- Sutarji

註：各講題如附錄二；與博大環境科學院教師學術交流會議紀錄如附件三。

（三）拜訪博特拉大學

於 97 年 1 月 21 日上午拜訪博特拉大學（Universiti Putra Malaysia, UPM），由環境研究及科學院 Dr. Pauzi 接待本校人員，上午 8:30 由 Dr. Pauzi 及 Dr. Kamil 兩位教授陪同拜訪該院院長 Dr. Nasir，報備本次行程目的及未來合作可能性；上午 11:00 與環境科學系主任 Dr. Kamil 進行課程教授及行程安排。

贈送本校紀念品予該系院長 Dr. Nasir

與 Dr. Pauzi 及 Dr. Kamil 討論情形

22 日上午 11:00 由 Dr. Kamil 及 Dr. Firuz 陪同參觀校園；23 日上午 8:30 參觀歷史博物館及吉隆坡市區；24 日上午 8:15 由院長 Dr. Nasir、Dr. Kamil 及 Dr. Pauzi 陪同下拜訪博特拉大學(UPM)校長洽談未來交換學生及合提馬國計畫；上午 10:00~12:00 與該校大學部學生講授 Carbon Cycle 課程，講題：Environmental Chemistry and Soil Remediation；下午 2:00~5:00 指導該校大學部學生 COD 實驗。

與 UPM 校長洽談未來合作計畫

贈送本校紀念品予 UPM 校長

課程 Carbon Cycle 學生上課情形-1

25、26 日參觀麻六甲(MELAKA)及上課教材收集；27 日準備本周上課教材(Carbon Cycle 及 GHS)及 Seminar 資料；28 日上午 9:00 與環境科學系及環境管理系老師進行學術交流及未來合作相關事宜；下午 2:00~5:00 與大學部學生進行專題演講，講題：Environmental Chemistry and Changing World 。

與環境研究及科學院老師進行學術交流

贈送本校紀念品予該院計畫負責人

大學部專題演講上課情形

29 日上午 9:00~12:00 與研究生進行專題演講，講題：Environmental Emergencies and Chemistry；下午 2:00~3:00 與大學部學生講授水化學，講題：Environmental Emergencies and Water Quality；下午 3:00~5:00 與 Dr. Pauzi 研究生 meeting；30 日下午 4:00~5:00 與大學部學生講授環境化學，講題：GHS and Labeling，晚上 8:00 由環境科學院院長招待晚餐；31 日上午 10:00~12:00 與大學部學生講授 Carbon Cycle II 課程，講題：Environmental Chemistry and Soil Remediation；下午 2:00~4:00 進行該課程小考。

研究生專題演講上課情形

與院長共進晚餐

課程 **Environmental Emergencies and Water Quality** 學生上課情形


課程 GHS and Labeling 學生上課情形


課程 Carbon Cycle 學生上課情形-2

三、心得

博大(UPM)的前身是以農科聞名的農業大學，佔地達 3000 公頃。大校園道路兩旁是整齊的人行道，學生可以安全且自由地穿行校園各處。人行道兩旁是一字排開的大樹，爲學子們遮擋那炎熱的陽光。而該校爲第一所馬國教育部核准學與我國國立雲林科技大學於 2005 年 6 月 19 日正式簽署學術交流協定由雲科大林聰明校長親赴博大簽署。

博特拉大學新校長聶慕斯達化教授致力發展博大爲一所卓越的農業大學，包括採用先進的科技讓農業增值。希望農業發展迎合政府的要求，即成爲創造財富的領域。“博大的宏願是通過知識令國家致富，使全民共享繁榮。”他表示，博大是以科學和工藝爲主的大學，所以該大學將利用此來發展農業。 他在第一天上任接受訪問時說，博大在研究發展方面已經很穩定，只是需要再加強創新。他強調，無論博大作出甚麼改變，農業始終是它的基礎，它也是我國唯一提供農業系的大學，只是加入資訊工藝、生物科技的輔助。 聶慕斯達化是填補前校長拿督莫哈末祖哈迪離職後所留下的空缺，現年 54 歲的校長任期是 3 年 2006 年 1 月 1 日起生效。

本次雲科大環安衛工程系洪肇嘉老師暨防災所研究生王勇勝先生到博大環境研究學院交流，除參與數門課程之教學外，也於大學部及研究所演講，主題包括「環境災害之緊急應變」、「環境化學之新趨勢」等，加強兩校學術交流。此外並與院方(FES)討論及未來學生交流之安排，及各項可能之研究計畫。並與該院數位教師合寫-研究計畫，現正向其政府部門申請中，若能獲通過將可更進一步促進兩校之合作研究及學術交流。

四、建議事項

建議未來與 UPM 合作之方向如下：

1. 建議可盡速推動交換學生計畫，除可交流博士班學生於互補及互相學習研究、儀器操作及分析技術。另碩士班研究生的交流亦可推動大學部學生因學期制不同 (UPM上學期 7~12月，下學期 1~5月) 除整年 (兩學期)交換，本國學生以上學期去馬國，馬國學生以下學期 (我國下學期 2~6月)較佳。另馬國有不少來自中東及非洲之回教國家，如：伊朗、巴林等，應可迅速推動交換學生計畫俾增加接觸。
2. 我國應建立與馬國大學之合作研究，本人已與UPM Pauzi教授共同撰寫-合作計畫書 (如附錄四)，現由該學院向其他相關單位申請中。
3. 未來配合相關國合計畫共同研擬教授網路課程『環境科學』。

五、附錄

附錄一 博拉特大學（**Universiti Putra Malaysia**）簡介及聯絡資料

Pendaftar Bahagian Akademik,Unit Pengamblian Pelajar dan Rekod ,

Universiti Putra Malaysia,43400 Serdang, Selangor.

電話：０３－８９４６６０５９

傳真：０３－８９４２６４６９

網址：www.upm.edu.tw

博特拉大學前稱農業大學，在 1971 年成立，由沙登馬來亞農業學院和馬大農業系合併而成，當時開辦的科系只有農業系、森林和獸醫系及畜牧科學系。

1997 年易名爲博特拉大學，並在砂勞越民都魯設有分校，該大學設有 13 個學院、兩所中心及 1 所研究院；民都魯分校則設有兩所學院(農業科學及食品學院及社會科學及管理學院)。文憑課程接開放給 SPM 學生申請。

博大教學媒介語是國語及英語，參考書以英文爲主。新生若在大馬教育文憑(SPM)的英文試卷，未考獲 A1 或 A2，則必須選修英文。此外，2003 年起入學的新生，必須報考馬來西亞大學英文科(MUET)，成績須及格。

博特拉大學設有 13 個學院，包括健康科學及醫學院、人類生態學院、管理及經濟學院、獸醫學學院、工程學院、現代語文及傳播學院、教育研究學院、森林學院、農科學院、設計及繪測學院、環境研究及科學院、資訊工藝及電腦科學院、生物工藝及食品科學院。

此次參訪之「環境科學系」乃屬於環境研究院(Faculty of Environmental studies)，環境科學與環境管理學位需就讀 6 學期，至少 130 個學分。

NORHASLIZA BT HASSAN
Administrative Officer

International Relations Office,
Chancellery, Universiti Putra Malaysia
43400 UPM Serdang,
Selangor Darul Ehsan, Malaysia

603-8946 6198 603-8656 3539
norhasliza_h@putra.upm.edu.my / iro@admin.upm.edu.my

Mohamad Pauzi Zakaria PhD
Associate Professor of Coastal and Marine Pollution; Geochemistry; Forensic Chemistry

Department of Environmental Sciences
Faculty of Environmental Studies, Universiti Putra Malaysia,
43400 UPM Serdang, Selangor Darul Ehsan, Malaysia

Tel : 603-8946 6738 Fax : 603-8943 8109
Hp : 012 2505964
Email : mpauzi@env.upm.edu.my
http://www.env.upm.edu.my

PROF. IR. DR. DESA AHMAD
Director

Centre for Food and Agricultural Mechanisation and Automation
Complex of Engineering and Technology
Universiti Putra Malaysia
43400 UPM Serdang
Selangor Darul Ehsan, Malaysia

603-8946 6271 / 6279 / 6426 603-8656 7130
desa@eng.upm.edu.my

Zelina Zaiton Ibrahim PhD
Associate Professor of Estuarine Processes
Head, Department of Environmental Management

Department of Environmental Management
Faculty of Environmental Studies, Universiti Putra Malaysia,
43400 UPM Serdang, Selangor Darul Ehsan, Malaysia

Tel : 603-8946 6771 / 6752 Fax : 603-8943 8109
Email : zelina@env.upm.edu.my / zelina@putra.upm.edu.my
http://www.env.upm.edu.my

ASSOC. PROF. DR. AZMI DATO' HJ. YAHYA
Ph.D (Iowa State)
M.I.E.M., M.A.A.A.E., S.M.T.
Dean

Faculty of Engineering
Universiti Putra Malaysia, 43400 UPM Serdang,
Selangor Darul Ehsan, MALAYSIA

603-8656 7101 603-8656 7099
azmiy@eng.upm.edu.my

DR. AIDY ALI
B. Eng. (Hons) Mechanical & System (UPM)
M. Eng. Manufacturing System (UKM)
PhD. Mechanical Aeronautic Fatigue (Sheffield, UK)
Lecturer

Department of Mechanical & Manufacturing Engineering
Faculty of Engineering, University Putra Malaysia
43400 UPM Serdang, Selangor Darul Ehsan, MALAYSIA

603-8946 6437 603-8656 7122
aidy@eng.upm.edu.my H/P 017-249 6293

ERIS ELIANDDY SUPENI
B.Eng (Hons) Mechanical (Salford U.K.) M.Sc Mechanical (UPM)
Lecturer

Department of Mechanical & Manufacturing Engineering
Faculty of Engineering, Universiti Putra Malaysia,
43400 UPM Serdang, Selangor Darul Ehsan, Malaysia

603-8946 6333 603-8656 7122
H/P: 019-340 7519
eris@eng.upm.edu.my

PROF. DR. ABU BAKAR SALLEH
Deputy Vice Chancellor
(Research and Innovation)

Chancellery
Universiti Putra Malaysia
43400 UPM Serdang
Selangor, Malaysia

603-8948 6053 / 8946 6091 603-8656 6038
abubakar@biotech.upm.edu.my http://www.upm.edu.my

PROF. DR. NIK MUSTAPHA R. ABDULLAH
Dip Agri (UPM), B S (California-Davis), M S Ph D (Oregon State)
Vice Chancellor

Vice Chancellor Office
Universiti Putra Malaysia
43400 UPM Serdang Selangor, Malaysia
603-8946 6001 / 603-8948 6888 603-8948 3244

UNIVERSITI PUTRA MALAYSIA

NOR ADIDA BT ABD. KHALID
BPA (Hons), M.Sc.
Ketua

Bahagian Perhubungan Antarabangsa
Canseleri, UPM
43400 UPM Serdang
Selangor Darul Ehsan
Tel: 603-8946 6007 Faks: 603-8656 3539
e-mel: adida@putra.upm.edu.my
adida@admin.upm.edu.my
iro@admin.upm.edu.my

M Nasir Shamsudin PhD
Professor of Agricultural and Resource Economics
Dean

Faculty of Environmental Studies
Universiti Putra Malaysia
43400 UPM Serdang, Selangor Darul Ehsan, Malaysia

Tel : 603-8946 6732 Fax : 603-8943 8109
Email : nasir@env.upm.edu.my
http://www.env.upm.edu.my

UNIVERSITI PUTRA MALAYSIA

Prof. Ir. Dr. Azni Hj. Idris P.M.C
PhD Environmental Engineering
Director
(Waste Technology Centre)

Faculty of Engineering,
Universiti Putra Malaysia,
43400 UPM Serdang,
Selangor, MALAYSIA.

Tel : 603-8946 6302
H/P : 019-316 0300
Fax : 603-8656 7099
E-mail : azni@eng.upm.edu.my

ASSOC. PROF DR. JAMBARI HJ. ALI
Director
Public and International Relations

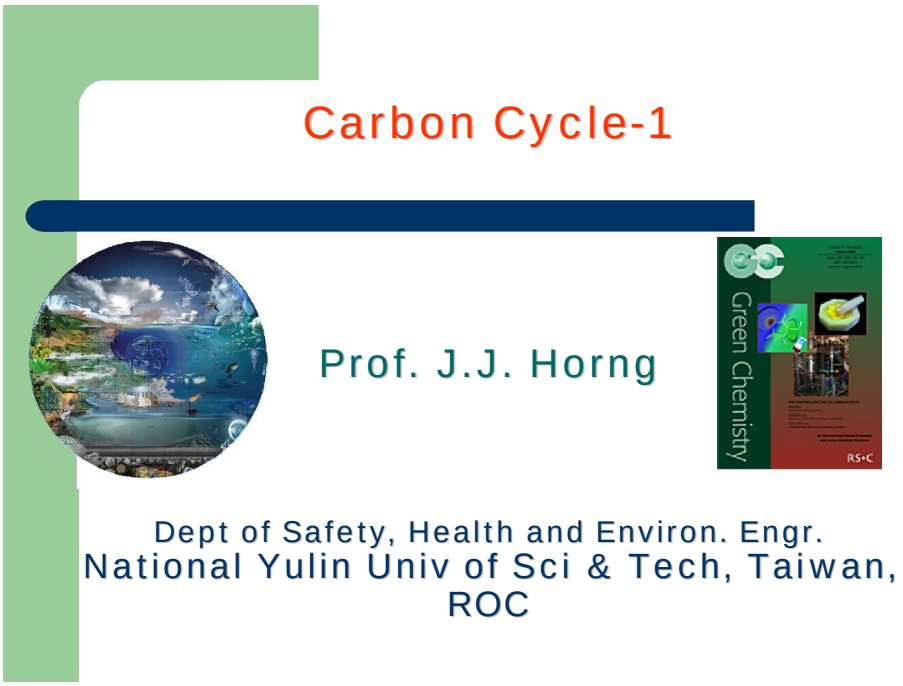
Universiti Putra Malaysia,
43400 UPM Serdang, Selangor Darul Ehsan, Malaysia

603-89472020, H/P 019-3513105 603-86563539
jambari@putra.upm.edu.my

附錄二 各課程上課講題

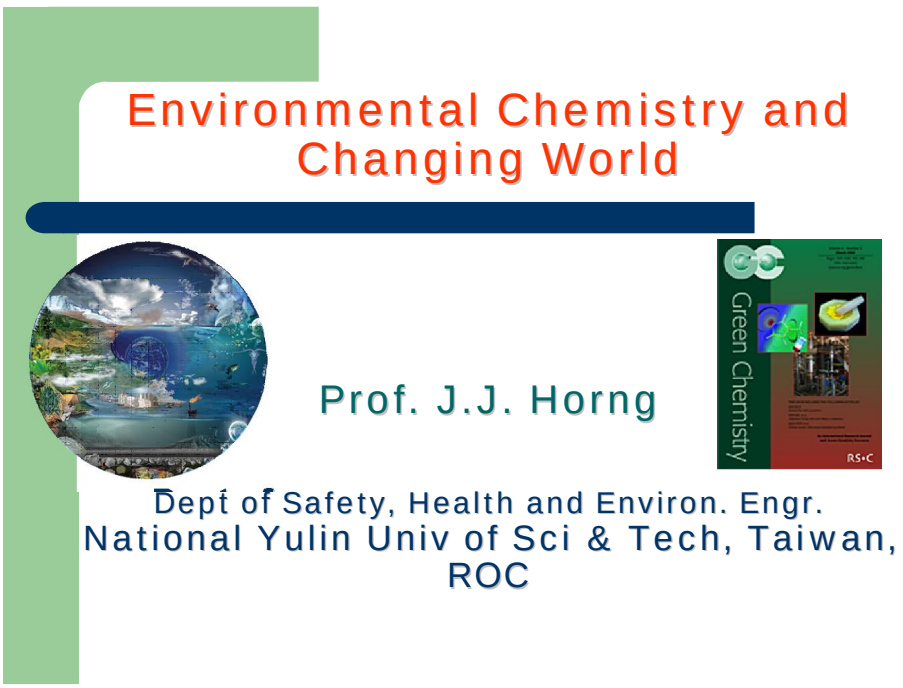
97.01.24 Carbon Cycle I 課程

講題：**Environmental Chemistry and Soil Remediation**



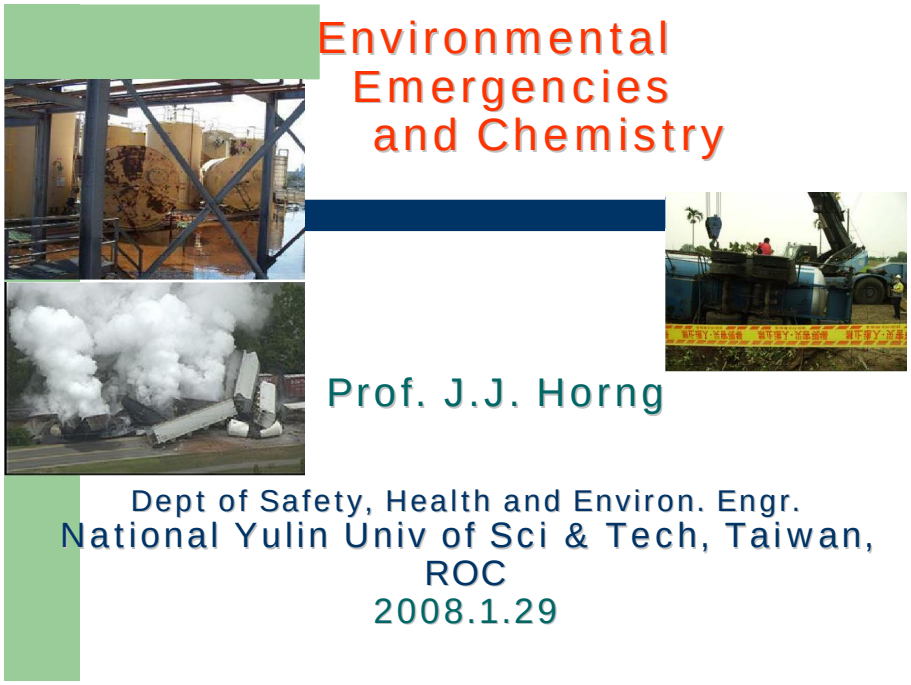
97.01.28 大學部專題報告

講題：**Environmental Chemistry and Changing World**



97.01.29 研究所專題報告

講題：**Environmental Emergencies and Chemistry**

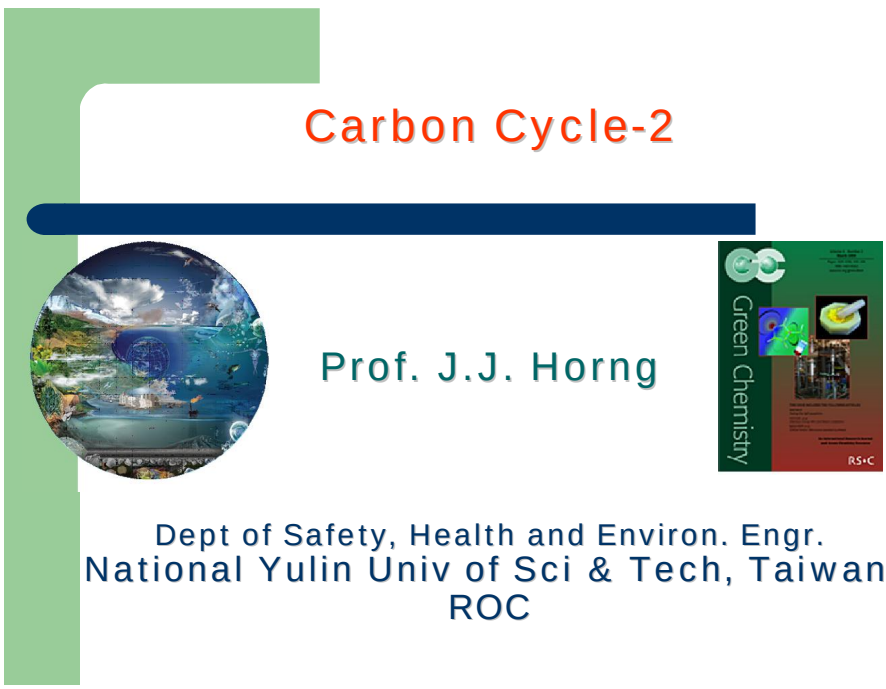


97.01.29 講題：**Environmental Emergencies and Water Quality**

97.01.30 講題：GHS and Labeling

97.01.31 Carbon Cycle II 課程

講題：**Environmental Chemistry and Soil Remediation**



附錄三 與博大環境科學院教師學術交流會議紀錄

Minutes of the Meeting between Faculty of Environmental Studies Staff and Prof. JJ

Date: 28 January 2008

Attendance:

MIY, MPZ, LAM, THI, NRH, RA, MKY, MFR, AM, Sutarji, ZZI, WNA

General Discussions on future research collaborations

1. Environmental chemistry need to change according to the changing world
2. Setting up a database on chemicals
3. Exchange of staff between the FPAS and Yunlin university
4. Exchange of graduate students between
5. To put up a research proposal on Disaster Management on Drinking Water Treatment Plants for Chemical Spills and Flood
6. Dr Pauzi to lead a research proposal subcommittee to discuss and prepare a draft a present it to the faculty
7. Committee members are MIY and Sutarji,
8. Getting graduate student exchange: Dr Pauzi's students will lead the way first
9. Undergraduate students can be exchanged via ESC 3004 (env. Training)
10. Other possible research

附錄四 與馬國大學合作研究案

Project Proposal for the period of 2008-2010

Title: Development of Database, Information Platform and Technology for Responding to Environmental Emergencies in Malaysia

Participants:

Faculty of Environmental Studies, University of Putra Malaysia (UPM)

Engineering College, National Yulin University of Science and Technology (NYUST), Taiwan, ROC

Objectives:

1. To develop modern chemical hazard database and information platform for emergency response during environmental disasters in Malaysia.
2. To promote new research and technology development on dealing with hazardous material (HAZMAT) incidents, natural and man-made disasters that caused environmental impacts in Malaysia**, especially on environmental monitoring, drinking water, treatment of chemical spills, flooding problems, et c...**
3. To setup a new international information and technology exchange mechanism on responding environmental emergencies (E2s) through Taiwan's NYUST and to continue the research cooperation and MOU on environmental studies between UPM and NYUST

Goals:

2008

1.1 Promoting the awareness and knowledge of E2s to government agencies, industries and general public.

1.2 Gathering and analyzing the newly developed chemical hazard information (Global Harmonization System of Classification and Labeling of Chemicals,

GHS by United National CEC) on common used chemicals in Malaysia.

1.3 Documenting various case-studies regarding to E2s.

2.1 Analyzing research and technology needs for HAZMAT as well as E2s for Malaysia.

2.2 Promoting the researches of HAZMAT incidents to strengthen our ability in responding to environmental impacts during natural and man-made disasters in Malaysia**, especially on environmental monitoring, drinking water, treatment of chemical spills, flooding problems, etc** ...

2.3 Introducing new technology and emerging techniques of HAZMAT response and developing local adaptation as needed**, especially on environmental monitoring, drinking water, treatment of chemical spills, flooding problems, etc**...

.

3.1 Establishing the introduction and exchange mechanisms on information, research and technology regarding to E2s.

3.2 Extending our cooperation with Taiwan's NYUST on E2s to strengthen our research and technology as well as environmental studies.

2009

1.1 Continuing the promotion of E2s' awareness and knowledge of E2s for Malaysia.

1.2 **Creating database for E2's case-studies** for national use.

1.3 **Setting up GHS's database and web-sites** for public uses.

2.1 Continuing introduction of needed research and technology for HAZMAT and E2s for Malaysia.

2.2 Assisting in **strengthening our ability in responding to HAZMAT and environmental impacts during natural and man-made disasters, especially on environmental monitoring, drinking water, treatment of chemical spills, flooding problems, etc**...

2.3 **Developing and localizing needed new and emerging technology on HAZMAT and E2s** for Malaysia.

3.1 **Strengthening the introduction and exchange mechanisms on information, research and technology** regarding to HAZMAT and E2s.

3.2 Continuing the extension of our cooperation with Taiwan's NYUST on E2s' research , technology and Environmental studies.

2010

1.1 **Stepping up and HAZMAT and E2s' trainings toward the operation, commander, technician and specialist levels**.

1.2 Creating **national databank** for E2's case-studies and **publishing the seasonal and monthly communication**..

1.3 Establishing GHS's **national databank, web-sites and communication**.

2.1 **Catching up and onto the world-class research and technology for HAZMAT and E2s.**

2.2 Assisting in strengthening our ability in responding to HAZMAT and environmental impacts during natural and man-made disasters.

2.3 **Complementing the localization of needed new and emerging technology** on HAZMAT and E2s for Malaysia**, especially on environmental monitoring, drinking water, treatment of chemical spills, flooding problems, etc** ...

.

3.1 Continuing the introduction and exchange mechanisms on information, research and technology regarding to HAZMAT and E2s.

3.2 **Developing mutual cooperation** with Taiwan's NYUST on E2s research and technology and environmental studies.

Proposed Activities:

2008

1.1 Promoting the awareness and knowledge of environmental emergency to government agencies, industries and general public.

1) Obtaining and translating the video of US. Chemic al Safety Broad (CSB) (at lease 6) regarding several industrial accidents that caused environmental emergencies.
2) Production and Distribution those media (at lease 3000 CDs or DVDs) to Malaysia's industrial to promote the awareness to prevent possibility of similar accidents.
3) Production of public education internet webpage and information as well as distribution to the general public.
4) Integration of the knowledge of environmental emergency into the university courses (at least 2 courses).

1.2 Gathering and analyzing the newly developed chemical hazard information (Global Harmonization System of Classification and Labeling of Chemicals, GHS by United National CEC) on common used chemicals in Malaysia.

1). Investigating most common used chemicals in variou s industries (3 kinds of industries) in Malaysia.

2). Gathering and analyzing GHS' chemical hazard information on chemicals (at least 100).

3).Providing the GHS' chemical hazard information for use by the government agencies and industrie s.

4). Education the general public regarding the proper use of GHS' information.

1.3 Documenting various case-studies regarding to environmental emergency.

1). Gathering and analyzing the famous case-studies of environmental emergency (at lease 10) in the world.

2). Writing the case-studies to be posted in web-page and use as the course

material.

2.1 Analyzing research and technology needs for HAZMAT as well as E2s for Malaysia

1). Investigation and analysis the needed research and developmen t (R&D) as well as technology on HAZMAT (from government and enterprise resources).

2). Surveying and analysis the R&D and technology needed for E2s (for industries and universities).

3). Formulating the initial suggestions on future strategies on HAZMAT and E2s for Malaysia.

2.2 Promoting the researches of HAZMAT incidents to strengthen our ability in responding to environmental impacts during natural and man -made disasters in Malaysia

1). Holding workshop or conference to promote the presentation and concerns regarding to R&D on HAZMAT and E2s in Malaysia (1 workshop and 1 conference).

2). Inviting the speeches (experts or researchers) from abroad to bring new views in HAZMAT and E2s.

3). Preparing the future publication of communication for E2s in Ma laysia.

2.3 Introducing new technology and emerging techniques of HAZMAT response and developing local adaptation as needed.

1). Developing the training courses regarding to HAZMAT and E2s (such as water quality and management in E2s, disaster manageme nt for chemical spills, ..).

2). Trying out the training courses in HAZMAT and E2s.

3). Introducing new monitoring techniques and technology (joining with

conference or workshop) with demonstration….(including water quality monitoring, emergency air monitoring, protection equipment….).

4) Demonstrating the prevention and mitigation technology through workshop or conference invitation.

3.1 Establishing the introduction and exchange mechanisms on information, research and technology regarding to E2s.

1). Using workshop and conference to invite experts and researchers from other countries in order to facility the exchanges of information and R&D.

2). Collecting the list of international experts (in Asia, especially) in preparing to Set up international information platform for exchanging information and R&D on HAZMAT and E2s.

3.2 Extending our cooperation with Taiwan's NYUST on E2s to strengthen our research and technology as well as environmental studies.

1).Inviting the scholars from NYUST to join the workshop, conference, courses and demonstration of new R&D, technology on HAZMAT and E2s.

2). Joining with NYUST to establish the major links in south and east Asia to form a possible international network on E2s in Asia.

2009

1.1 Continuing the promotion of E2s' awareness and knowledge of E2s for Malaysia.

1.2 **Creating database for E2's case-studies** for national use.

1.3 **Setting up GHS's database and web-sites** for public uses.

2.1 Continuing introduction of needed research and technology for HAZMAT and E2s for Malaysia.

2.2 Assisting in **strengthening our ability in responding to HAZMAT and environmental impacts during natural and man-made disasters**.

2.3 **Developing and localizing needed new and emerging technology on HAZMAT and E2s** for Malaysia.

3.1 **Strengthening the introduction and exchange mechanisms on information, research and technology** regarding to HAZMAT and E2s.

3.2 Continuing the extension of our cooperation with Taiwan's NYUST on E2s' research , technology and Environmental studies.

2010

1.2 **Stepping up and HAZMAT and E2s' trainings toward the operation, commander, technician and specialist levels**.

1.2 Creating **national databank** for E2's case-studies and **publishing the seasonal and monthly communication**..

1.3 Establishing GHS's **national databank, web-sites and communication**.

2.1 **Catching up and onto the world-class research and technology for HAZMAT and E2s.**

2.2 Assisting in strengthening our ability in responding to HAZMAT and environmental impacts during natural and man-made disasters.

2.3 **Complementing the localization of needed new and emerging technology** on HAZMAT and E2s for Malaysia.

3.1 Continuing the introduction and exchange mechanisms on information, research and technology regarding to HAZMAT and E2s.

3.2 **Developing mutual cooperation** with Taiwan's NYUST on E2s research and technology and environmental studies.

Budget:

1. NYUST (from Prof. J.J.- Horng of Dept of Safety, Health and Environ. Engr.) had submitted the application for the international cooperation of join-teaching "Environmental Science" through internet and class with the faculty of Environmental Studies of UPM for fall semester 2008 as well as holding the International Conference of Environmental Emergency (Taiwan's Ministry of Education) on the amount 150,000 R.M.

2. For this proposal NYUST will apply their part of additional funding through Taiwan's National Science Council and Ministry of Education (partially funded by the NYUST itself). The budget amount will be above 50,000 RM for 2008.

Funding Request by UPM …

Project importance

Environmental Emergency is defined by US EPA as industrial chemical accident, transportation Accidents, natural or man-made disaster events. Environment Canada regarded any natural events and human activities that would cause the danger to life, environment and property. In 2007, the UK Environment Secretary extended that "Climate change a potential humanitarian emergency." In Taiwan, the emergency was deal with in an "All-Hazard" approach.

Emergency could be defined as already caused loss, a high probability of escalating, or an immediately threatening to life, health, property or environment. The earlier example ca be contributed to the Bhopal disaster in 1984. Bhopal, a Muslim princely state in central India, attracted international attention as a consequence because of an industrial accident creating an environmental emergency. When the Union Carbide plant (now a part of Dow Chemical Company) leaked deadly MIC (Methyl Isocyanate) gas killing thousands of people during the night of December 3, 1984. Thousands still suffer from its effects even two decades later.

Many types of similar emergency was found as the examples below.

1. 1986.11.1: Chemical spill in the Rhine River

- a catastrophic fire at a chemicals factory near Basel, Switzerland, sending 30 tons of pesticides into the nearby river Rhine and turning it red.
- As the river water flows through four countries - Switzerland, Germany, France and Holland - before flowing into the North Sea, the ecology of Rhine River was damaged and the fish did not return for more than 2 years.

2. 1989: Taiwan's styrene tank truck accident.

- a tank truck caught on fire while no put-out method was possible. Fortunately, the tank explored while the firefighters were re-treating.

A nearby manufacture plant was caught on fire during the exploration. The evaluation called for better response on similar emergency. res may be formed.

3. 2005.11.13: China's chemical spill into the Songhuaji ng onto Russia.

- On 2005.11.13, an Chemical plant accident at Jilin City brought about the spillage of 100 tons of nitrobenzene into river (Songhuajing). Excepting dozens died and injuries in the accidents, more than 40,000 were evacuated. In addition, many downstream city's drinking water sources were threaten up to millions people. The China officially apologized to Russian government.
- After months of clean-up, the conditions and future of the pollutants were still un-clear (un-disclosed)
- Industrial accidents reportedly (BBC News) killed more than 127,000 people in China 2005.
- The government would spend nearly $60 Biillion over the next five years to reduce the high death toll in coal mines and other dangerous workplaces.

4. On 2006.9.2: Toxic Chemi cals Spill into Spanish River

- A toxic slick has killed fish and flora as it seeped down a river in Spain's northwestern Galicia region after a factory fire caused a chemical spill.
- The government was looking into excavating a 15-kilometre canal parallel to the Umia to draw off clean water upstream and downstream of the slick
- The incident compound with environmental disaster in summer 2006 which more than 1,600 forest was fire. Many started deliberately and those fires destroyed up to 92,000 hectares (227,000 acres) of land and caused damage estimated at 100 million euros (130 million dollars)..

5. On 2006.10.26, the Lianchou, upstream of Yellow River, China, was polluted with read colored chemicals.

6. On 2007.4.18, 32 people have died at a steel facto ry in Liaoning of China, after being showered with molten metal. No environmental emergency was

One of the environmental emergencies that we experienced in Malaysia was the October flooding of 2007. A severe flooding occurred in KL and nearby States. Many potential problems involved in the incident including the follows

- **Possible contamination**
  - Spraying metallic and organic chemicals from manufacturers/storages/stores…
  - Creating oil pollution from motor-vehicles and service stores….
  - Severing pollutants from dirty flood, rubbish and landfills
  - Potential pollution from drugs/detergents….
- **Sanitation**
  - Threatening clean drinking water and wash water for decontamination….
  - Creating bad sanitary conditions (rubbish overflowing, dead animals….)
- **Diseases**
  - Potential stomach and skin infection problems…
  - Potential spraying of Infectious diseases (hand/foot, Cholera, Malaria….)

The Emergency Response Information Center at the National Yulin University of Science and Technology (YERIC) has been set up by Taiwan's EPA and NYUST since 2001. YERIC has the main consultation of environmental emergencies regarding to HAZMAT and toxic substance in the middle region of Taiwan (North Center ran by the Industrial Technology Research Institute and South Center set in another university). The center is one of the major training organizations for many

enterprises in Taiwan. For example, the center trained more than 1000 manager-level personnel for Taiwan's Formosa Plastic Company in 2007. Prof. J. -J. Horng has been directed the center since its establishment and been the advisors of various government agencies (Taiwan's Executive Yuan, EPA and Ministry of Interior etc.). He also owned the trainer position in the Califronia Specialized Training Institute (CSTI) of the California State Government 's Office of Emergency Service (OES) in US.

The Environmental Study Faculty of UPM set up the MOU with NYUST since June 2006 and has interchanged various programs with YERIC, such as workshop and conference, faculty exchanges, etc. Based on our efforts previously in the Malaysia's environment, This project propose another step ahead to introduce information, platform, research and technology for responding to environmental emergency into UPM and well as to diffuse into government agencies and enterprises in Malaysia. We believe this project should be able to achieve the follows.

1. To strengthen our chemical hazard database and information platform for emergency response during natural and man-made environmental disasters in Malaysia.
2. To further develop our research and technology development into dealing with hazardous material (HAZMAT) incidents as well as natural and man-made environmental disasters in Malaysia.
3. To establish the mechanism of international information and technology exchange on environmental emergencies with other countries