2017 SEOUL CONFERENCE ABSTRACT

April 11-13, 2017

Hanyang University

Seoul, South Korea

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2017 Seoul Conference Introductions

Welcome to CBEES 2017 conference in Seoul, South Korea. The objective of the Seoul conference is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and Development Activities in Biotechnology and Food Science, Pharmacy and Pharmaceutical Science, and Environment Science and Engineering.

2017 8th International Conference on Biotechnology and Food Science (ICBFS 2017)

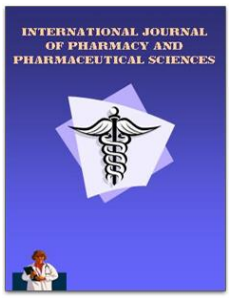
Papers will be published in the following journal:

International Journal of Food Engineering (IJFE, ISSN: 2301-3664), and be included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Cross ref, ProQuest , CABI.

Conference website and email: http://www.icbfs.org/; icbfs@cbees.org

2017 2nd International Conference on Pharmacy and Pharmaceutical Science (ICPPS 2017)

Papers will be published in one of the following journals:



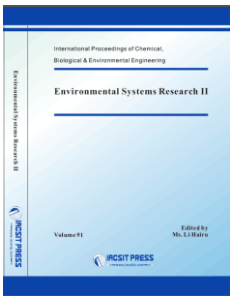
International Journal of Pharmacy and Pharmaceutical Sciences (IJPPS, ISSN: 0975-1491) and be indexed by Google Scholar, Scopus, Elsevier, EBSCO, EMBASE, SCI mago (SJR), CAS, CASSI (American Chemical Society), Directory of Open Access Journal (DOAJ), Index Copernicus, ICAAP, Scientific commons, PSOAR, Open-J-Gate, Indian Citation Index (ICI), Index Medicus for WHO South-East Asia (IMSEAR), OAI, LOCKKS, OCLC (World Digital Collection Gateway), UIUC.

International Journal of Pharma Medicine and Biological Sciences (IJPMBS, ISSN: 2278-5221), which will be included in the Engineering & Technology Digital Library, and indexed by Embase (Under elsevier), ProQuest, Google Scholar, Chemical Abstracts Services (CAS), Indian Science, ICMJE(International Committee Medical Journal Editors), HINARI(World Health Organization), and NYU(Health Sciences Library).

International Journal of Learning and Teaching (IJLT, ISSN: 2377-2891), which will be included in Google Scholar; Crossref; Engineering & Technology Digital Library; etc.

Conference website and email: http://www.icpps.org/; icpps@cbees.net

2017 7th International Conference on Environment Science and Engineering (ICESE 2017)



Papers will be published in the following journal:

International Proceedings of Chemical, Biological and Environmental Engineering (IPCBEE, ISSN: 2010-4618), which is indexed by EBSCO, Chemical Abstracts Services (CAS), CABI, CNKI, WorldCat, Google Scholar, Ulrich's Periodicals Directory, Crossref, and Engineering & Technology Digital Library.

Conference website and email: http://www.icese.org/; icese@cbees.org

Presentation Instructions

Instructions for Oral Presentations

Devices Provided by the Conference Organizer:

Laptop Computer (MS Windows Operating System with MS PowerPoint and Adobe Acrobat Reader)
Digital Projectors and Screen
Laser Sticks

Materials Provided by the Presenters:

PowerPoint or PDF Files (Files should be copied to the Conference laptop at the beginning of each Session.)

Duration of each Presentation (Tentatively):

Regular Oral Presentation: about **12** Minutes of Presentation and **3** Minutes of Question and Answer
Keynote Speech: about **20** Minutes of Presentation and **5** Minutes of Question and Answer

Instructions for Poster Presentation

Materials Provided by the Conference Organizer:

The place to put poster

Materials Provided by the Presenters:

Home-made Posters
Maximum poster size is A1
Load Capacity: Holds up to 0.5 kg

Best Presentation Award

One Best Oral Presentation will be selected from each presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on April 11 and April 12, 2017.

Dress code

Please wear formal clothes or national representative of clothing.

Keynote Speaker Introductions

Keynote Speaker I

Prof. Hami Alpas

Department of Food Engineering, Middle East Technical University, Ankara, Turkey

Prof. Hami Alpas is a Food Engineer and also holds an MBA degree from Dept. of Business Administration METU on Total Quality Management.

He has served as a “visiting scholar” in 1996 and 1998 at University of Wyoming, USA; as a “visiting scientist” in 2001 and 2002 at Ohio State University, USA and as a “visiting professor” in 2006, 2007 and 2008 at University of Bordeaux I, France on the topic of Non-Thermal Food Processing Technologies (HHP).

His main research areas are: Unit Operations in Food Engineering, Non-thermal Food Processing Technologies, Food Quality, Food Safety and Food Security through Total Food Protection. He is an expert in Food Defense training activities via NCFPD (USA).

He has supervised 4 Ph.D and 11 M.Sc. thesis in Food Engineering Department. He has 72 international journal articles (SCI) and over 800 citations (ISI-Web of Sci; h-factor 18) as well as close to 55 academic presentations in 35 different international meetings.

He has completed 15 national, 4 international projects including EU/JRC, CNRS-EGIDE and NATO ARW/ATC projects. He has authored 7 chapters in internationally edited books and has edited 3 international books by Springer. He has also organized and co-directed 3 NATO-workshops (ARW-ATC). He is currently the co-director of EU-FP7 project on “Plant Food Security”.

Topic: "*Hydration Behavior of Quinoa Seed by Nuclear Magnetic Resonans (NMR) Relaxometry*"

Kübra Ünal, Hami Alpas, Hakan Aktaş, and Mecit Halil Öztop

Abstract- There has been a growing interest in quinoa due to its nutritional and biological properties. It is a pseudocereal which is rich in protein, lipid, fiber, vitamin minerals and has an excellent balance of essential amino acids and contains numerous phytochemicals. In this study, quinoa was analyzed by Nuclear Magnetic Resonans (NMR) relaxometry method in terms of its hydration behavior. T_2 measurements and FID measurements were performed for 0.8 gr quinoa seeds diluted with 500 ml distilled water for 6 hours. T_2 values of quinoa diluted with distilled water decreased from 1502.49ms to 67.06ms at the end of 6 hr measurement. Quinoa with no dilution presented a T_2 value of 22.66ms and only distilled water presented a T_2 value of 2179.91ms. As a result of FID measurements, M_0 values were obtained as 1.27E+07 and 8.76E+07 for quinoa with no dilution and distilled water only, respectively. M_0 value of quinoa diluted with distilled water were measured as 3.23E+07 and 5.83E+07 at the beginning and at the end of the measurement, respectively. Results show that T_2 value of the quinoa diluted with water was decreased significantly by time passes due to decrease in the mobility of water since quinoa's hydration ability. In addition to T_2, M_0 value of quinoa was increased as time passes because number of protons have increased in the quinoa as it hydrated water. The study showed that NMR relaxometry is a useful tool to give information about hydration behavior of quinoa seeds.

Keynote Speaker II

Prof. Chan Jin Park

Incheon National University, Republic of Korea

Prof. Park Chan Jin graduated from Korea University, and got Master and PhD degrees in same university. His major fields of research are the air pollution control, greenhouse gas technology and odor management technology. His another interests is green growth policy. He is now full-professor in Incheon National University at Urban and Environmental Engineering School. He is member of INU ensemble taking part in piano (Chamber orchestra of his University).

Topic: "*The Greenhouse Gas Reduction Strategy in Environmental Facility*"

***Abstract*—**There are three challenges in recent world such as environmental pollution, global warming and energy crisis. Recent urgent problems with global warming in environmental facility are GHG generation in waste treatment such as landfill sites, incineration of wastes and wastewater treatment process. As the amount of buried materials is increased in landfill site, LFG is generally increased until getting more serious global warming. Various strategies are suggested to make those problems less serious which are related to world climate changes in environmental facilities. The main landfill sites are illustrated with the reduction system of landfill GHG, system of methane collection and the process of energy conversion. The methods of GHG estimations are compared to make more accurate estimation of environmental facility. Clean development mechanism in Kyoto protocols are suggested for energy utilization process of environmental facility with greenhouse gas minimization and low pollution to prevent climate disaster and make sustainable development.

Keynote Speaker III

Prof. Ki-Hyun Kim

Department of Civil & Environmental Engineering, Hanyang University, South Korea

Prof. Ki-Hyun Kim has been working on the following areas:

-Development and establishment of detection methods for hazardous/odorous pollutants and heavy metals along with the establishment of basic QA for those pollutants.

-Carbon capture and storage based on development and performance evaluation of diverse sorbent materials.

-Sorptive removal and regeneration cycle in the treatment of airborne pollutants

He was awarded a National Star Faculty offered by the Korean Ministry of Education, Science and Technology in 2006. He is currently serving as editorial members of journals like Sensors, Scientific World, and several others. He has published more than 300 articles in peer-reviewed international SCI journals.

Topic: "*Synthesis of Nanomaterials from Wastes*"

Pallabi Samaddar, Ki-Hyun Kim, Eilhann E. Kwon, and Yong Sik Ok

***Abstract*—** Due to high social metabolism, the usage of package foods, household materials, clothes, etc. has increased continuously. Considering this scenario, our society will be better off if we can successfully produce NMs from various waste materials. Note that different parts of plants such as leaves, stems, fruits, and flowers have been extensively used to produce many forms of useful goods such as paper, pencils, and wooden furniture. However, these materials will ultimately lead to the generation of waste after utilization. On the other hand, approximately 7.6 billion tons of industrial solid waste are generated and disposed of every year. Accordingly, there remains a large opportunity to utilize these biological and industrial wastes for NM production.

In this research, we scrutinized fabrication of nanomaterials (NMs) such as metallic nanoparticles (NPs), carbon nanotubes (CNTs), nanosheets (NSs), and nanoactivated carbon (NAC). We focused on novel synthetic recipes for NMs from biological and industrial waste. Synthetic techniques for NMs including chemical activation, arc discharge, vacuum evaporation, inert gas condensation, sodium borohydride reduction, solvent thermal, and bio-oxidation were discussed. In addition, we provided detailed descriptions of the possible utilization of NMs in water and wastewater treatment (WWT). Lastly, we highlighted the possible detrimental impact of using NMs in waste water treatment (WWT).

Keywords: Nanoparticles, Recycling, Reuse, Adsorbent, Sorption, Biorefinery, Advanced

Keynote Speaker IV

Prof. Jan E. Szulejko

Department of Civil & Environmental Engineering, Hanyang University, South Korea

13th July, 1974: B.Sc., Physics (cum laude) – University College Cardiff, University of Wales, Cardiff, U.K.
Attended: 01 October, 1971 to 30 June, 1974
1st Year: Physics, Chemistry, and Applied Mathematics (tripartite Year 1 program)
2nd/3rd Year: Honours Physics program
20th July, 1977: B.Sc., Chemistry (cum laude) – University College Swansea, University of Wales, Cardiff, U.K.
Attended: 01 October, 1975 to 30 June, 1977
Program: Honours Chemistry (2nd/3rd Year only, exempted from tripartite Year 1 program)
7th July, 1981: Ph.D., Mass Spectrometry – University College Swansea, University of Wales, Cardiff, U.K.
Attended: 01 October, 1977 to 30 September, 1980
Thesis Title: Negative Ion Mass Spectrometry
(http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.639147)
Supervisor: Prof. J.H. Beynon, FRS (deceased) – former Royal Society Research Unit

Topic: "*Weekday – Sunday Effect on the Behavior of Airborne Pollutants: Case Study in an Urban District of Seoul, Korea*"

Jan E Szulejko and Ki-Hyun Kim

Abstract—Atmospheric pollutant levels vary in relation to changes in source processes and various related variables including spatiotemporal (e.g., time of day, season, and geographical factors), meteorological (e.g., wind direction, wind velocity, and solar irradiance), and environmental factors. As a means to learn more about the factors controlling the behavior of pollutants, the so-called workday (WD) – weekend (WE) effect is one important parameter to consider. It is generally granted that the pollutant levels may be lower during weekends (Saturday and Sunday) than those of the weekdays (Monday through Friday) where emissions are higher from work-related activities.

In this work, we used the workday (WK, Monday through Saturday) – Sunday (Sun) *effect* for some key criteria airborne pollutants like Hg, NO, NO_2, and O_3 in the Yongsan district of Seoul. The *effect* is defined as ratio of pollutant level on a selected day relative to a reference day (Sunday in this work). The WK – Sunday *effect* is most pronounced if these two days are considered – Wednesday (Wed) or Thursday (Thu) relative to Sunday (Sun). For example in Yongsan in 2009, the 52 week averaged Mon/Sun and Wed/Sun [NO] *effect* averaged over 52 weeks was 1.98 (>1 over 45 weeks) and 2.40 (>1 over 41 weeks), respectively For other pollutants (NO_2, O_3, and Hg), the Thu/Sun *effect* was lower at 1.43, 1.08, and 1.19, respectively.

Keywords: Workday/Sunday, Effect, Airborne pollution, NO, NO_2, Hg, O_3

Plenary Speaker I

Prof. Patrick Ball

School of Pharmacy, Faculty of Science and Engineering,
University of Wolverhampton, United Kingdom

Prof. Patrick Ball graduated in Pharmacy in 1975 and worked in hospital pharmacy until 1995. During that time he specialised in paediatrics, critical care and parenteral nutrition. At the Children's Hospital, Birmingham, UK he became involved in clinical research, especially in nutrition support, and in computer applications, developing a computer-based prescribing system for paediatric parenteral nutrition that was translated into 7 languages and used in at least 200 hospitals. He was a member of the committee that developed the pan-European Guidelines for paediatric parenter4al nutrition. In 1995 he moved to academia, starting at the University of Otago in Dunedin, New Zealand. Here he was teaching clinical pharmacy and working as a clinical pharmacist specialising in pain management and palliative care. In academia, he has become increasingly involved in medication management in non-communicable disease. He has an interest in the syndrome of frailty in the elderly and in the diagnosis and treatment of delirium superimposed on dementia. He also maintains a research interest in the behaviour of medications in parenteral fluid systems and devising safe and effective parenteral medication administration systems. Patrick has over 160 publications in peer-reviewed journals and has graduated 10 doctoral students. He is currently Professor of Pharmacy at the University of Wolverhampton, UK.

Topic: "*Medication Management in the Elderly, the Importance of Frailty and of Delirium*"

Prof. Ball, Patrick

Abstract—Worldwide, people are living longer, and in many cases this is due to medications. The number of people over 70 years old continues to increase, but in many countries, most older people are taking multiple medications. Textbooks talk about changes in pharmacokinetics and pharmacodynamics with age, but research shows clearly that linear age is a poor guide to these changes. Far more important to prognosis in the elderly is the syndrome of frailty. Frailty is a syndrome resulting from a multi-system reduction in capacity to the extent that a number of physiological systems are close to the threshold of symptomatic clinical failure. Most older people will become frail at some point, but the age at which this occurs varies. Tools have recently become available allowing us to document and quantify frailty, and it has recently become clear that with appropriate management, frailty can be improved allowing people to live independently for longer. An appropriate understanding of frailty and its management is an essential foundation to medication management in the elderly. Another important factor is cognitive impairment. This can be due to dementia, but may also be caused by delirium, or a combination of delirium superimposed on dementia. Again, practical tools have recently become available to distinguish delirium, which is important because delirium is mostly treatable. Provided with suitable training and some basic tools, pharmacists are able to be far more effective in managing medication therapy in the elderly helping our older citizens to live independently with a good quality of life for longer.

Plenary Speaker II

Prof. Tjokorda Gde Tirta Nindhia

Engineering Faculty, Udayana University, Bali, Indonesia

Prof. Tjokorda Gde Tirta Nindhia was born in Denpasar, Bali, Indonesia on January 16th, 1972. Received Doctor Degree in Mechanical Engineering from Gadjah Mada University (UGM) Yogyakarta, Indonesia on August 2003, with major field of study was Material Engineering.

He participated in various international research collaboration such as with Muroran Institute of Technology Japan (2004), Toyohashi University of Technology Japan (2006), Leoben Mining University Austria (2008-2009), Technical University of Vienna Austria (2010) and Recently with Institute Chemical Technology of Prague Czech Republic (2012-now). His current job is as Full Professor in the field of Material Engineering at Department of Mechanical Engineering, Engineering Faculty, Udayana University, Jimbaran, Bali, Indonesia. His research interest covering subjects such as, biomaterial, waste recycle, failure analyses, ceramic,metallurgy, composite, renewable energy, and environmental friendly manufacturing.

Topic: "*Preparing Silk Biomaterial from Cocoon of Wild Silkmoth Attacus atlas*"

Tjokorda Sari Nindhia, Tjokorda Gde Tirta Nindhia, I Wayan Surata, Zdenek Knejzlik, and Tomas Ruml

Abstract—This Article reporting result from research in providing silk from Wild silkmoth cocoon of Attacus atlas. The silkmoth is from Indonesia origin. The research was initiated by collecting the silkmoth egg from their real location. The silkmoth eggs were hatched and the larva were introduce with specific leaf that will be use as a a future food. The consideration in selecting leaf for the food is the leaf should from the three that easily and rapid grow also having ingredient that could be useful in drug, pharmacy and medical purpose. It is found the wild silkmoth attacus atlas are like to consume a herb plant leaf of Erythrina variegate and also Cananga odorata. The cocoon resulting from feeding the carterpilar of Attacus atlas with these 2 type of leaves were observed by using scanning electron microscope (SEM) and element copmpositions were detected by using Energy Dispersive X-ray Spectroscopy (EDS). Diferent appearance of fiber are observed. With feeding with Cananga oroata resulting fiber surface covering with cubic crystal that reach with Calcium (Ca) meanwhile feeding with Erythrina variegate resulting fiber without fibrous surface which is rich with clhorine (Cl).

Brief Schedule for Conference

<table>
<tr><td rowspan="2">Day 1</td><td colspan="2">April 11, 2017 (Tuesday) 9:00~19:00
Venue: Room 402, Fusion Tech Center (FTC) Bldg, Hanyang University
Arrival Registration, Keynote Speech, Conference Presentation, Poster Session</td></tr>
<tr><td colspan="2">Afternoon Conference (Venue: Room 402, Fusion Tech Center (FTC) Bldg)
Opening Remarks 13:30~13:35
Keynote Speech I 13:35~14:00
Session 1 14:00~16:30
10 presentations-Topic: “Food Engineering and Animal Science”
Coffee Break & Group Photo Taking 16:30~16:50
Keynote Speech II 16:50~17:15
Session 2 17:15~19:00
7 presentations-Topic: “Microbiology and Biotechnology”
Poster session 13:30~19:00</td></tr>
<tr><td rowspan="6">Day 2</td><td colspan="2">April 12, 2017 (Wednesday) 8:30~19:00
Venue: Room 402, Fusion Tech Center (FTC) Bldg, Hanyang University
Arrival Registration, Keynote Speech, Conference Presentation, Poster Session</td></tr>
<tr><td colspan="2">Morning Conference
Venue: Room 402, Fusion Tech Center (FTC) Bldg
Opening Remarks 8:30~8:35
Keynote Speech III 8:35~9:00
Keynote Speech IV 9:00~9:25
Plenary Speech I 9:25~9:50
Coffee Break & Group Photo Taking 9:50~10:15
Plenary Speech II 10:15~10:40
Session 3 10:40~12:40
8 presentations-Topic: “Pharmaceutical & Biomedical Management”</td></tr>
<tr><td colspan="2">Lunch 12:40~13:30 Venue: Restaurant</td></tr>
<tr><td colspan="2">Afternoon Conference</td></tr>
<tr><td>Session 4: 13:30~16:15
Venue: Room 402, Fusion Tech Center (FTC) Bldg
11 presentations-Topic:“Phytochemistry and Pharmaceutical Analysis”</td><td>Session 5: 14:00~16:15
Venue: Room 106, Jae Sung Civil Bldg
9 presentations-Topic:“Environmental Chemical Engineering”</td></tr>
<tr><td colspan="2">Coffee Break 16:15~16:30</td></tr>
<tr><td>Session 6: 16:30~19:00
Venue: Room 402, Fusion Tech Center (FTC) Bldg
10 presentations-Topic:“Pharmacology and Applied Pharmacy”</td><td>Session 7: 16:30~18:15
Venue: Room 106, Jae Sung Civil Bldg
7 presentations-Topic:“Environmental Monitoring and Energy Engineering”</td></tr>
<tr><td colspan="2">Dinner 19:10 Venue: Restaurant</td></tr>
<tr><td>Day 3</td><td colspan="2">April 13, 2017 (Thursday) 9:00~17:00 One Day Visit & Tour</td></tr>
</table>

Tips: Please arrive at the Conference Room 10 minutes before the session begins to upload PPT into the laptop.

Detailed Schedule for Conference

April 11, 2017 (Tuesday)

Venue: Room 402, Fusion Tech Center (FTC) Bldg, Hanyang University

9:00~19:00	**Arrival Registration, Keynote Speech, Conference Presentation, Poster Session**

Note: (1) The registration can also be done at any time during the conference.
(2) The organizer doesn't provide accommodation, and we suggest you make an early reservation.
(3) One Best Oral Presentation will be selected from each oral presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on April 11 and April 12, 2017.

Afternoon, April 11, 2017 (Tuesday)

Venue: Room 402, Fusion Tech Center (FTC) Bldg, Hanyang University

13:30~13:35		**Opening Remarks** Prof. Hami Alpas Department of Food Engineering, Middle East Technical University, Ankara, Turkey
13:35~14:00		**Keynote Speech I** Prof. Hami Alpas Department of Food Engineering, Middle East Technical University, Ankara, Turkey Topic: "*Hydration Behavior of Quinoa Seed by Nuclear Magnetic Resonans (NMR) Relaxometry*"
14:00~16:30		**Session 1** 10 presentations-Topic: "Food Engineering and Animal Science"
16:30~16:50		**Coffee Break & Group Photo Taking**
16:50~17:15		**Keynote Speech II** Prof. Chan Jin Park Incheon National University, Republic of Korea Topic: "*The Greenhouse Gas Reduction Strategy in Environmental Facility*"
17:15~19:00		**Session 2** 7 presentations-Topic: "Microbiology and Biotechnology"

Session 1

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 11, 2017 (Tuesday)

Time: 14:00~16:30

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 1: 10 presentations- Topic: "Food Engineering and Animal Science"

Session Chair: Prof. Hami Alpas

S0007 Presentation 1 (14:00~14:15)

Health Status Evaluation of Madura's Bulls with Tropical Total Mixed Ration Silage Feeding

Ahmad Wahyudi, Sutawi, Listiari Hendraningsih, and Sofyan Arief

University of Muhammadiyah Malang, Indonesia

Abstract—The objective of this study was to evaluate the use of tropical total mixed ration (TMR) silage from agricultural by-products consist of rice brant, copra meal, corn ground, corn cob, molases, mineral, and urea on feed intake and health status of Madura's bulls. Eighteen of two years old Madura's bull divided into three treatments of feeding system with six replication. T1 was fed with conventional feed consist of field grass and concentrate as a control, meanwhile T2 was fed with TMR, and T3 was fed with TMR-silage. Feed intake was measured from daily total feed administration minus the uncomsumption feed. Blood sampel were colected from base tail-coccigea vein on 28 days of feeding treatment. Blood plasma protein and glucose level were analyzed with Hematology-Analyzer, Sysmex XT-4000. Feces- microbial composition was analyzed based on Cai methods (1998). This study showed the treatments were not significant ($P \geq 0.05$) effect to dry matter intake, T1 = 2653.33, kg/head/day T2 = 2603.33 kg/head/day, dan T3 = 2710.00 kg/head/day respectively. Blood plasma protein and glucose level were in normal range around 6.3 – 8.9g/dl and 46 – 60mg/dl respectively. Plasma protein content were T1 = 7.01g/dl, T2 = 7.02 g/dl, and T3 = 6.74 g/dl, meanwhile glucose content were T1 = 53.5 mg/dl, T2 = 52.0 mg/dl, and T3 = 54.0 mg/dl. Total anaerob feces bacteria population were 1.75 x 10^8 cfu, 1.3 x 10^8 cfu, and 1.70 x 10^8 cfu. Lactic acid bacteria population were 1.75 x 10^7 cfu, 5.3 x 10^7 cfu, and 4.3 x 10^7 cfu. Coliform population were 4.75 x 10^7cfu, 2.2 x 10^7 cfu, and 6.1 x 10^6 cfu. Clostridia population were 8.0 x 10^6 cfu, 6.6 x 10^6 cfu, and 5.0 x 10^6 cfu. It could be concluded that TMR-silage from agricultural by product could be implemented as conventional feed replacer. Implementation TMR-silage tend to reduce total bacteria content, increase lactic acid bacteria (LAB), redude coliform, clostridia, and improved the healty status of Madura's bulls.

Afternoon, April 11, 2017 (Tuesday)

Time: 14:00~16: 30

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 1: 10 presentations- Topic: “Food Engineering and Animal Science”

Session Chair: Prof. Hami Alpas

S0010 Presentation 2 (14:15~14:30)

Marketing Strategy for Complete Feed of Beef Cattle

Sutawi, Ahmad Wahyudi, Listiari Hendraningsih, and Sofyan Arief

University of Muhammadiyah Malang, Indoneisa

Abstract—Population and productivity of local beef cattle must be improved if beef self-sufficiency was an important matter. Achieving beef self-sufficiency would need procurement of feed in adequate quantity and quality. One of alternative to reduce dependence on forage in dry season is using of complete feed. The objectives of the research were (1) to identify the factors of strength, weakness, opportunity, and threat (SWOT) of the marketing for beef cattle complete feed for smallhoder farm; and (2) to formulate the marketing strategy for beef cattle complete feed. Internal and external factors behind complete feed were identified with survey method against the groups of beef cattle farmer who were provided with complete feed sample. Marketing strategy was formulated with SWOT, based on the calculation of internal factor analysis summary (IFAS), it was shown that strength value of complete feed was 1.398. It was lower than weakness value of 1.981 with differential of both counted for -0.583. Result of IFAS indicated that opportunity value of 1.671 was lower than threat value of 1.951 with the differential of -0.280. The most suitable marketing strategy for complete feed was WT Strategy (minimizing weakness and avoiding threat). Some activities that must be done by complete feed producers were: (1) maximizing the use of farming crop residues or byproduct available at place to minimize the cost of complete feed production, and (2) having a cooperation work with Gapoktan (Joined Farmer Group) and KUD (Rural Unit Cooperative) as the distributor in the marketing of beef cattle complete feed.

Afternoon, April 11, 2017 (Tuesday)

Time: 14:00~16: 30

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 1: 10 presentations- Topic: "Food Engineering and Animal Science"

Session Chair: Prof. Hami Alpas

E0006 Presentation 3 (14:30~14:45)

Plant Extracts and Storage Temperature to Extend Shelf Life of Bell Paper (*Capsicum Annuum* L.*)*

Henik Sukorini, Dyah Roeswitawati, and Piki Endrasusila

University of Muhammadiyah Malang, Indonesia

Abstract—Shelf life of bell paper are very short, a week for no treatment and in the room temperature, but 2-3 weeks in the 7-10oC. Storage of fruits and vegetables are very susceptible to various post-harvest diseases. Anthracnose that caused by *Colletotrichum capsici* is a major disease that can cause losses of up to 70%. To control this disease generally used synthetic fungicide, but because of environment and health reason the used of fungicide more and more reduced. As a consequence, some alternatives need. Packaging and storage temperature treatment is an important action for the post-harvest fruits to extend shelf life.
Randomized Completely Design (RCD) was used in this study that arrange in nested. There were two factors, the first was the different plant extract ingredients comprising: Control = P0, P1 = 10,000 ppm papaya seed extract, mahogany seed extract P2 = 10,000 ppm, P3 = 10,000 ppm clove leaf extract, fungicide thiabendazole P4 = 0.1%. The second factor was the temperature of storage consisting of: S1 = room temperature (+26 ℃), S2 = 5 ℃, a temperature of 10 ℃ = S3, S4 = temperature of 15 ℃.
The result showed that, there was interaction between plant extracts and storage temperature on weight loss of fruit after 21 and 28 days of storage, the fruit firmness at 14 days after storage as well as the disease intensity and disease severity. The best treatments were 5 ℃ storage temperature, papaya seed extract, mahogany seeds extract, clove leaf extract. All of those treatments capable to control post-harvest disease.

Afternoon, April 11, 2017 (Tuesday)

Time: 14:00~16: 30

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 1: 10 presentations- Topic: "Food Engineering and Animal Science"

Session Chair: Prof. Hami Alpas

E0009 Presentation 4 (14:45~15:00)

Rumen and Intestinal Bacteria Population in Pre-Weaning Dairy Calves with Fruit Peel Extract Administration

Listiari Hendraningsih, Imbang Dwi Rahayu, and Ahmad Wahyudi

University of Muhammadiyah Malang, Indonesia

Abstract—Some oligosaccharides have been reported able to modify gastrointestinal microflora composition and show positive influence in some animal species. Certain oligosaccharides also tend to elevate beneficial bacteria and the others depress harmful bacteria in the gastrointestinal tract. In pre-weaning dairy calf, depressing pathogenic bacteria will be helpful in an effort to decrease diarrhea and mortality rate. However, previous research was more focus on the health status of the calf in general. Data of their fermentation characteristics by the rumen microbial community and their effects on the colon microflora composition were still limited.

The aim of this study was to evaluate the effect of oligosaccharides from apple and banana peel extraction and mannan oligosaccharide (MOS) commercial on concentrations of the total anaerobic bacteria, Bifidobacterium, Lactobacilli, Coliform and Escherichia coli population in dairy calf' rumen liquid and colon contents. Two groups, each consist of four pre-weaning dairy calves fed milk replacer (1 week old), and milk replacer + fibrous pellets (3 weeks old) were sacrificed 5 h after the morning meal. Rumen liquid was collected and diluted with Mc Dougal buffer and colon content was pooled and diluted by Lowe medium. Extraction of apple, banana peel, and MOS were tested versus a control. Each bottle was incubated in duplicate for each treatment and at 370C in a shaking water bath. Bacterial concentrations were determined at 48 H and inoculated in selected media for each bacteria group.

The result showed, in general, apple and banana peel extraction significantly increase rumen total anaerobes and bifidobacteria in rumen liquid from a week old calf, and total anaerobic and lactobacilli in the second group but could not depress the E. coli. On the other hand, MOS seems the most effective in depressing Coli bacteria. Based on the results, oligosaccharides was fermented by bacteria of rumen liquid and colon contents in dairy calves and its fermentation led to a selective stimulation of host bacteria.

Afternoon, April 11, 2017 (Tuesday)

Time: 14:00~16: 30

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 1: 10 presentations- Topic: "Food Engineering and Animal Science"

Session Chair: Prof. Hami Alpas

E0016 Presentation 5 (15:00~15:15)

Storage Influence on Physico-Chemical Composition and Antioxidant Activity of Jamun Drink Prepared from Two Types of Pulp

Muhammad Atif Randhawa, Naveed Ahmad, Hassan Nabeel Ashraf, Muhammad Nadeem, and Mahreen Akhtar

University of Agriculture-Faisalabad, Pakistan

Abstract—The influence of different types of Jamun pulp was assessed by making drink in six combinations as an attempt to add value to underutilized fruit of Pakistan. pH and ascorbic acid (21.92%) decreased significantly along with phenolic contents (6.13-4.86 g of GAE/kg) and antioxidant activity (70.68-48.62 percent) till storage period of 60 days while significant increase in acidity, TSS, reducing sugars, total sugars and viscosity was observed. Statistically significant differences were determined among sensory parameters as a function of pulp type and concentration, while treatment T_5 (10% pulp with seed) was much liked by the consumer and obtained highest score (7.42+0.06).

Afternoon, April 11, 2017 (Tuesday)

Time: 14:00~16: 30

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 1: 10 presentations- Topic: "Food Engineering and Animal Science"

Session Chair: Prof. Hami Alpas

E0022 Presentation 6 (15:15~15:30)

Effect of Octenylsuccinylation on Morphological, Particle Size and Surface Activity of Octenyl Succinic Anhydride (OSA) Modified Sago Starch

Anida Yusoff, Nur Farhana Zainal Abiddin, and Noorlaila Ahmad

Universiti Teknologi MARA, Malaysia

Abstract—Sago starch (Metroxylon sagu) and Gelose 80 was chemically esterified with Octenyl Succinic Anhydride (OSA) to produce hydrophobically starch which can act as emulsifier in oil-in-water emulsion (O/W). The modification of sago starch and Gelose 80 was conducted in aqueous phase following the optimum parameter: OSA concentration 5.0%, pH 7.20 and reaction time of 9.65 h. The study was conducted to investigate the morphological properties, particle size and surface activity of octenyl succinic anhydride (OSA) modified sago starch. The OSA sago starch had a degree of substitution (DS) of 0.0120. The morphology of starch granule examined by scanning electron microscopy (SEM) showed some rough surface and a few changes in shape of OSA starches. The particle size of both OSA starches significantly ($p < 0.05$) increased (OSA sago starch = 29.05 μm, OSA gelose 80 = 20.37 μm) due to structural disorder that occurs after modification. OSA sago starch showed an increase in surface tension from 58.40 to 60.80 mN/m with increased in OSA sago starch concentration from 0.01 to 1.0% w/v. The surface tension for OSA gelose 80 was 54.87 mN/m. The modification has improved native sago starch and Gelose 80 becoming surface active molecules which will be useful to be used in emulsion.

Afternoon, April 11, 2017 (Tuesday)

Time: 14:00~16: 30

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 1: 10 presentations- Topic: “Food Engineering and Animal Science”

Session Chair: Prof. Hami Alpas

E2002 Presentation 7 (15:30~15:45)

Milk Quality of Etawa Crossbred Dairy Goat Fed by Product of Palm Oil Industry

Arief, N Jamarun, and B Satria

Andalas University, Indonesia

Abstract—The objective of this research was to determine the level of replacement concentrate ration of PE dairy goat with concentrates formulated by various of by product of palm oil industy (palm kernel cake (PKC), and palm oil sludge (POS) that have supplemented with probiotics. Research was conducted using completely randomized design (CRD) with 5 treatments concentrate ration replacement and 4 replications. Treatment A). 100% concentrate standard (CS) and 0% concentrate of by products of palm oil industry (CBPO), B). 75% CS + 25% CBPO, C). 50% CS + 50% CBPO, D). 25% CS + 75% CBPO, and treatment E). 0% CS + 100% CBPO. Parameters measured were quality of milk, ie protein, fat, lactose and mineral (Ca and P).

The results of the research was protein 4.26 %, fat 5.45 %, lactose 2.18 and mineral 2.84 and 0.58 for Ca and P, respectively.

From the overall parameters of the above it can be concluded that concentrate rations based on by products of palm oil industry that have supplemented by was able to maintain the milk quality of PE dairy goat measured by fat of milk, protein, lactose and mineral (Ca and P).

Afternoon, April 11, 2017 (Tuesday)

Time: 14:00~16: 30

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 1: 10 presentations- Topic: "Food Engineering and Animal Science"

Session Chair: Prof. Hami Alpas

E2004 Presentation 8 (15:45~16:00)

The Physical Quality of Ruminant Pellet Based of Oil Palm Trunk Fermented on Different Level of Tapioca Starch as Binder

Yetti Marlida, Arnim, Harnentis, and Porti Meriska

Andalas University, Indonesia

Abstract—Pelleted feeds have been defined as "agglomerated feeds formed by extruding individual ingredients or mixtures by compacting and forcing through die openings by any mechanical process". Basically, the purpose of pelleting is to take a finely divided, sometimes dusty, unpalatable and difficult-to-handle feed material and, by using heat, moisture and pressure, form it into larger particles. These larger particles are easier to handle, more palatable and usually result in improved feeding results when compared to the unpelleted feed.This study aims to determine the physical quality of ruminant pellet based oil palm trunk fermented on different level of tapioca starch as binder (water content, texture, durability). Complete rations used 40% oil palm trunk and 60% of concentrate. The experimental design used was completely randomized design (CRD) with three treatments and seven replications. The treatment were A: 5% of tapioca starch; B: 7.5% of tapioca starch; C: 10% tapioca starch. The variables measured were water content, texture and durability. The results obtained showed that the treatment effect is not significant ($P > 0.05$) to the water content of the pellets, and highly significant ($P < 0.01$) to the texture and durability of pellets. The results of this study can concluded that the use of 10% of tapioca starch gives the best pellet physical quality of the water content: 8.40%, the texture: 179,75N / cm2, and the durability of 99.50% .

Afternoon, April 11, 2017 (Tuesday)

Time: 14:00~16: 30

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 1: 10 presentations- Topic: “Food Engineering and Animal Science”

Session Chair: Prof. Hami Alpas

E3002 Presentation 9 (16:00~16:15)

Content of Purine in Mushroom Fruiting Bodies and Mycelia

Shih-Jeng Huang, Hsin-Wei Juan, and **Shu-Yao Tsai**

Asia University, Taiwan

Abstract—Levels of purine bases (adenine, guanine, hypoxanthine, and xanthine) were determined in 29 species of mushroom fruit body and mycelia from the Taiwan. Changes in purine-related compounds of mushroom during storage and cooking were investigated. Freeze-dried were hydrolyzed with water–trifluoroacetic acid–formic acid (1:5:5, v/v/v) at 120 ◦C for 30 min for the quantitative liberation of bases from nucleic acids. Purine bases were then analyzed by reverse-phase liquid chromatography. The results indicated that total purine amounts in most mushroom fruit body were higher than mushroom mycelia. The principal purine bases were xanthine and adenine, and xanthine content was the highest in fruit body. The principal purine bases were hypoxanthine and adenine, and hypoxanthine content was the highest in mycelia. The purine content of mushroom differed depending on species, part, storage and cooking, which could be recommended for consumers as a healthy diet, especially for people with hyperuricemia and gout.

Afternoon, April 11, 2017 (Tuesday)

Time: 14:00~16: 30

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 1: 10 presentations- Topic: "Food Engineering and Animal Science"

Session Chair: Prof. Hami Alpas

E3009 Presentation 10 (16:15~16:30)

Effects Supplementation of Different Sources of Tannins in Diet Based of Oil Palm Frond Ammoniated On Nutrient Digestibility, Methane Production and Daily Weight Gain of Beef Cattle

Mardiati Zain, Ningrat, RWS, Erpomen and Heny Suryani

Universitas Andalas, Indonesia

Abstract—This research was to conducted the effect of supplementation of tannin from two different sources to ammoniated oil palm frond in diet based of oil palm ammoniated as source of roughage on feed intake, digestibility and daily weight gain of Beef Cattle. Source of tannin is gambier leaves waste (GLW) from Payakumbuh and Painan, two different Districts in West Sumatera Province. The research was designed using Latin Square Design (LSD). The treatment A as a control was cattle fed with a complete feed, consist o oil palm frond treated with 6% urea previously) + concentrate, B was Diet A + 10% GLW Painan, and C was diet A + 15% GLW Payakymbuh. Each treatment had ratio roughage and concentrate 50 : 50. Concentrates consist of palm oil cake, rice brain, and mineral. Data collected were feed intake, nutrient digestibility, body weight gain and methane production. The result showed that treatments had no significant (P>0,05) effects on intakes of dry matter, organic matter, and nutrient digestibility but the treatments had highly significant (P<0,01) effect on average daily gain and methane production. The results showed that the supplementation of GLW could increased daily weigh gain and reduce methane production and no different about source of GLW. Supplementation of gambier leaves waste gave the best result on animal performance on diet based oil palm frond ammoniated.

16:30-16:50	**Coffee Break& Group Photo Taking**

Session 2

Afternoon, April 11, 2017 (Tuesday)

Time: 17:15~19:00

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 2: 7 presentations- Topic: “Microbiology and Biotechnology”

Session Chair: To be added

E0001 Presentation 1 (17:15~17:30)

Isolation of Bacteriophage From Hot Spring in Malaysia with Lytic Activity Against Gram Negative Bacteria

Ng, Michelle Y.T., Abdul Halim, A.T., and Mohd Ismail, N.I.

Universiti Tunku Abdul Rahman, Jalan Universiti, Bandar Barat, Perak

Abstract—Endolysin, the enzyme produced by phage to break the host cells during the later stages of phage lytic replication cycle, has been widely studied as potential anti-microbial agents. Many studies regarding the use of endolysins against Gram positive bacteria have been reported, but there are little data on the activity of this enzyme against Gram negative bacteria. This is mostly likely due to the presence of an outer membrane in Gram negative bacteria which prevents the direct contact of phage lysins to the peptidoglycan layer. However, recently, several researches have demonstrated that externally applied purified endolysins from Gram negative infecting phages have been able to lyse the cells in the absence of cell-permeabilizing agents. In view of this, our main interest is to explore the possibility of utilizing endolysin extracted from phage isolated from hot spring in cellular disruption step in downstream processing. Currently, two phage isolates, KW-D and KW-E that exhibit strong lytic activity against *E. coli* BL21 cells have been isolated from Kuala Woh hot spring (55oC) in Perak, Malaysia after few rounds of double-layer agar overlay method. The genomes of these phage isolates have been partially characterized, which showed that these two phage isolates are different from one and another with sizes more than 10 kbp. Furthermore, the host range of these isolated phages against various Gram negative bacteria has also been determined by using spot lytic assay. The current study also demonstrated that ammonium sulfate precipitation is a feasible to method to use to isolate the native endolysin from crude lysate. The activity of endolysin has been detected in ammonium sulfate saturation

Afternoon, April 11, 2017 (Tuesday)

Time: 17:15~19:00

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 2: 7 presentations- Topic: “Microbiology and Biotechnology”

Session Chair: To be added

E0015 Presentation 2 (17:30~17:45)

Effect of Hydrogen Cyanamide Concentrationto Stem Shoots Two Cuttings Grape Variety (Vitis Vinifera)

Dyah Roeswitawati, Paschalis Bagus Satrio Utomo, and Aniek Iriany

Agotechnology Departement of Muhammadiyah University of Malang

Abstract—Grape is one of the fruit widely consumed either processed forms of fruit or fresh. Planting grapes have not been able to meet the needs of national, as shown by the Central Statistics Agency (Badan Pusat Statistik) the data of imported grapes recorded 29,501,977 kg with a value of US $ 39,527,300 in last period. The study aims to know effect of hydrogen cyanamide on stem cuttings bud two varieties of grapes (Vitis vinivera). This study uses a randomized block design factorial consisting of two factors: the grape varieties and concentration of hydrogen cyanamide. The result shows that in general observation interaction between varieties and treatments significantly affected concentrations bud burst, and a very significant effect on shoot length, number of leaves, leaf area, and not significantly different from the number of roots and root length.

Afternoon, April 11, 2017 (Tuesday)

Time: 17:15~19:00

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 2: 7 presentations- Topic: “Microbiology and Biotechnology”

Session Chair: To be added

E0024 Presentation 3 (17:45~18:00)

Verrucosispora sp. K2-04, Potential Xylanase Producer from Kuantan Mangrove Forest Sediment

Suhaila Mohd Omar, Norsyafawati Mohd Farouk, Nurfathiah Abdul Malek, Zaima Azrira, Zainal Abidin

International Islamic University Malaysia, Malaysia

Abstract—Forty actinomycetes that were isolated from sediment of Kuantan Mangrove Forest, Malaysia were tested for their ability to produce extracellular xylanase. At least 15 isolates were able to degrade xylan in the primary agar-based screening on marine agar containing 0.1% (v/v) azo-xylan (Birchwood). The degradation of xylan was indicated by the formation of halo zone around the colonies and the enzymatic clear zone index (CZI) was calculated. Isolate K2-04 with CZI 3.35 ± 1.91 was identified as Verrucosispora sp. This isolate was further grown in marine broth and incubated at 30℃, 200 rpm for 20 days. The growth of K2-04 and the xylanase activity was measured at day 2, 4, 6,12 and 18 respectively. The highest enzyme activity for the crude enzyme was recorded at day 18 (1.83616 U/mL) and exhibited stability after 20 days storage at 4℃.

Afternoon, April 11, 2017 (Tuesday)

Time: 17:15~19:00

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 2: 7 presentations- Topic: "Microbiology and Biotechnology"

Session Chair: To be added

E2003 Presentation 4 (18:00~18:15)

The Role of Humic Acid Doses to Improve the Nutrient Content and Quality of Fermented Palm Oil Sludge

Mirnawati, Ade Djulardi, and Gita Ciptaan

Andalas University, Indonesia

Abstract—An experiment was conducted to understand the effect of type of microbe and humic acid doses to improve the quality and nutrient content of fermented palm oil sludge (FPOS)**.** The experiment used completely randomize design (CRD) with 2 x 3 factorial and 3 replications. The first factors were two kinds of microbe: *Neurospora sitophila* and *Neurospora crassa.* The second factor was humic acid doses: (1) 100 ppm (2) 200 ppm (3) 300 ppm. The parameters were crude protein, crude fiber, nitrogen retention and crude fiber digestibility of fermented palm oil sludge (FPOS). The result of the study showed that there was more significant interaction between types of fungi and humic acid doses ($P<0.01$), than between each type of microbes and humic acid doses, which is significantly affected ($P<0.01$) to crude protein, crude fiber, crude lipid, nitrogen retention and crude fiber digestibility of fermented palm oil sludge. The conclusion was fermented palm oil sludge with *Neurospora crassa* and humic acid doses 200 ppm gave crude protein, crude fiber, crude lipid, nitrogen retention and crude fiber digestibility of fermented palm oil sludge better than *Neurospora sitophila* as seen from its highest crude protein (23,74%),crude fiber (20,14%), crude lipid (2.70%), nitrogen retention (60.97%) and crude fiber digestibility (55.63%) of fermented palm oil sludge.

Afternoon, April 11, 2017 (Tuesday)

Time: 17:15~19:00

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 2: 7 presentations- Topic: “Microbiology and Biotechnology”

Session Chair: To be added

E3003 Presentation 5 (18:15~18:30)

Determination of substrate composition and chemical composition of Bagasse fermented with fungi *ganoderma lucidum*

Fauzia Agustin and Elihasridas

Andalas University, Indonesia

Abstract—High lignin content in bagasse is a limiting factor for using it as animal feed. *Ganoderma lucidum* is a white rot fungi that can degrade lignin. Fermentation of bagasse with *G.lucidum* was conducted to determine the composition of substrate for the growth of *G.lucidum* and its chemical composition after fermentation. This experiment using a completely randomized design patterns 4X5 factorial with three replications. A factor is the addition of an energy source on the base substrate bagasse: A1 = control, bagasse 100% (without additional energy sources); A2 = bagasse 70% + 30% rice bran; A3 = bagasse 70% + 30% corn; A4 = bagasse 70% + 15% rice bran and 15% corn. Factor B is a fermentation time: B1 = 0 week; B1 = 2 weeks; B2 = 4 weeks; B3 = 6 weeks and B5 = 8 weeks. The dry matter, organic matter, crude fiber, lignin, fiber fraction and crude protein components of growth media of *G. lucidum* was determined and was analyzed. The result showed that each factor (substrate composition and fermentation time) were highly significant difference ($P < 0.01$) on crude fiber, acid detergent fiber (ADF), cellulose, and lignin content of fermentation product. Crude fiber content of fermentation products decreases with the length of fermentation up to eight weeks on all of the substrate composition with the value by 20% at 8 weeks of fermentation. It can be concluded that the best substrate composistion for growing *Ganoderma lucidum* was bagasse + 15% rice bran and 15% corn and the best fermentation time to lower lignin content and to get good chemical composition was fermentation time 6 weeks.

Afternoon, April 11, 2017 (Tuesday)

Time: 17:15~19:00

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 2: 7 presentations- Topic: "Microbiology and Biotechnology"

Session Chair: To be added

E3004 Presentation 6 (18:30~18:45)

Comparative Study on Antioxidant Activity of Scales and Tunic from Bulb of Bawang Dayak (*Eleutherine Palmifolia* L Merr)

Sitti Faika Ahsan and Yi-Hsu Ju i

National Taiwan University of Science and Technology, Taiwan

Abstract—In literature various methods were used for extracting antioxidant compounds from Bawang Dayak (*Eleutherine palmifolia* L), but there is no report on optimizing the extraction of antioxidant compounds from this plant particularly in scales and tunic of the bulb. By employing aqueous ethanol (50%, 70%) as the solvent, dry scale leaves and tunic of Bawang Dayak (BD) were macerated for 12 to 24 h. Total phenolic content (TPC), total flavonoid content (TFC) and DPPH free radical scavenging activity of the extract were quantitatively determined. It was found that by employing 70% ethanol with a maceration time of 12 h, the tunic resulted in significantly higher TPC (2750.00±116.68mg GAE/100 g extract) and TFC (1040.35±37.52mg IQE/100 g extract) than that of the scales (TPC =898.54±41.4652 68mg GAE/100 g extract; TFC = 396.60±2.215252mg IQE/100 g extract). The result showed that higher concentration of TPC and TFC may increase corresponds to higher scavenging activity. When different target (TPC, TFC, DPPH scavenging activity) was considered, different optimized extraction conditions (ethanol concentration, maceration time) may have to be used in extracting bioactive compounds from BD.

Afternoon, April 11, 2017 (Tuesday)

Time: 17:15~19:00

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 2: 7 presentations- Topic: "Microbiology and Biotechnology"

Session Chair: To be added

L0027 Presentation 7 (18:45~19:00)

Fungi Trichoderma sp associated sponge: identification, fermentation and activity

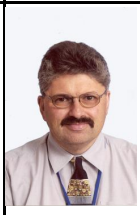
Erna Prawita Setyowati, Sut Pratiwi, Triana Hertiani, Oka Samara, and Purwantiningsih Purwantiningsih

Universitas Gadjah Mada, Indonesia

Abstract—Sponge is an animal whose body is porous (Porifera). More than 45% of the sponge body consists of microbes. One of the common microbes associated with sponge is a fungus. This study has been conducted on testing the ethyl acetate extract of fermented fungus with code sal 5 and sal 10 are associated with a sponge *Stylissa flabelliformis* against antimicrobial properties and cytotoxic properties. Identification of fungi Associated with sponges are made at the molecular level using the method 16rRNA / ITS region with the addition of phylogeny tree. The results showed that the ethyl acetate extract fungi code sal 5 and sal 10 active against bacteria *S. aureus* ATCC 29213, *E. coli* ATCC 25 922, and *C. albicans* ATCC 10231. The ethyl acetate extract is also active against cancer cells T47D and Raji cells each with IC50 value of 270 ug/mL and 470 ug/mL. The results showed that the fungi sal 5 and 10 are *Chondrema* sp

April 12, 2017 (Wednesday)

Venue: Room 402, Fusion Tech Center (FTC) Bldg

8:30~8:35		**Opening Remarks** Prof. Ki-Hyun Kim Department of Civil & Environmental Engineering, Hanyang University, South Korea
8:35~9:00		**Keynote Speech III** Prof. Ki-Hyun Kim Department of Civil & Environmental Engineering, Hanyang University, South Korea Topic: "*Synthesis of Nanomaterials from Wastes*"
9:00~9:25		**Keynote Speech IV** Prof. Jan E. Szulejko Department of Civil & Environmental Engineering, Hanyang University, South Korea Topic: "*Weekday – Sunday Effect on the Behavior of Airborne Pollutants: Case Study in an Urban District of Seoul, Korea*"
9:25~9:50		**Plenary Speech I** Prof. Patrick Ball School of Pharmacy, Faculty of Science and Engineering, University of Wolverhamp ton, United Kingdom Topic: "*Medication Management in the Elderly, the Importance of Frailty and of Delirium*"
9:50~10:15		**Coffee Break & Group Photo Taking**
10:15~10:40		**Plenary Speech II** Prof. Tjokorda Gde Tirta Nindhia Engineering Faculty, Udayana University, Bali, Indonesia Topic: "*Preparing Silk Biomaterial from Cocoon of Wild Silkmoth Attacus atlas*"
10:40~12:40		**Session 3:** 8 presentations-Topic: "Pharmaceutical and Biomedical Management" Venue: Room 402, Fusion Tech Center (FTC) Bldg
12:40~13:30		**Lunch**
13:30~16:15		**Session 4:** 11 presentations-Topic: "Phytochemistry and Pharmaceutical Analysis" Venue: Room 402, Fusion Tech Center (FTC) Bldg
14:00~16:15		**Session 5:** 9 presentations-Topic: "Environmental Chemical Engineering" Venue: Room 106, Jae Sung Civil Bldg
16:15~16:30		**Coffee Break**
16:30~19:00		**Session 6:** 10 presentations-Topic: "Pharmacology and Applied Pharmacy" Venue: Room 402, Fusion Tech Center (FTC) Bldg
16:30~18:15		**Session 7:** 7 presentations-Topic: "Environmental Monitoring and Energy Engineering" Venue: Room 106, Jae Sung Civil Bldg
19:10		**Dinner**

Session 3

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Morning, April 12, 2017 (Wednesday)

Time: 10:40~12:40

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 3: 8 presentations- Topic: "Pharmaceutical and Biomedical Management"

Session Chair: Assoc. Prof. Nuraliza Abdul Satar

L0006 Presentation 1 (10:40~10:55)

Cancer Risk Assessment System by Android Application in Smartphone

Bunthida Chunngam

Faculty of Industrial Education, Rajamangala University of Technology, Suphanburi, Thailand

Abstract—This research was cancer risk analysis system development on Android operating system. This research had objective to developed cancer risk analysis system development on Android operating system and studied satisfaction of system user. There were 5 experts who were 3 information technology experts, 2 professional level registered nurses. There were 100 sample users to test this system which collected data by questionnaire about system efficient evaluation and satisfaction about this risk assessment system. This system had 3 functions which were system using, system feather evaluation and system accuracy evaluation which analyzed by frequency of rating scales, mean and standard deviation. This data analysis result from these 5 experts found that the system using performance quality had good level satisfaction (3.95 mean), system feather function analysis had good level satisfaction (4.12 mean) and system accuracy had good level satisfaction (4.13 mean).

Morning, April 12, 2017 (Wednesday)

Time: 10:40~12:40

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 3: 8 presentations- Topic: "Pharmaceutical and Biomedical Management"

Session Chair: Assoc. Prof. Nuraliza Abdul Satar

L0011 Presentation 2 (10:55~11:10)

Development of Water in Olive Oil (W/O) Nanoemulsions as Lipstick Base Formulation

Siti Z. Munawiroh, Aughina N. Nabila, and Lutfi Chabib

Universitas Islam Indonesia, Indonesia

Abstract—**Objective**: The objective of this research is to develop w/o olive nanoemulsions which prepared by low energy method to use in lipstick base formulation.
Methods: W/o olive nanoemulsionss were prepared by low energy methods which was employed a Phase Inversion Composition (PIC) technique in elevated temperature at 80℃ using mixed-surfactants (tween 20/span 80).
Results: In ternary phase diagram (oil:water:mixed-surfactants), the largest area of nanoemulsions was occurred in equal ratio tween20:span80 (1:1). The maximum water content of w/o olive nanoemulsions was reached at 12% water with 60% mixed-surfactants (1:1). An unimodal size distribution of w/o olive nanoemulsions with varied water content at 8,10 and 12% were found with droplet size at 29.33 ± 5.30 nm, 30.23 ± 7.33nm and 29.83 ± 11.47 nm. Water content of w/o olive nanoemulsions significantly affected to melting profile of lipstick but not to the hardness properties of lipstick.
Conclusion: W/o olive nanoemulsions which prepared by low energy can be developed as lipstick base formulation.

Morning, April 12, 2017 (Wednesday)

Time: 10:40~12:40

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 3: 8 presentations- Topic: "Pharmaceutical and Biomedical Management"

Session Chair: Assoc. Prof. Nuraliza Abdul Satar

L0022 Presentation 3 (11:10~11:25)

Translation and validation of eight-item Morisky Medication Adherence Scale MMAS for diabetic patients in Indonesia

Susi Ari Kristina, Ikawati Zullies, Dwi Endarti, Lita Riastienanda Putri, Defilia Anogra Riani, and Donald E Morisky

Universitass Gadjah Mada, Indonesia

Abstract—**Background**: Medication non-adherence in patient with diabetes has been associated with poor blood glucose control. A self-reported questionnaire consisted of 8 items Morisky medication adherence scale (MMAS) has been developed and validated as well as widely used because of its convenience for patients.
Objective: to examine the reliability, including internal consistency and test retest reliability and the validity, including convergent validity and known-groups validity of the MMAS among patients with diabetes in Indonesia
Methods: A cross sectional study was conducted to collect the data, using a convenience sampling. 250 patients with diabetes at four primary health centers in Yogyakarta Province were recruited and interviewed, during September to December 2016. Eight items MMAS, four items MMAS, sociodemographic data, and medical records were reviewed for data analysis.
Results: Internal consistency reliability was excellent (Cronbach's α =0.781), as well as the test-retest reliability of the MMAS was excellent (Spearmans' rank correlation = 0.816; $p<0.001$). Regarding convergent validity, the MMAS had a high correlation with the 4items MAS ($r=0.88$, $p<0.01$). MMAS had excellent score in known group validity, showed a significant association between MMAS and fasting blood glucose level ($p<0.001$). The specificity, specificity, positive predictive value, and negative predictive value of the MMAS were 74.5 %, 56.9 %, 56% and 75.2 % respectively.
Conclusion: The eight items MMAS is a valid and reliable tool in measuring medication adherence among patients with diabetes in Indonesia which can now be used.

Morning, April 12, 2017 (Wednesday)

Time: 10:40~12:40

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 3: 8 presentations- Topic: "Pharmaceutical and Biomedical Management"

Session Chair: Assoc. Prof. Nuraliza Abdul Satar

L0023 Presentation 4 (11:25~11:40)

Psychometric Properties of the EQ-5D-3L and EQ-5D-5L Instruments for Health Related Quality of Life Measurement in Indonesian Population

Dwi Endarti, Susi Ari Kristina, Rizki Noorizzati, Akbar Eka Nugraha, Fera Maharani, Kika Ainun Putri, Asninda Hafshah Azizah, Sausanzahra Angganisaputri, and Yunisa Yustikarini

Universitas Gadjah Mada, Indonesia

Abstract—**Objective**: Cost utility analysis is the most recommended pharmacoeconomic method since it allows widely comparison of cost-effectiveness results from different interventions. The method uses outcome of quality-adjusted life year (QALY) or disability-adjusted life year (DALY). Measurement of QALY requires the data of utility and life years gained. Utility is measured with the instrument for quality of life measurement such as EQ-5D. Recently, the EQ-5D is available in two versions which are EQ-5D-3L and EQ-5D-5L. This study aimed to compare the EQ-5D-3L and EQ-5D-5L to examine the most suitable version for Indonesian population.

Methods: This study was an observational study employing cross sectional approach. Data of quality of life measured with EQ-5D-3L and EQ-5D-5L were collected from several groups of population which were respondents with chronic diseases, respondents with acute diseases, and respondents from general population (without illness) in Yogyakarta Municipality, Indonesia. Convenience samples of hypertension patients (83), diabetes mellitus patients (80), and osteoarthritis patients (47), acute respiratory tract infection (81), cephalgia (43), dyspepsia (42), and respondent from general population (293) were recruited in this study. Responses on the 3L and 5L versions of EQ-5D were compared by examining the psychometric properties including agreement, internal consistency, ceiling effect, and convergent validity.

Results: Agreement test using intraclass coefficient correlation showed that utility derived from EQ-5D-5L had better correlation with EQ-VAS (0.195 – 0.559) compared to correlation of EQ-5D-3L and EQ-VAS (0.155 – 0.818). In general, internal consistency of EQ-5D-5L were better than EQ-5D-3L, indicated by greater Cronbach's alpha of EQ-5D-5L (0.067 – 0.790) compared to EQ-5D-5L (0.078 – 0.865). Ceiling effects in EQ-5D-5L (average: 56%) reduced compare to ceiling effects in EQ-5D-3L (average: 60%). Compared to EQ-5D-3L,

EQ-5D-5L had better convergent validity with EQ-VAS, indicated from greater coefficient of correlation which were 0.240 – 0.444 and 0.294 – 0.545 in EQ-5D-3L and EQ-5D-5L, respectively.

Conclusion: Based on psychometric properties tests of EQ-5D-3L and EQ-5D-5L, EQ-5D-5L tended to have better psychometric properties compared to EQ-5D-3L. Future studies for health related quality of life (HRQOL) measurements for pharmacoeconomic studies in Indonesia should apply EQ-5D-5L.

Morning, April 12, 2017 (Wednesday)

Time: 10:40~12:40

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 3: 8 presentations- Topic: "Pharmaceutical and Biomedical Management"

Session Chair: Assoc. Prof. Nuraliza Abdul Satar

L0026 Presentation 5 (11:40~11:55)

Implementation of Self-Regulated Learning for Pharmacy Students in Nervous System Pharmacotherapy

Yosi Febrianti, Saepudin S, and Hana Morrissey

Universitas Gadjah Mada, Indonesia

Abstract—**Background:** Conventional learning through lecturing decreases students' involvement whereas students' active participation in class promises more benefits. The development of active learning method can help hone students' soft skills in thinking critically and systematically.

Objectives: This study aimed to identify the influence of self-regulated learning (SRL) on students' active participation and learning outcome in the Nervous System Pharmacotherapy subject. Students' response towards the self-regulated learning method would also be described.

Method: The study used a quasi-experimental quantitative approach with a non-equivalent control group design involving four classes of fifth-semester pharmacy students during December 2016. Students were divided into 2 control groups (155 students) and 2 intervention groups (124 students), which were then divided into 1 case group involving an international lecturer and SRL application as well as 1 case group involving an internal lecturer and SRL application. Learning outcome was assessed based on the average final score and pass rate of all students compared to the average final score of last year's students, while the active participation was graded from their ability to do a presentation. To identify students' response towards the learning process using SRL, a questionnaire adopted from other studies was utilized.

Results: There was an improvement in the average final score of all students of 2016/2017 as much as 70.94 compared to the average final score of all students of 2015/2016, which was 67.8. The evaluation on students' active participation showed a relatively satisfactory result with 7.25 average score in Case 1 Group and Case 2 Group and 6.99 in the Control Group. The students also indicated positive responses to the implementation of SRL method, reaching 81.3%.

Conclusion: The implementation of self-regulated learning could improve students' active participation and learning outcome in Nervous System Pharmacotherapy.

Morning, April 12, 2017 (Wednesday)

Time: 10:40~12:40

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 3: 8 presentations- Topic: "Pharmaceutical and Biomedical Management"

Session Chair: Assoc. Prof. Nuraliza Abdul Satar

L0029 Presentation 6 (11:55~12:10)

Role of Pharmacist in Counseling Asthma to Improve Patient Adherence in Yogyakarta

Chynthia Pradiftha Sari, Lukman Hakim, and I Dewa Putu Pramantara

Islamic University of Indonesia

Abstract—**Background:** An effort to minimize asthma attacks and improve therapy success is done by increasing patient adherence to medication. Pharmacist counseling is expected to improve adherence and therapy outcome.
Objective: To identify the effect of pharmacist-provided counseling on patient adherence and to examine the correlation between adherence level and asthma therapy outcome
Research Methodology: Quasi-experimental through control-group design with pretest-posttest. Study was conducted during February–June 2013 (N=120). Only the intervention group received pharmacist counseling. All participants completed MMAS and ACT questionnaires before and after counseling. They were 18–60 years old and having <8 MMAS pretest score with moderate-severe persistent asthma.
Results: The intervention was pharmacist counseling for 56 patients, and control group had 50 patients. After counseling, 3.92% severe persistent asthma patients showed low-medium adherence, and 62.64% moderate persistent asthma patients had medium-high adherence. The change of MMAS score in the intervention group was 3.71 and 2, and 1.23 and 1.64 in the control group. Wilcoxon and Mann Whitney test indicated a significant difference in patient adherence before and after counseling ($p<0.001$). Adherence was positively and significantly correlated with therapy outcome ($p<0.001$; $r=0.583$).
Conclusion: Pharmacist counseling affects asthma patient adherence. There is a significant correlation between adherence and therapy outcome.

Morning, April 12, 2017 (Wednesday)

Time: 10:40~12:40

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 3: 8 presentations- Topic: "Pharmaceutical and Biomedical Management"

Session Chair: Assoc. Prof. Nuraliza Abdul Satar

L0035 Presentation 7 (12:10~12:25)

Clinical Pharmacy in Galle Sri Lanka, Collaboration and Friendship

Hana Morrissey, Shukry Zawahir, Sujeewa Hettihewa, and **Patrick Ball**

University of Wolverhampton, UK

Abstract—Pharmacy undergraduate courses in Ruhuna, while is more practice focus than many of the other courses in Sri Lanka, it is still missing clinical pharmacy elements. Collaboration between academic staff from Ruhuna University and two international clinical pharmacy academics was established in 2014. The aim of this paper is to report on a clinical pharmacy training program, delivered by the international academics and supported by the Sri Lankan academics to pharmacy students in 2015-2016. After short conceptualisation lecture on each topic, there was a workshop which was structured as team case-based learning progressive case studies. Topics included mental health, pharmacokinetics, interpreting laboratory results, parenteral drug compatibility, special hospital compounding and medication review, of which all were assessed in the final examination. Student found team based learning to be engaging and enabled them to independently and critically think in a safe environment and preferable over the traditional lectures.

Morning, April 12, 2017 (Wednesday)

Time: 10:40~12:40

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 3: 8 presentations- Topic: "Pharmaceutical and Biomedical Management"

Session Chair: Assoc. Prof. Nuraliza Abdul Satar

L2002 Presentation 8 (12:25~12:40)

A Multicenter Study Treatment Adherence of Hypertension Focused on Primary Health Care in Indonesia

Endang Sulistiyowatiningsih

Pharmacy Department, Islamic University of Indonesia

Abstract—Hypertension today has a remained a focus in developing countries. This study aim was to determine the treatment adherence measured by the 8-item Morisky Medication Adherence Scale (MMAS-8) in hypertensive outpatients. A cross-sectional study was carried out with hypertensive patients older than 18 years, treated at eight of the primary health care in Special Region of Yogyakarta through interviews, between January and April 2016. Adherence was determine by MMAS-8 version translated for this study. The patients consider low adherence (score < 6), moderate adherence (score 6 – 7) and high adherence when they had a score equal to 8 at the MMAS-8. The prevalence of adherence among the 233 patients in primary healthcare showed the majority was lower adherence (57.90%), the moderate adherence (30.25%) and the high adherence (11.82%). The average adherence value acoording to the MMAS-8 was 5.2 (± 1.7). Non-adherence treatments of hypertensive outpatients in primary healthcare was highest through application of MMAS-8.

Lunch	
12:40-13:30	Restaurant

Session 4

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

L0003 Presentation 1 (13:30~13:45)

A Study of Proliferative Activity of Herbs Eriocaulon Cinereum R.BR on Cervical Cancer Cells (HELA) with MTT Assay Method

Arde T Nugraha, Viren Ramadhan, Herianto Pandapotan, and Fitra Romadhonsyah

Universitas Islam Indonesia, Indonesia

Abstract—The Objective of this research was to evaluate potency of *Eriocaulon cinereum* R.Br to inhibit the HeLa cells. Extraction method was obtained by Ultrasound-Assisted Extraction at 40 degrees up to 30 minutes with ethanol 96%. The Extract was evaluated for total phenolic and flavonoid content and determine the proliferative on Cervical Cancer Cell (HeLa) by MTT assay method.The result of total phenolic content is 18,983 mg/g of dry weight extract, expressed as gallic acid equivalents. The result of total flavonoid content is 63,518 mg/g, expressed as quercetin equivalents. *Eriocaulon cinereum* R. has potential as an anticancer with IC_{50} 427, 79 µg/ml on HeLa cells. This study has revealed the potential of *Eriocaulon cinereum R.Br* from Bangka Belitung Island for cervical cancer treatment. The study has shown that an in vitro exposure of HeLa cells to *Eriocaulon cinereum* R.Br extract, inhibit the growth HeLa cells.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

L0005 Presentation 2 (13:45~14:00)

Membrane Stabilization and Protein Denaturation Inhibition Activity of Steroid Compound Isolated from Physalis Angulata Linn. Herbs

Rina Herowati, Gunawan Pamudji Widodo, Suwandri Suwandri, and Rizky Ardian Hartanto Sawal

Setia Budi University, Indonesia

Abstract—Physalis angulata L. extract exhibits *anti-athritis* activity, and has been reported to have analgesic and anti-inflammatory properties. This study aimed to evaluate the in vitro anti-inflammatory activity of steroid compound that was isolated from ethanol extract of P. *angulata* L. herb. Fractionation of extract was conducted by vacuum column chromatography with gradualy eluent consist of n-hexane, ethyl acetate and ethanol (from 100:0:0 to 0:0:100), followed by colum chromatography. In vitro anti-inflammatory activity was determined by membrane stabilization test, while anti-arthritis activity was determined by protein denaturation inhibitory activity. The isolate was obtained after purification of fraction H. Spectroscopic techniques; including infrared, H-, C-NMR, and LC-MS confirmed the structure as physagulin. Physagulin showed membrane stabilization and protein denaturation inhibitory activity comparable to standard drug.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

L0007 Presentation 3 (14:00~14:15)

Acetylcholinesterase Inhibitory and Antioxidant Properties of Thai Vegetables

Supat Langyanai, Prapaporn Chaniad, and Jindaporn Puripattanavong

Songkhla Rajabhat University, Thailand

Abstract—**Objective:** To screen *in vitro* AChE inhibition and DPPH radical scavenging activity of Thai vegetables.
Methods: Nineteen Thai vegetables were investigated for AChE inhibitory activity based on Ellman's colorimetric method and the antioxidant activity was also determined by 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay.
Results: The methanol extracted of pods of *Vigna unguiculata (*L.) Walp. exhibited the strongest activity against AChE with percent inhibition of 53.05 ± 1.88. For antioxidant activity of Nineteen Thai vegetables, the leaves extract of *Spondias pinnata* (L.f.) Kurz. demonstrated the most potent antioxidant activity with an EC_{50} value of 1.89 µg/mL which was comparable to the positive control, L-ascorbic acid (EC_{50} = 1.62 µg/mL). four extracts, include leaves of *Ipomcea aquatica* Forsk., arial parts of *Mentha cordifolia* Opiz., leaves of *Ocimum basilicum* L. and whole plants of *Piper sarmentosum* Roxb. extracts showed good activity with EC_{50} as 4.49, 8.22, 9.19 and 10.18 µg/mL, repectively.
Conclusion: These results will be useful for further research and development of dietary supplements from *Vigna unguiculata* (L.) Walp. and *Spondias pinnata* (L.f.) Kurz. with biological properties against Alzheimer's disease and provide a useful guidance for further studies to identify the active compounds responsible for these biological activities.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

L0008 Presentation 4 (14:15~14:30)

Physicochemical Properties of Spray-dried Young Coconut Juice

Pimolmart Rattanaburee, Thanaporn Amnuaikit, and Jindaporn Puripattanavong

Prince of Songkla University, Thailand

***Abstract*—Methods:** YCJ and spray-dried YCJ in various concentrations 0-20% (w/v) of MD were studied on physical properties, chemical properties, antioxidant activity and phytochemical determinations.
Results: YCJ and reconstituted spray-dried YCJ were significant ($p<0.05$) difference in physicochemical properties (color, pH, total soluble solids and transmittance). *Water activity (a_w) of* spray-dried *YCJ products* were significant ($p<0.05$) difference. Antioxidant activity of YCJ and spray-dried YCJ in various concentrations 0-20% (w/v) of MD were studied. The isolated compound of spray-dried YCJ and spray-dried MD-YCJ powder (20%, w/v), *β*-sitosterol, was separated, identified and confirmed by comparison of their physical properties (*TLC, HPLC chromatogram, melting point).* The quantitative analysis of *β*-sitosterol in YCJ and selected spray-dried YCJ powder (calculated as 1 coconut fruit, 350 ml) using suitable HPLC conditions were 89.12 ± 7.76 and 12.31 ± 2.50 *μ*g, respectively.
Conclusion: Spray-dried technique *was selected and used as drying process of YCJ. MD was used as encapsulating agent to dried powder.* Spray-dried MD-YCJ powder 20% (w/v) was selected to future study because of their good physical appearance, physicochemical properties, antioxidant activity and good stability.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

L0013 Presentation 5 (14:30~14:45)

Synergistic Study of N-Hexane Extract of Anredera cordifolia (BINAHONG) Leaves Combination Antituberculosis Drugs against Drug-Sensitive and Drug-Resistant of Mycobacterium Tuberculosis

Dian Pitaloka and Elin Yulinah Sukandar

Institut Teknologi Bandung, Bandung, Indonesia

Abstract—**Objective**: The aim of this study was to evaluate antimycobacterial activity of n-hexane extract of binahong leaves when it using alone and combination with antituberculosis drugs against drug sensitive and drug resistant of *Mycobacterium tuberculosis* (Mtb).
Methods: H37Rv sensitive strain, streptomycin-rifampicin (SR) resistant strain, and isoniazid-ethambutol (HE) resistant strain were evaluated by susceptibility test using a serial number of n-hexane extract (50 µg/mL-1000 µg/mL). Minimum Inhibition Concentration (MIC) was read as minimum concentration of drugs that completely inhibit visible growth of organism. Synergistic study of extract with anti-tuberculosis (TB) drugs were determined in Lowenstein Jensen (LJ) media by calculating the Fractional Inhibitory Concentration Index (FICI).
Results: The results showed n-hexane extract of binahong leaves had antimycobacterial activity against drug sensitive and drug resistant of Mtb with MIC value was 500 µg/mL against H37Rv sensitive strain or SR resistant strain Mtb and 250 µg/mL against HE resistant strain. The combination of n-hexane extract and anti-TB drugs displayed synergistic interaction and no antagonism result from the combination was observed.
Conclusion: This results indicate that n-hexane extract may serve as a template for the development of novel antimycobacterial compounds.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

L0017 Presentation 6 (14:45~15:00)

Effects of Mobile Phase Composition as a function of Temperature on Isocratic Elution Behavior of β-carotene in Reversed-Phase Liquid Chromatographic Systems

Charuwan Khamkaew

Songkhla Rajabhat University, Thailand

Abstract—**Objective:** The objective of this research was to study the retention behavior of β-carotene under isocratic elution by reversed-phase high performance liquid chromatography (RP-HLPC) for describing its elution behavior.

Method: The reversed-phase chromatographic elution systems were performed using binary mobile phase comprising 2-propanol in methanol at different volume fractions (ψ) under the designed temperatures at 25 and 35 ℃. In this study, the obtained chromatographic parameters, i.e. retention factor (k) and reciprocal retention factor ($1/k$) were calculated to provide the plots for describing the elution behavior.

Results: From this study, the exponential dependency of k on ψ, and linear dependency of $1/k$ on ψ were plotted. From linear plot, the derived chromatographic parameters, i.e. slope (S) and extrapolated y-intercept ($1/k_o$) were also considered. The larger value of correlation coefficient (r^2) from the linear plot at 35 ℃ (r^2 = 0.9922) has been obtained with the comparison of r^2 at 25 ℃ (r^2 = 0.9783). These findings thus have recommended that the elution behavior of β-carotene using 2-propanol in methanol at ψ = 0.25% was able to elute β-carotene successfully with the faster elution at 35 ^{o}C evidently.

Conclusion: The elution behavior of β-carotene under its partition between the binary mobile phases and immobilized n-alkyl chains in stationary phase was depended on the polarity of mobile phase as a function of temperature used. These results will be useful for predicting and controlling the elution behavior of β-carotene under isocratic RP-HPLC system.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

L0031 Presentation 7 (15:00~15:15)

Chemical Profiling of Morinda Citrifolia Extract from Solvent and Soxhlet Extraction Method

Chotika Muenmuang, Monpilai Narasingha, and **Malinee Sriariyanun**

KMUTNB, Thailand

Abstract—Morinda citrifolia or noni fruit is a tropical tree grown in wide ranges of areas including Southeast Asia. In Thailand, it is named as "Yor", and consumed regularly as healthy beverages and foods because of its beneficial phytochemical compositions. In this study, chemical profiling analysis of M. citrifolia extract was performed to investigate the potential use of M. citrifolia by using solvent and soxhlet extraction method. Different types of solvents (methanol, ethanol and hexane) were used here to differentially pull out the active compounds. The methanolic extract in soxhlet extraction provided the most extraction yield. The chemical profiles obtained from soxhlet extraction and solvent extraction here were quite similar but the selectivity and yield of soxhlet extraction were showed to be more efficient than solvent extraction. Based on chemical profiling, it was demonstrated that M. citrifolia is the source of vitamin E, scopoletin, and phenolic compounds suggesting its potential to be applied in pharmaceutical and food sections.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

L1002 Presentation 8 (15:15~15:30)

Cytotoxic Effect from Ethyl Acetate-Metanol Subfraction of Carrisa Carandas L toward HeLa Cells by in Vitro Test

Mamik P. Rahayu, Reslely Harjanti, Mae S. H. Wahyuningsih, and Supargiyono

Gadjah Mada University, Indonesia

Abstract—Cervical cancer is a malignant type of cancer, often affects women, particularly in developing countries. *Carrisa carandas* leaves contained many secondary metabolites that had potency as an anticancer. The purpose of this study was to understand the cytotoxic effect of subfraction of *Carrisa carandas* leaves against HeLa cells.
Chloroform fraction was separated by VLC gradually with n-hexane – chloroform – ethyl acetate and methanol. The same profiles from eluent chloroform – ethyl acetate composed fraction 18-26 were categorized as Fr4 and ethyl acetate-methanol composed fraction 27-30 as Fr5. The cytotoxic effect was evaluated by MTT assay on HeLa cells
The result showed that the cytotoxic effect of subfraction Fr4 and Fr5 had IC_{50} values of 177 mg/mL and 98 mg/mL, respectively. Colorless crystal of Subfraction Fr 5-3 had IC_{50} value of 333 mg/mL. Subfraction Fr 5 showed effective cytotoxic activity than the others. It had chemo-preventive effect against cancer cells.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

L2005 Presentation 9 (15:30~15:45)

Angiotensin Converting Enzyme Inhibitor Activity of Ethanol Extract of Sonchus arvensis (Linn.) Leaves

Suryani, Elin Yuliah Sukandar, Afifah B. Sutjiatmo, and Suci Nar Vikasari

University of Jenderal Achmad Yani Cimahi, Cimahi, Indonesia

Abstract—This research was to know the activity of Ethanol extract of Sonchus arvensis (Linn.) leaves in inhibiting the angiotensin converting enzyme (ACE) activity. ACE is an enzyme that functions to convert the Angiotensin I into Angiotensin II. The Angiotensin II has a role in the process of hypertension, it has a strong vasoconstriction effect inducting the hypertension. Methods: The ethanol extract of Sonchus arvensis (Linn.) was made through the maceration method with ethanol 96% as solvent. The inhibition extract activity of ACE activity was evaluated using N-hippuryl-L-histidyl-L-leucine (HHL) as a substrate and will be cleaved by ACE. The inhibitory activity of ethanol extract of Sonchus arvensis (Linn.) leaves towards ACE was calculated based on the number of hypural acid was created and calculated based on the absorbance value at 228 nm wavelength measured using spectrophotometer UV. The results: The ethanol extract of Sonchus arvensis (Linn.) has inhibition activity ACE at IC50 46.71 μg/ml and IC50 from captopril as a reference drug in 1,26 μg/ml. Therefore, it can be said that the inhibitory activity of Ethanol extract was lower that captopril. Conclusion: Sonchus arvensis (Linn.) is potentially used as the ACE inhibitor and is potential to be developed as antihypertension.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

E0025 Presentation 10 (15:45~16:00)

Antibacterial Activity of Flower, Leave and Stem Extract of *Melastoma Decemfidum*

Izzati Nasuha Ismail, Wan Razarinah Wan Abdul Razak, **Norrizah Binti Jaafar Sidik**, and Siti Saizah Mohd Said

Universiti Teknologi MARA, Malaysia

Abstract—Melastoma decemfidum (*M. decemfidum*) or locally identified as "senduduk putih" is a small shrub with white petals. Locally, different part of *M. decemfidum* has been used as traditional remedies for various illnesses. It is used to treat postpartum conditions, hepatitis, leucorrhea, swelling, mouth ulcer, toothaches, and sinusitis. The objective of this study is to determine the antibacterial activities of methanolic extract of different parts of *M. decemfidum* which includes flower, leaves and stem. These extracts of *M. decemfidum* was used to study the antibacterial activity against two Gram positive bacteria (*Bacillus cereus*, *Staphylococcus aureus*) and two Gram negative bacteria (*Escherichia coli, Pseudomonas aeruginosa*) by disc diffusion method at different concentrations (100, 150, 200, 250 mg/ml). The antibacterial activity is determined from the evaluation of the zone of inhibition. Based on the results, the different parts of *M. decemfidum* exhibited diverse activity against the tested bacteria. The largest diameter of zone of inhibition was 22.6 mm which was recorded by stem extract (250 µg/mL) against *Pseudomonas aeruginosa.* The maximum diameter of zone of inhibition recorded by flower and leave extract were both 15.8 mm against *P. aeruginosa* at 250 µg/mL. The antibacterial activities shown by *M. decemfidum* could indicates its potential for development of new drugs for pharmaceutical application.

Afternoon, April 12, 2017 (Wednesday)

Time: 13:30~16:15

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 4: 11 presentations- Topic: "Phytochemistry and Pharmaceutical Analysis"

Session Chair: Prof. Patrick Ball

E0026 Presentation 11 (16:00~16:15)

Antimicrobial Activity of *Melastoma Decemfidum* Leave Extract Against Human Pathogen

Wan Razarinah Wan Abdul Razak, Izzati Nasuha. Ismail, Nurul Huda. Che Isa, Norrizah. Jaafar Sidik and Siti Saizah. Said

Universiti Teknologi MARA, Malaysia

Abstract—Melastoma decemfidum is a shrub that belongs to the family Melastomaceae and traditionally used by local people to treat diseases. This study was carried out with the aim to evaluate the antimicrobial activities of different concentrations of wild and *in vitro M. decemfidum* leaves extracts against *Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Salmonella typhimurium, Candida albicans* and *Aspergillus brasiliensis.* The inhibitory effects of both extracts were tested using the disc diffusion method. Results showed that *Staphylococcus aureus* was the most sensitive towards both extracts, while *A. brasiliensis* resistance to both extracts. Therefore, *M. decemfidum* indicate its potential for the development of new drugs for pharmaceutical application.

16:15-16:30	**Coffee Break**

Session 5

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 12, 2017 (Wednesday)

Time: 14:00~16:15

Venue: Room 106, Jae Sung Civil Bldg

Session 5: 9 presentations- Topic: "Environmental Chemical Engineering"

Session Chair: Prof. Ki–Hyun Kim

S0002 Presentation 1 (14:00~14:15)

Removal of UV254 in Drinking Water Sources using Carbon Nanomaterials by a Combined Coagulation Process

Kadir Özdemir and **Ömer Güngör**

Bülent Ecevit University, Turkey

Abstract—The objective of this study is to investigate the ultraviolet absorbance at 254 nm (UV254) removal from drinking water with combined coagulation processes using single-walled carbon nanotubes (SWCNTs) and multi-walled carbon nanotubes (MWCNTs). Conventional coagulation using aluminum sulfate (alum) and ferric chloride (FeCl3) was also conducted using Ulutan Lake water (ULW) samples collected in four seasons. The proposed process was more effective than using alum and FeCl3. UV254 was always removed to a greater extent than dissolved organic carbon (DOC). The application of alum + MWCNT doses greater than 50 mg/L was similar to that observed with SWCNTs, with 77.35% removal in winter, 81.12% in fall, 87.76% in spring, and 76.23% in summer. This result shows that while the increases in UV254 removal changed with increasing doses of alum + SWCNTs in winter, higher removal percentages of UV254 were determined with the application of MWCNTs and conventional coagulants. Further, the greatest percentage of UV254 removal was determined in spring (95.87%) with the addition of FeCl3 doses greater than 50 mg/L. The results explain that the combined coagulation process is more effective than the conventional coagulants alone in different seasons for UV254 removal in ULW.

Afternoon, April 12, 2017 (Wednesday)

Time: 14:00~16:15

Venue: Room 106, Jae Sung Civil Bldg

Session 5: 9 presentations- Topic: "Environmental Chemical Engineering"

Session Chair: Prof. Ki–Hyun Kim

S0025 Presentation 2 (14:15~14:30)

Preparation of the Second-Generation Oxygen Release Compound and Assessment of its Oxygen Release Performance in Water

Gordon C. C. Yang and **Sheng-Chih Huang**

National Sun Yat-Sen University, Taiwan

Abstract—The objective of this study was to prepare a long-lasting high performance oxygen-releasing agent (called 2G-ORC, the second-generation oxygen release compound in this study). The lab-prepared 2G-ORC is comprised of sustained-release catalase and high stability sodium percarbonate. In this study, catalase was embedded in chitosan to control its water solubility and prolong its effectiveness, whereas PLGA (Poly (D,L-lactide-co-glycolide)) was coated with nanoscale sodium percarbonate to reduce its solubility to achieve its stable release. Test results showed that sustained-release catalase (added only once) has the ability to catalyze hydrogen peroxide and produce oxygen for 15 days while maintaining the dissolved oxygen concentration in the range of 13.84-15.17 mg/L in water. When sustained-release catalase was further combined with high-stability sodium percarbonate, it could maintain the dissolved oxygen concentration (6.24 mg/L) higher than the dissolved oxygen concentration of deionized water (5.43 mg/L) even after 7 days of application. Test results are really promising in enhancing the degradation of organic pollutants by indigenous microorganisms.

Afternoon, April 12, 2017 (Wednesday)

Time: 14:00~16:15

Venue: Room 106, Jae Sung Civil Bldg

Session 5: 9 presentations- Topic: "Environmental Chemical Engineering"

Session Chair: Prof. Ki–Hyun Kim

S1003 Presentation 3 (14:30~14:45)

Nitrogen Removal with Inherent Reduced Sludge Production using Membrane Bioreactor (MBR) - A Paradigm Shift?

Choon-Ping Lim, Yishuai Jiang, Muhammad Zulhilmi Rahmat, and Wun Jern Ng

Nanyang Technological University (NEWRI-AEBC), Singapore

Abstract—Partial nitrification (PN) is crucial for energy saving in wastewater treatment. It is achieved by encouraging activity of Ammonia-oxidizing bacteria (AOB) over Nitrite-oxidizing bacteria (NOB). Whereas operational-wise membrane bioreactors (MBRs) can achieve better biomass retention coupled with smaller footprint. This study investigated the feasibility of using autotrophic AOB cultivated in MBR, to achieve stable PN with reduced sludge production. An aerobic MBR (AMBR) was inoculated with an AOB pure culture (*Nitrosomonas europaea*), and operated at 35^{o}C; HRTs 8 hr, 10 hr, and 20 hr; pH 8-8.5; 80 days SRT with headspace gas recirculation. The AMBR was challenged with a synthetic medium containing 50 mg NH4-N/L, 690 mg/L $NaHCO_3$ as alkalinity, and 5 mg P/L. Full nitrification was observed 2 weeks after inoculation, indicating contamination. The reactor operating parameters were then changed to SRT: 6 to 8 days, HRT: 6 to 20 hr, without headspace recirculation and with intermittent low DO supply. The ammonium in the synthetic medium was increased from 50 mg NH4-N/L to 100 mg NH4-N/L. Stable PN was achieved with 30-40% nitritation for both HRT 6 hr and 12 hr. Despite occasional disturbances, the performance of AMBR-1 recovered within 1-2 days. Average MLVSS was 50-120 mg/L. qPCR revealed that AOB population increased from less than 5% to 30-40% of total bacterial population. On the contrary, NOB population decreased from 4.2% to below 1%. It was demonstrated that, contrary to common perception that MBRs should be operated at high MLVSS, PN was achieved at reduced sludge concentration by using AOB pure culture to initiate the process. With proper process control, no subsequent bioaugmentation of AOB pure culture was required.

Afternoon, April 12, 2017 (Wednesday)

Time: 14:00~16:15

Venue: Room 106, Jae Sung Civil Bldg

Session 5: 9 presentations- Topic: "Environmental Chemical Engineering"

Session Chair: Prof. Ki–Hyun Kim

S2001 Presentation 4 (14:45~15:00)

Feasibility analysis of CO_2 capture using ionic liquids and membranes

Muhammad Younis and **Arshad Hussain**

National University of Sciences and Technology, Pakistan

Abstract—CO_2 is a major greenhouse gas and considered responsible for climate change. About 20% of Natural Gas contains CO_2 which is above acceptable limits (2%). CO_2 is an acidic gas, corrosive in nature and damaging to both equipment and environment. Consequently, it is pertinent to develop a CO_2 capture process which is cost effective and environment friendly. This work is an effort to compare two CO_2 capture process using ionic liquids and polymer membranes.

Most of the polymers or their blends used for CO_2 separation are expensive but cellulose acetate (CA) being cheap is considered as a feasible alternative. In this work, Polyethylene glycol (PEG) and multi-wall carbon nanotubes (MWCNTs) were incorporated in CA using acetone as solvent via solution casting technique to study the permeation behavior of pure and mixed gases (CO_2 and CH_4) through fabricated membranes. Fabricated membranes were characterized using scanning electron microscopy (SEM), X-ray Diffraction (XRD), Thermogravimetric analysis (TGA) and Tensile Testing. Permeation results demonstrate remarkable improvement in CO_2/CH_4 selectivity. A considerable value of CO_2/CH_4 selectivity in case of pure gases rise has been measured up to 39. The feasibility analysis of CO_2 capture by using ionic liquids and membrane based separation process is conducted. Furthermore, solubility of CO_2 in aqueous blend of 1-butyl-3- methylimidazolium Tetrafluoroborate has been measured to determine the loading capacity (mole CO_2/total mole) as the function of CO_2 partial pressure at room temperature. Based on CO_2 loading capacity of various blends, feasibility of CO_2 capture process using ionic liquid is also evaluated and compared with a similar membrane based CO_2 capture process.

Keywords: Cellulose acetate; multiwalled CNTs; ionic liquid, CO_2 capture

Afternoon, April 12, 2017 (Wednesday)

Time: 14:00~16:15

Venue: Room 106, Jae Sung Civil Bldg

Session 5: 9 presentations- Topic: "Environmental Chemical Engineering"

Session Chair: Prof. Ki–Hyun Kim

S3001 Presentation 5 (15:00~15:15)

Research on Utilization of Anatase (TiO_2) Extracted from Polymetallic Ore for Waste Water Treatment Process

Munkhtsetseg Baatar, Enkh-Uyanga Otgon-Uul, Urangoo Urtnasan, Ulziijargal Nanzad, Enkhtuvshin Ayush, and Ankhbayar Gelegbadam

Ulaanbaatar State University, Mongolia

Abstract—In this research work, we attempt to present research finding on photocatalyst activity of anatase titanium dioxide that extracted from polymetallic ore in Orkhontuul soum, Mongolia, which is used for building a model reactor to treat waste water, whereas, total bacteria, especially E. coli dramatically decreased under UV-A. In our study, reactor is built with a thin film coated with extracted anatase (TiO2 - 99.18%) and UV-A, which increases photocatalyst activity of anatase. In order to test capacity of the reactor to eliminate total bacteria in waste water including E. coli, which belongs bacteria group causes intestinal infection, experiments are carried out under UV-A different length of time: 10', 40', 60', 80', 100 minutes. Research result shows that total bacteria decreased by 81.2-87.8% when TiO_2 UV-A reactor at 60' minutes.

Afternoon, April 12, 2017 (Wednesday)

Time: 14:00~16:15

Venue: Room 106, Jae Sung Civil Bldg

Session 5: 9 presentations- Topic: "Environmental Chemical Engineering"

Session Chair: Prof. Ki–Hyun Kim

S3003 Presentation 6 (15:15~15:30)

Promoting Effect of PKS Ash on Activated Carbon Preparation from Cypress Sawdust

Liuyun Li, Yuka Sato, and Tadaaki Shimizu

Niigata University, Japan

Abstract—Activated carbon preparation from sawdust of Japanese cypress mixed with palm kernel shell (PKS) ash was studied. The PKS was used as an activation agent. Effects of PKS ash, its mixing ratio to sawdust, carbonization temperature and introduced gases were discussed. PKS ash shows a higher promoting effect on activated carbon production because of its high content of K. 1:1 (w/w) mixing ratio of PKS ash to sawdust produced a high surface area cypress char. Also, specific surface areas of the carbonized char showed strong temperature dependence. The 700 ℃, 750 ℃ chars, showed as high as 1618 and 1678 m^2g^{-1}, respectively, in N_2 gas ambient. CO_2 and steam activation for the PKS ash mixed cypress char was operated at relatively low temperature of 600 ℃ because of complete gasification by the gasifying agents at 750 ℃. Textural structure cypress char of 1668 m^2g^{-1} surface area was achieved under steam addition at 600 ℃, micro pores of 0.3－0.6 nm were generated profusely.

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Venue: Room 106, Jae Sung Civil Bldg

Session 5: 9 presentations- Topic: "Environmental Chemical Engineering"

Session Chair: Prof. Ki–Hyun Kim

S3004 Presentation 7 (15:30~15:45)

Improvement in fouling resistance of silver-graphene oxide coated polyvinylidene fluoride (PVDF) microfiltration membrane

Kwanyoung Ko, Youngjae Yu, Min Ji Kim, Jihyang Kweon, and Haegeun Chung

Konkuk University, Republic of Korea

Abstract—Polyvinylidene fluoride (PVDF) membranes are widely used in microfiltration and ultrafiltration because of its high chemical resistance, thermal stability, and mechanical strength. However, the hydrophobic characteristic and high surface roughness of the PVDF membrane surface makes it vulnerable to membrane fouling. Therefore, nanomaterials such as graphene oxide have been coated to the membranes for improvement in fouling resistance. In this study, PVDF membranes were coated with different concentrations of silver-graphene oxide (Ag-GO) composite suspensions (0.01 - 0.3 mg ml^{-1}) via filtration process. The fouling resistance of Ag-GO coated PVDF membranes were significantly enhanced due to increased hydrophilicity and smoother membrane surface. The initial feed water flux of modified membranes were increased up to 161.1% (0.3 mg Ag-GO/PVDF) when compared to that of the pristine PVDF membrane. Also, flux recovery rate and anti-bacterial properties of Ag-GO/PVDF membranes were higher than that of the pristine membrane. Our results indicate that improvement of antifouling properties and reusability of Ag-GO/PVDF membranes could contribute to the development of highly reusable antifouling membranes coated with Ag-GO nanocomposites.

Afternoon, April 12, 2017 (Wednesday)

Time: 14:00~16:15

Venue: Room 106, Jae Sung Civil Bldg

Session 5: 9 presentations- Topic: “Environmental Chemical Engineering”

Session Chair: Prof. Ki–Hyun Kim

S3007 Presentation 8 (15:45~16:00)

Study of Different Points to Ensure Production Quality of TSP Fertilizers according to the Saint - Gobain Process and according to the Afcome Requirements

N. Chaouqi, M.EL Gharous, S.Ben-Baadi , and M.Bouzziri

University Mohammed VI polytechnique Benguerir & Service Engrais, Division Maroc-Chimie, Safi, Morocco

Abstract—The depletion of phosphate resources is still the subject of an active debate and an alarming fact. When phosphate fertilizers are not used correctly, in addition to economic loss, leads to soil degradation. Therefore, better management of the fertilizer industry can be very effective in eliminating this possibility. The objective of this research is to increase the overall performance of cropping systems by providing a balanced fertilization of P that gives optimal economic yield. In this study, a critical analysis of the TSP production chain was initiated at the OCP-Safi, Morocco. At the attack tank: T (100-105) ° C, P (6-7) Bars, ρ H_3PO_4 (1465-1480), H_2SO_4, % TS, Particle size φφ, Molecules other than P_2O_5 ($CaCO_3$, MgO, Al_2O_3, FeO_3, K2O, Na_2O). At the granulation phase: Recycling rate, the K ratio close to 0.1 to 0.12, and the residence time of the product in the granulator. At the level of the dryer: The main parameters affecting the physical and chemical quality of the TSP are: T °C at the inlet and outlet of the dryer (moisture content close to 5%) and the speed of drying. In the present study, it is sought to ensure that the various points of this manufacturing loop ensure a finished product TSP according to the chemical requirements of AFCOME (P_2O_{5total} (Min.46%), P_2O_{5SE} (Min.42%), $P_2O_{5SE + Citrate}$ (Min.46%), Cd (Max.25ppm), AL (Max.2%)). An objective, which can only be achieved if the operating conditions are, established strictly controlling the process from the point of view, physical: Running parameters, and chemical analysis: Analysis of the finished product. The response to this goal will ensure improved TSP product quality, a preserved environment and respected human health.

Afternoon, April 12, 2017 (Wednesday)

Time: 14:00~16:15

Venue: Room 106, Jae Sung Civil Bldg

Session 5: 9 presentations- Topic: “Environmental Chemical Engineering”

Session Chair: Prof. Ki–Hyun Kim

S3006 Presentation 9 (16:00~16:15)

Performance of Sewage Sludge Dewatering by Chemical, Ultrasonic, and Electric Treatments

Gordon C. C. Yang and **Ping-Hua Yeh**

National Sun Yat-Sen University, Taiwan

Abstract—The objective of this study was to evaluate the effects of chemical, ultrasonic, and electric treatments on sewage sludge dewatering by a recess plate filter system based on the moisture content of filter cake. To assess the potential of sludge dewaterability, the jar test was used in the chemical treatment to determine its optimal dose of polymeric flocculent, application of ultrasound was used in the ultrasonic treatment to determine the optimal magnitude of specific energy input, and application of electric field while sludge dewatering was used in the electric treatment. The operating parameters of concern in the sludge dewatering tests included the dose of polymeric flocculent, magnitude of specific energy input of ultrasound, magnitudes of mechanical dewatering time, and magnitude of electric field strength applied. Experimental tests conducted based on an experimental design using the L_8 orthogonal arrays showed that the aforementioned treatments are all influencing. Under the optimal combination of experimental parameters and operating conditions, filter cake having 66% in moisture content was obtained. Further, different degrees of influence were also found for different treatments, the greatest for the electric treatment of sludge.

16:15-16:30	**Coffee Break**

Session 6

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 12, 2017 (Wednesday)

Time: 16:30~19:00

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 6: 10 presentations- Topic: "Pharmacology and Applied Pharmacy"

Session Chair: Senior Lecturer Hana Morrissey

L0001 Presentation 1 (16:30~16:45)

Improved dissolution, flow property and compressibility of poor soluble API by co-grinding with fine silica

Bappaditya Chatterjee

International Islamic University Malaysia

Abstract—**Objective**: The objective of this work was to enhance dissolution and tableting property of a poor soluble API which also has poor flow property. If flowability and compressibility of the API can be improved, the drug powder would be suitable to direct compression method of tableting.
Methods: Ibuprofen is chosen as a model poor soluble and poor flowable API. Ibuprofen is mixed with 1 wt% of hydrophobic and hydrophilic silica (particle size < 40 nm) separately by a 'V' blender. The mixture was then subjected to milling by a simple lab scale ball mil. The co-milled ibuprofen-silica mixture is then formulated as tablet using 30, 50 and 70% drug loading. Before tableting flow property and bulk density of all the tableting mixtures containing co-milled ibuprofen as well as blended ibuprofen (before milling) along with other inactive excipients were studied by various approaches such as angle of repose (AOR), Carr index (CI) and powder flow tester. The tablets are tested for physico-chemical characteristics and in-vitro dissolution.
Results: Tableting mixture of 30% and 50% drug (co milled mixture with hydrophobic silica) loading showed 'excellent' flow property by AOR (<30), CI (<10) and flow function co-efficient (ffc) (<12). However 70% drug loaded mixture showed 'poor' flowability by AOR and CI but comparable flowability by ffc. The compressibility result was superior in 50% co-milled ibuprofen loaded tableting mixture than other mixtures. The simple blended ibuprofen tableting mixture also showed acceptable flowability for 30% and 50% drug loaded mixture. Hydrophilic silica mixed ibuprofen in all cases resulted in 'fair' flowability

but poor compressibility. Out of the entire tablets 50% co-milled drug loaded tablet showed better dissolution profile by releasing more than 90% of drug within 1 hour which is significantly higher than normal blended ibuprofen loaded tablet. However 70% drug loaded tablet resulted in slow drug release (<59.34% in 1 hour).

Conclusion: Co-milling of silica-ibuprofen might be a good strategy to improve flowability and dissolution of the drug. This approach may help preparing tablet by direct compression using high dose poor flowable drug.

Afternoon, April 12, 2017 (Wednesday)

Time: 16:30~19:00

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 6: 10 presentations- Topic: "Pharmacology and Applied Pharmacy"

Session Chair: Senior Lecturer Hana Morrissey

L0009 Presentation 2 (16:45~17:00)

Synthesis and Antibacterial Test of 1-PHENYL-3-(4'NITROPHENYL)-5-(3',4'-DIME THOXY)-2-PYRAZOLINE via 1,3-DIPOLAR Cycloaddition Reaction

Lina Fauzi'ah and Tutik Dwi Wahyuningsih

Islamic University of Indonesia

***Abstract*—Objective**: The aims of this research were to synthesized, characterized, and tested antibacterial activity of 1-phenyl-3-(4'-nitrophenyl)5-(3',4'-dimethoxy)-2-pyrazoline.
Methods: The synthesis of pyrazoline was performed via 1,3-dipolar cycloaddition of chalcone and phenylhydrazine by refluxing them in glacial acetic acid for 6 h. Furthermore, synthesized compound was characterized using FTIR, GC-MS, and 1H-NMR spectrometers. Antibacterial test was carried out by agar well-diffusion against Gram positive (*Staphylococcus aureus, Bacillus cereus, Bacillus subtilis*) and negative (*Eschericia coli, Shigella flexneri*) bacteria, tetracycline (100 ppm) as positive control and dimethylsulfoxide (DMSO 99.9%) as negative control.
Results: The cycloaddition reaction yielded red solid pyrazoline in 53.80%. 1H-NMR showed the formation of pyrazoline with its characteristic that has geminal and vicinal protons in upfield shift. FTIR spectra confirmed product formation that was indicated by absorption band of *v*(C=N) and the loss of enone group absorption, *v*(C=C). Antibacterial test showed that the pyrazoline had the highest activity against *S. aureus* with inhibition zone was 8.25 mm (300 ppm).
Conclusion: Pyrazoline that has been synthesized, showed antibacterial activity against positive and negative bacteria. However, its activity was not good and need to be further investigated.

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Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 6: 10 presentations- Topic: "Pharmacology and Applied Pharmacy"

Session Chair: Senior Lecturer Hana Morrissey

L0010 Presentation 3 (17:00~17:15)

Photophysical and Photobiological Properties of Meso-Tetraphenylporphyrin and Meso-Tetraphenylchlorin as Photosensitizers for PDT: A Comparison Study

Asmiyenti Djaliasrin Djalil, Ari Fariz Mustafa, Alwani Hamad, Susanti Susanti, and Suwandri Suwandri

Universitas Muhammadiyah Purwokerto, Indonesia

Abstract—**Objective:** In this paper, we have evaluated the photophysical and photobiological properties of tetrapyrrolic macrocycles containing non-reduced pyrrole ring with reduced pyrrole ring to assess the best molecules for PDT applications.
Methods: mTPP (*meso*-tetraphenylporphyrin) and mTPC (meso-tetraphenylchlorin) absorption spectra were carried out by using UV-Vis spectrophotometer. Singlet oxygen quantum yields (ΦΔ) were measured relative to chlorin e6. The cellular uptake was fluorometrically determined by using a fluorescence spectrophotometer and dark toxicity was determined using MTT assay. The stability of the compounds under indirect sunlight was also observed.
Results: The absorption maxima of Q1 bands, the long-wavelength band which were used to excite photosensitizer during PDT, are all at longer wavelengths. The Q1 bands of the photosensitizer with reduced pyrrole ring was more intense with the lowest energy transition undergoes a red shift. Singlet oxygen quantum yield was studied at two different pH. Singlet oxygen generation was found to be higher at higher pH. Photosensitizer with reduced pyrrole ring exhibit higher singlet oxygen quantum yield than photosensitizer with non-reduced pyrrole ring. Moreover, the photosensitizers were stable under indirect sunlight radiation. The photobiological properties of mTPP and mTPC were studied using T47D breast cancer and normal NIH 3T3 cell lines. mTPC has higher cellular uptake than mTPP. Furthermore, dark toxicity of mTPC is slightly higher than mTPP in T47D cells.
Conclusion: Our study concludes that cellular uptake and singlet oxygen quantum yield, could be improved by reducing the pyrrole ring of tetrapyrrole macrocycles. Hence, mTPC proved to be the better photosensitizer than mTPP.

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Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 6: 10 presentations- Topic: "Pharmacology and Applied Pharmacy"

Session Chair: Senior Lecturer Hana Morrissey

L0014 Presentation 4 (17:15~17:30)

Cytotoxic Effect of Ethyl Acetate Fractions from Secondary Metabolites of Streptomyces SP. GMY01 on Human Breast Cancer MCF7 Cell Lines

Sista Werdyani, Nastiti Wijayanti, Annisa Fithria, and Sari Rahmawati

Universitas Islam Indonesia

Abstract—This research aimed to fractionate the ethyl acetate extract from secondary metabolites of S*treptomyces* sp. GMY01 and to identify which fraction contains cytotoxic active compounds against human breast cancer MCF7 cell lines. Secondary metabolites were obtained from fermentation of *Streptomyces* Sp. GMY01 for 15 days. The supernatant containing these secondary metabolites was extracted through partition using ethyl acetate as the solvent. Fractionation of the ethyl acetate extract was conducted via column chromatography using silica gel as the solid phase while the gradient mobile phase consisted of n-hexane, ethyl acetate, and methanol. The cytotoxicity of each fraction was calculated using MTT-assay. The ethyl acetate extract could be separated into 9 fractions using column chromatography. The cytotoxic effect of each fraction differed from each other. The smallest IC_{50} value was obtained from fraction 4. Further investigation should be conducted to discover the active anticancer compound. The active compound with cytotoxic effect was found in fraction 4 because of the highest IC_{50} value. This fraction is potential to be investigated more deeply as anticancer, especially for breast cancer.

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Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 6: 10 presentations- Topic: "Pharmacology and Applied Pharmacy"

Session Chair: Senior Lecturer Hana Morrissey

L0015 Presentation 5 (17:30~17:45)

Solubility Improvement of Nifedipine through Co-crystal Formation with Caffeine

Fikri Alatas, Titta Hartyana Sutarna, and Dian Medina Permatasari

Universitas Jenderal Achmad Yani, Indonesia

Abstract—Nifedipine (NFD) is a calcium-channel blocker drug used for the treatment of angina pectoris and hypertension. NFD is practically insoluble in water so that its absorption and dissolution rate is limited. The purpose of this research was to improve the solubility and dissolution rate of nifedipine by the co-crystal formation between NFD and caffeine (CAF). The NFD-CAF co-crystal was prepared by a solvent-drop grinding method using methanol as solvent. The grinding result was characterized by powder X-ray diffraction (PXRD), infrared spectrophotometry (FTIR), and a polarizing microscope. The solubility of co-crystal was investigated in water at an ambient temperature, and the dissolution was tested in pH 1.2, 4.5, and 6.8 buffer solutions. The difference of the PXRD pattern between NFD-CAF and its constituent components indicated the formation of co-crystal. The polarizing microscope photos showed the crystal habit of NFD-CAF that recrystallized from methanol was different from the pure NFD and CAF that recrystallized from the same solvent. The solubility of NFD-CAF co-crystal was higher than pure NFD. The dissolution test also showed the dissolution rate of nifedipine from co-crystal was faster than pure NFD.

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Session 6: 10 presentations- Topic: "Pharmacology and Applied Pharmacy"

Session Chair: Senior Lecturer Hana Morrissey

L0024 Presentation 6 (17:45~18:00)

Formulation of sunscreen cream and sun protecting factor activity from standardised –partision compound of mahkota dewa leaf {phaleria macrocarpa (Scheff) Boerl}

Abdulkarim Zulkarnain, Marchaban Marchaban, and Subagus Wahyuono

Universitas Gadjah Mada, Indonesia

Abstract—Mahkota dewa contains phalerin which has activity as sunscreen. In this study, 13 formulations of cream o/w were prepared and tested for their physical characteristics. The physical characteristics were then used for determining the optimum formula. This study aimed to explore the physical stability of optimized formulation of cream, its sun protecting factor (SPF) values using in vitro and in vivo test.

The optimum formula of o/w cream was prepared based on Simplex Lattice Design (LSD) method using software Design Expert®. The formulation of o/w cream was varied based on the proportion of cetyl alcohol, mineral oil, and tween 80. The difference of physical characteristic of optimum and predicted formula was tested using t-test with significant level of 95%.

The optimum formula of o/w cream was the formula which consists of cetyl alcohol 9.71%, mineral oil 29%, and tween 80 3.29. Based on t-test, there was no significant difference of physical characteristics of optimum and predicted formulation. Viscosity, Spreadability, Adhesivity, and separation volume ratio of o/w creams at week 0-4 were relatively stable. The o/w creams were relatively stable at extreme temperature. The o/w creams from mahkota dewa, phalerin, and benzophenone have SPF values of 21.32, 33.12, and 42.49, respectively. The formulas did not irritate the skin based on in vivo test.

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Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 6: 10 presentations- Topic: "Pharmacology and Applied Pharmacy"

Session Chair: Senior Lecturer Hana Morrissey

L0025 Presentation 7 (18:00~18:15)

Effect of Grape Seed Extract in Sunscreen Lotion on Sun Protection Factor (SPF) Determined by in Vitro Method

Tunyaluk Limsuwan and Thanaporn Amnuaikit

Prince of Songkla University, Thailand

Abstract—**Objective**: The aim of this study was to formulate and evaluate sunscreen products containing an organic UV filter (Tinosorb®S) with an inorganic UV filter (microfined titanium dioxide, TiO2) and in combination with an herbal extract (grape seed) for determining of sun protection factor (SPF) value.
Methods: The combination of Anisotriazine (Tinosorb®S) and microfined TiO2 was used to formulate the sunscreen lotion with varying ratios of Tinosorb®S and microfined TiO2. Then, 1%w/w of a grape seed extract was added to the selected sunscreen lotion. The physical properties (appearance, pH, and viscosity), antioxidant activity, in vitro SPF and stability test of formulations were determined.
Results: The selected formulation of sunscreen lotion composed of Tinosorb®S and microfined TiO2 at the ratio 8 and 12% displayed good physical properties and high SPF value (45.17±3.97). The adding of 1%w/w grape seed extract in the selected sunscreen lotion resulted in increasing SPF value of formulation (53.58±4.45) and had good antioxidant activity (84.04±3.92%). In addition, the formulation showed the light brown lotion with pH 7.35, viscosity 625.38±12.58 cps and stable at room temperature (30±1°C) protect from light for at least 1 year of storage condition.
Conclusion: The results of this study revealed that the grape seed extract was a potential antioxidant and SPF booster for sunscreen products.

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Session 6: 10 presentations- Topic: "Pharmacology and Applied Pharmacy"

Session Chair: Senior Lecturer Hana Morrissey

L0028 Presentation 8 (18:15~18:30)

Stability and in Vitro Permeability of Body Lotion Containing Okra Seeds' Extract

Sirikhwan Manee and Jasadee Kaewsrichan

Prince of Songkla University, Thailand

Abstract—**Objective:** *Abelmoschus esculentus* (L.) Moench. or okra has revealed medical benefits. An attempt has been made in this study to incorporate the ethanol extract from okra seeds in a lotion and determine the product stability and permeability *in vitro*.
Methods: Okra seeds were extracted with absolute ethanol. Phytochemical profiles of the resulting extract were carried out using GC/MS. DPPH antioxidant activity, total phenolic content (TPC) and anti-tyrosinase activity were measured using specific colorimetric assays. An O/W lotion containing the extract was developed and *in vitro* characterized for its stability and permeability, using a freeze-thaw method and Franz diffusion system, respectively.
Results: An anti-tyrosinase activity of the extract was 14.96 ± 8.86 mg ascorbic acid equivalent/g DW. After 6-freeze-thaw cycles, the formula' pH and viscosity were not changed. The TPC and DPPH antioxidant activity for the receiver part of the Franz diffusion cell were not detected after let it for 12 h. Interestingly, the antioxidant activity was determined to present in the porcine skin under investigated.
Conclusion: Due to the existing antioxidant and anti-tyrosinase activity, the developed okra lotion was stable and could be used for whitening and anti-aging. Moreover, its use would be safe regarding systemic impermeability.

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Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 6: 10 presentations- Topic: "Pharmacology and Applied Pharmacy"

Session Chair: Senior Lecturer Hana Morrissey

L3002 Presentation 9 (18:30~18:45)

Tocotrienol-Rich Fraction Supplementation Improves Oocyte Quality and Maintains Telomere Length in the Ovaries of Aging MIC

Nuraliza Abdul Satar, Norerlyda Hamdan, Nasibah Azme, and Mudiana Muhamad

Faculty of Medicine, Universiti Teknologi MARA, Malaysia

Abstract—**Objective:** The aim of this study is to determine the effect of tocotrienol-rich fraction (TRF) supplementation on telomere length, telomerase activity and oocytes qualities (morphology and DNA damage).
Methods: Four groups of female mice were used in this study. In Experiment 1: six-weeks-old, young mice were used as negative control (Group A) and eight-months-old aging mice were used as positive control (Group B1). While in Experiment 2: six-month-old aging mice were used; i.e. Group B2 (control group) and Group B3 (supplemented with TRF at the dose of 150 mg/kg). Supplementation of TRF was given orally for two months and at the end of the duration, mice will be superovulated and euthanized. The ovaries and oocytes were collected for the determination of telomere length and telomerase activity, as well as assessment of oocytes quality.
Results: The results confirmed that aging caused telomere shortening in ovaries and a reduction in oocytes qualities. Conversely, the telomerase activity increased due to the role of telomerase in protecting the mitochondrial function during oxidative stress condition. The TRF supplementation was able to restore the telomere length and telomerase activity as well as decrease the DNA damage in oocytes. However, TRF supplementation could not improve the oocytes quality in term of morphology.
Conclusion: Tocotrienol supplementation potentially delays the consequences of age-related infertility by maintaining the telomere regulation and enhancing the quality of oocytes.
Keywords: Reproductive aging, Infertility, Telomere length, Telomerase activity, Oocytes quality, DNA damage

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Venue: Room 402, Fusion Tech Center (FTC) Bldg

Session 6: 10 presentations- Topic: "Pharmacology and Applied Pharmacy"

Session Chair: Senior Lecturer Hana Morrissey

L3006 Presentation 10 (18:45~19:00)

Solubility of Carbamazepine Co-Crystals in Ethanolic Solution

Noor Ashila Ramle, **Syarifah Abd Rahim,** Nornizar Anuar, and Omar El-Hadad

Universiti Malaysia Pahang, Malaysia

Abstract—**Objective:** This study focuses on solubility study of carbamazepine (CBZ) co-crystals formed from four types of co-crystal formers (CCFs), namely nicotinamide (NIC), saccharin (SAC), succinic acid (SUC) and fumaric acid (FUM) at various temperatures (25-50oC).
Methods: High Performance Liquid Chromatography (HPLC) was used to determine the solubility of each component while analytical equipment (X-Ray Powder Diffraction was used to characterize the solid crystals and co-crystals formed.
Results: The solubility of CBZ-NIC and CBZ-FUM co-crystals were found to be higher than pure CBZ crystal, meanwhile the solubility of CBZ-SUC co-crystal is lower than the pure CBZ crystal for the range of studied temperatures. Different trend was found for CBZ-SAC co-crystal in which for temperature lower than 40oC, the solubility of CBZ crystal is higher while at temperature higher than 40oC, CBZ-SAC co-crystal has higher solubility than CBZ crystal.
Conclusion: CBZ co-crystals formulated with NIC and FUM have shown to increase the solubility of CBZ by solubility ratio of 1.95 and 1.24 respectively however CBZ co-crystals formulated with SAC has almost same solubility values with CBZ.

Dinner	
19:10	**Restaurant**

Session 7

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 12, 2017 (Wednesday)

Time: 16:30~18:15

Venue: Room 106, Jae Sung Civil Bldg

Session 7: 7 presentations- Topic: "Environmental Monitoring and Energy Engineering"

Session Chair: Prof. Jan E. Szulejko

S0003 Presentation 1 (16:30~16:45)

A Study of Changing Trends of the Ambient Dry Bulb Temperature and Relative Humidity in Malaysia and Brunei

Choo Khean Chang

Universiti Kuala, Lumpur Malaysia France Institute, Malaysia

Abstract—Climate change is likely to have a significant impact on the HVAC system design, especially in tropical climates, such as Malaysia, Singapore and Thailand. This paper presents a comprehensive analysis of 20 years of meteorological data (1988 – 2007) from seven weather stations in Malaysia (Kuala Lumpur-Subang), Bayan Lepas, Kota Bharu, Miri, Sibu, Bintulu and Kuching) and one in Brunei (Bandar Seri Begawan). Studies are focused on the dry bulb temperature and relative humidity. A rising trend for temperature has been identified. The annual average dry bulb temperature has increased at ~0.6 ^{o}C in Kuala Lumpur (Subang) over the past 20 years, whilst the relative humidity has decreased at ~3 percentage points for the same period. The analysis results have implied that the changing degree of the climate in each study city is different. Hence, it is advisable to generate individual weather data for cities and towns in Malaysia and Brunei for building thermal load calculation purposes. This will help to produce a more accurate heat load calculation for the HVAC systems in a building. The weather data can also be used to forecast the future of the Malaysian climatic scenario, which will help the building designer to counter climate change implications on the building load. The authors strongly believe that the results obtained serve the purpose in designing viable HVAC systems in the future in Malaysia and Brunei.

Afternoon, April 12, 2017 (Wednesday)

Time: 16:30~18:15

Venue: Room 106, Jae Sung Civil Bldg

Session 7: 7 presentations- Topic: "Environmental Monitoring and Energy Engineering"

Session Chair: Prof. Jan E. Szulejko

S0014 Presentation 2 (16:45~17:00)

Optimized Performance and Life Cycle Analysis of Cooled Solar PV

Mohammad Herfatmanesh, Yiming Liu, and **Zhijun Peng**

University of Hertfordshire, United Kingdom

Abstract—This research is aiming to investigate practical effects of solar PV surface temperature on output performance, in particular output efficiency. Experimental works were carried out under different radiation condition for exploring variation of output voltage, current, output power and efficiency. After that, cooling test was conducted to find how much efficiency improvement can be achieved with cooling condition. As test results shows the efficiency of solar PV can be increased close to 50% with cooled condition, a cooling system is proposed for possible system setup of residential solar PV application. Life cycle assessment suggests that the cost payback time can be reduced to 12.5 years, compared to 15 years of the baseline of a similar system without cooling sub-system.

Afternoon, April 12, 2017 (Wednesday)

Time: 16:30~18:15

Venue: Room 106, Jae Sung Civil Bldg

Session 7: 7 presentations- Topic: "Environmental Monitoring and Energy Engineering"

Session Chair: Prof. Jan E. Szulejko

S0017 Presentation 3 (17:00~17:15)

Rainfall estimation for Typhoon using Global Precipitation Measurement

Nan-Ching Yeh

Air Force Institute of Technology, Taiwan, ROC

Abstract—In the recent years, the climate changed, there are many severe weather systems cased great damage for people, goods and so on, especially caused by torrential rainfall. The accumulated rainfall of typhoon Morakot on 8 August 2009 had broken the record of past decades in Taiwan. The key factor for these disasters is the dense concentration of rainfall distribution both in spatial and temporal domains. If we could understand information of rainfall well and provide a nowcasting warning for the weather station and people, then they will have enough time for preparation and the damage and loss of property will be reduced significantly. Therefore it is extremely important to provide accurate rainfall estimations for severe weather systems.

The Global Precipitation Measurement/Dual-frequency Precipitation Radar (GPM/DPR) satellite data are used to estimate the rainfall intensity of the three typhoons using the algorithm developed in this study. Rainfall rate retrieved of typhoons in the Pacific Northwest by GPM/DPR and GPM/GMI (GPM Microwave Imager) are more than 30 mmhr-1. The structure of the typhoon SOUDELOR is Double Eye Walls, and the record in Hualien stations maximum rainfall rate is above 50 mm hr-1.

Preliminary analysis of retrieved rainfalls by GPM/GMI is validated with measurements of GPM/DPR, and the results of rainfall estimates are fairly consistent. The rainfall estimation by GPM is similar to the actual rainfall observation. Threrefore, GPM / DPR and GPM/GMI is one of the best choice for rainfall estimation of typhoon over the ocean.

Afternoon, April 12, 2017 (Wednesday)

Time: 16:30~18:15

Venue: Room 106, Jae Sung Civil Bldg

Session 7: 7 presentations- Topic: "Environmental Monitoring and Energy Engineering"

Session Chair: Prof. Jan E. Szulejko

S2002 Presentation 4 (17:15~17:30)

Identifying changes in rainfall distribution using Standardized Precipitation Index (SPI): An Application in Uva Province

Jeewanthi P.W, Wijesuriya W, and Amarakoon A.M.C

Uva Wellassa University of Sri Lanka, Sri Lanka

Abstract—Changes in rainfall pattern and distribution are very important as it is mainly connected with the all agronomy practices in agriculture sector. Standardized Precipitation Index (SPI) is one of versatile tools for understanding the variations in monthly rainfall under different scenarios. Rainfall data recorded in four meteorological stations which represent different regions in Uva province namely Badulla, Monaragala, Okkampitiya and Wellawaya were used for the analysis. The 12-month SPI from January to December which gives an idea about annual rainfall anomalies and, 6-month SPI from October to March and April to September and 3-month SPI from December to February were used for the analysis. Changes in SPI time series were analyzed using Change Point Analyzer software. There are significant changes in the pattern of annual rainfall anomalies in Badulla and Wellawaya. However there is a no risk of having drought years in Badulla, Monaragala, Okkampitiya and Wellawaya after 2004, according to the 12-month SPI. There are significant changes in the pattern of 6-month SPI from October to March in Badulla and Wellawaya but no any significant change in the pattern of 6-month SPI from April to September in all four locations. The 6-month SPI for the period of October to March in Monaragala, Badulla and Okkampitiya indicate high risk of having the conditions of drought, nevertheless Wellawaya indicates low risk of having the conditions of drought for the period of October to March. There is no enough evidence for significant change in the pattern of 3-month SPI from December to February. However there are enough evidences to conclude about the changes in the pattern of rainfall anomalies in Uva Province.

Afternoon, April 12, 2017 (Wednesday)

Time: 16:30~18:15

Venue: Room 106, Jae Sung Civil Bldg

Session 7: 7 presentations- Topic: "Environmental Monitoring and Energy Engineering"

Session Chair: Prof. Jan E. Szulejko

S3002 Presentation 5 (17:30~17:45)

Analysis of thermal comfort SNI-6390 in the Lanting (floating house), Banjarmasin-Indonesia

Akbar Rahman and Shoichi Kojima

Saga University, Japan

Abstract—Lanting house is floating house type which is found in South Kalimantan, especially in Banjarmasin. Today, the floating houses decreased in quantity and quality. To preserve the cultural products, it is necessary to do research on floating houses. The research raises thermal comfort in floating houses by following the standard SNI-6390. The measurement results humidity indoor and outdoor of the floating house is high. The indoor air temperature is almost always higher than outdoors. The indoor temperature increases rapidly after sunrise. Indoor thermal comfort in floating houses for longer uncomfortable. The outdoor temperature in a comfort zone is only about 5 hours a day. However, overall the comfort zones only concerned with the dry bulb temperature, it still has weaknesses. These results conclude that the need for a more comprehensive study. Humidity and wind must also be considered in calculating the thermal comfort. Collaboration dry bulb temperature, humidity and wind called the effective temperature.

Afternoon, April 12, 2017 (Wednesday)

Time: 16:30~18:15

Venue: Room 106, Jae Sung Civil Bldg

Session 7: 7 presentations- Topic: "Environmental Monitoring and Energy Engineering"

Session Chair: Prof. Jan E. Szulejko

S3008 Presentation 6 (17:45~18:00)

Life-cycle Cost Analysis and Optimization of Gas-turbine-based Power Plants by Sequential Quadratic Programming Method for Distributed Generation

Satriya Sulistiyo Aji, Young Duk Lee, and Kook Young Ahn

University of Science and Technology (KIMM Campus), South Korea

Abstract—The purposes of this study are to analyze and to find the way to reduce life-cycle cost of electricity of gas-turbine power plants for wide spread of distributed power generation by employing mathematical optimization. Three kinds of power cycle, which are based on gas-turbine, have been thermodynamically simulated and optimized from cost viewpoint. To understand the effects of economic key parameters, such as natural gas price, return on investment rate, and escalation rate, on the optimum operating condition and the total cost, case study has been carried out by taking four different countries' economic situations into account: Indonesia, India, China, and South Korea. A commercial software ASPEN Plus® and Sequential Quadratic Programming (SQP) method are used to complete the energy balance and to minimize the total cost rate, respectively. Results reveal that 4-10% life-cycle cost reduction can be achieved when the new design conditions are applied to the gas-turbine power plants; the conditions are suggested by the SQP method targeting minimizing cost. Through the results we can concluded that the efficiency enhancement has significant effect on cost reduction for Chinese and Korean cases mainly due to their high fuel price, while initial investment cost is of importance for Indonesian and Indian cases; the new design condition, a cost effective one, can be derived and employed for the cases.

Afternoon, April 12, 2017 (Wednesday)

Time: 16:30~18:15

Venue: Room 106, Jae Sung Civil Bldg

Session 7: 7 presentations- Topic: "Environmental Monitoring and Energy Engineering"

Session Chair: Prof. Jan E. Szulejko

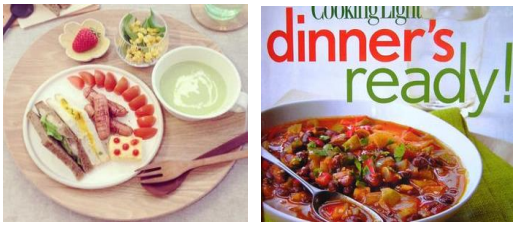
S3013 Presentation 7 (18:00~18:15)

Effects of Nanoscale Zero-Valent-Iron (nZVI) Particles on Biohydrogen Production from Organic Wastes

Eaktasang Numfon

Thammasat University, Rangsit Campus, Thailand

Abstract—The effects of nanoscale zero-valent-iron (nZVI) dosage on biohydrogen production were investigated at 25℃ under anaerobic and dark conditions at lab-scale experiments. Glucose was fed as the substrate and the seed sludge was obtained from an anaerobic digester of a brewery factory. The batch experiments were used and nZVI dosages were varied at 0, 100, 300 and 500 mg/L; while pH was being controlled at 5.5 and COD concentration was fixed at 2,000 mg/L. The hydrogen (H2) production was observed to increase with increasing nZVI dosage and was higher than the reactor without the nZVI addition. The highest H2 yield and H2 contents were found to be 0.044 ± 0.0007 g-H2/g-glucose and 63.12 ± 1.33 % of the produced biogas, respectively, at the nZVI dosage of 500 mg/L. The results obtained from this study indicated the technical feasibility of applying nZVI particles to increase biohydrogen production in bioreactors treating organic wastewaters.



Dinner	
19:10	**Restaurant**

Poster Session

April 11, 2017 (Tuesday) & April 12, 2017 (Wednesday)

Time: 13:30~19:00(April 11) & 8:30~19:00(April 12)

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Poster session: 2 presentations

E0007 Poster 1

Production and Characterization of Polylactic Acid and Polyvinylalcohol/Polyethyleneimine Fibers with Catalytic Activity by Electrospinning

Haci Ali GULEC, Pelin ONSEKIZOGLU BAGCI, Kadir CINAR, Ufuk BAGCI

Trakya University, TURKEY

Abstract—Nowadays, there is a great interest to nanofibers having catalytic activity in food industry. Their large surface area to volume ratio and porous structure are the main advantages of nanofibers for enzyme immobilization. In the present study, polylactic acid (PLA) and polyvinylalcohol (PVA)/polyethyleneimine (PEI)/β-galactosidase nanofibers were produced via electrospinning in chloroform and water as solvents, respectively. The morphologies of nanofibers were characterized by Scanning Electron Microscopy (SEM) and Fourier Transform Infrared Spectroscopy with Attenuated Total Reflectance (FTIR-ATR). The stability of nanofibers and the stability and activity of immobilized β-galactosidase were investigated to evaluate the application potential of nanofibers for biosynthesis of galactooligosachharides in a membrane reactor.

April 11, 2017 (Tuesday) & April 12, 2017 (Wednesday)

Time: 13:30~19:00(April 11) & 8:30~19:00(April 12)

Venue: Room 402, Fusion Tech Center (FTC) Bldg

Poster session: 2 presentations

E0008 Poster 2

Optimization of Enzymatic Synthesis of Galactooligosaccharides from Lactose in a Batch System

Kadir CINAR, Haci Ali GULEC, and Gurbuz GUNES

Trakya University, Turkey

Abstract—Lactose has significant potential as a raw material to be utilized for enhancing added-value of functional foods. Galactooligosaccharides (GOS), qualified as prebiotic functional food ingredients, are of considerable interest by the industry for improving functional properties of various food products such as processed baby foods, flavored yoghurts, fermented milk products, cereal products like biscuits and a variety of juices. On the other hand, trace amounts of GOS in natural sources and low level of productivity with chemical and enzymatic synthesizing cause these components to be expensive. The initial lactose concentration has been indicated as the most important parameter that affects the productivity of enzymatic GOS conversion. Relatively higher GOS productivity can be achieved with higher initial lactose concentrations. Nevertheless, hydrolysis reaction dominates due to the decrease in lactose (substrate) concentration during the enzymatic reaction thus desired level of productivity of GOS cannot be achieved. In the present study, it was aimed to optimize synthesis of GOS in a batch system by using free β-galactosidase. Response surface methodology by central composite design was employed to optimize the degree of hydrolysis by varying three parameters, temperature (30–40 ℃), initial lactose concentration (40–360 g/L) and β-galactosidase enzyme concentration (1-10 mg/mL).

One Day Visit & Tour

April 13, 2017 (Thursday) 9:00~17:00

(Tip: Please arrive at Room 402, Fusion Tech Center (FTC) Bldg--the place for registration before 9 a.m. The following places are for references, and the final schedule should be adjusted to the actual notice.)

1. (9:00) Assemble at Room 402, Fusion Tech Center (FTC) Bldg

2. (9:00-12:00) Visit Hanyang University

Hanyang University

Hanyang University is a private research university in South Korea. The main campus is in Seoul, and the second one, the Education Research Industry Cluster at Ansan, or ERICA campus, is located in Ansan. Hanyang derives from the former name of the capital Seoul which was used during the Chosun Dynasty. Its motto and educational philosophy is Love in Deed and Truth.

The university established the nation's first engineering institute (DongA Engineering Institute) in 1939 which became the founding facility of Hanyang University. It also established the first school of architecture and civil engineering in Korea.

Hanyang University has an alumni network of 300,000 that is not limited to the field of engineering but also to other fields. In 2015, Hanyang was ranked 1st for the number of CEO alumni of venture companies. In 2013, Times Higher Education ranked Hanyang University 76th for the number of alumni CEOs in the world’s top 500 companies.

The university enrolls over 2,000 foreign students each year and more than 3,000 students study abroad annually. HYU counts the Massachusetts Institute of Technology, University of Cambridge, and Tsinghua University among its 647 partner universities in 68 countries.

3. (12:00-13:30) Lunch time

4. (13:30-17:00)Visit Seoul

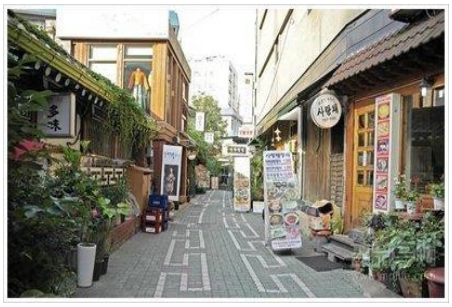
Myeongdong Cathedral

The Cathedral Church of the Virgin Mary of the Immaculate Conception, also known as Myeongdong Cathedral, is cathedral of the Roman Catholic Archdiocese of Seoul. Located in the Myeongdong neighborhood ofJung-gu, Seoul, South Korea, it is the cathedra, or seat, of the Latin Rite Archbishop of Seoul Cardinal Andrew Yeom Soo-jung, the highest Roman Catholic prelate within Roman Catholicism in South Korea. Dedicated to Our Lady of the Immaculate Conception, the principal patron

saint of Korea and the Korean people, the cathedral is a community landmark and a notable symbol of Catholicism in Korea. The cathedral church is one of the earliest and most notable examples of Gothic Revival architecture in Korea.

Gyeongbokgung

Gyeongbokgung, also known as Gyeongbokgung Palace or Gyeongbok Palace, was the main royal palace of the Joseon dynasty. Built in 1395, it is located in northern Seoul, South Korea. The largest of the Five Grand Palaces built by the Joseon dynasty, Gyeongbokgung served as the home of Kings of the Joseon dynasty, the Kings' households, as well as the government of Joseon. Gyeongbokgung continued to serve as the main palace of the Joseon dynasty until the premises were destroyed by fire during the Imjin War and abandoned for two centuries. However, in the 19th century, all of the palace's 7,700 rooms were later restored under the leadership of Prince Regent Heungseon during the reign of King Gojong. Some 500 buildings were restored on a site of over 40 hectares. The architectural principles of ancient Korea were incorporated into the tradition and appearance of the Joseon royal court. In the early 20th century, much of the palace was systematically destroyed by Imperial Japan. Since then, the walled palace complex is gradually being reconstructed to its original form. Today, the palace is arguably regarded as being the most beautiful and grandest of all five palaces. It also houses the National Palace Museum of Korea and the National Folk Museum within the premises of the complex.



Insadong

Insa-dong is a dong, or neighborhood of the Jongno-gu district of the South Korean city of Seoul. The main street is Insadong-gil, which is connected to a multitude of alleys that lead deeper into the district, with modern galleries and tea shops. At one time it was the largest market for antiques and artworks in Korea.

In area, 12.7 hectares (or 31.4 acres), the district is bordered by Gwanhun-dong to the north, Nagwon-dong to the east, and Jongno 2-ga and Jeokseon-dong to the south, and Gongpyeong-dong to the west.

5. (17:00)Back to Hanyang University.

Conference Venue

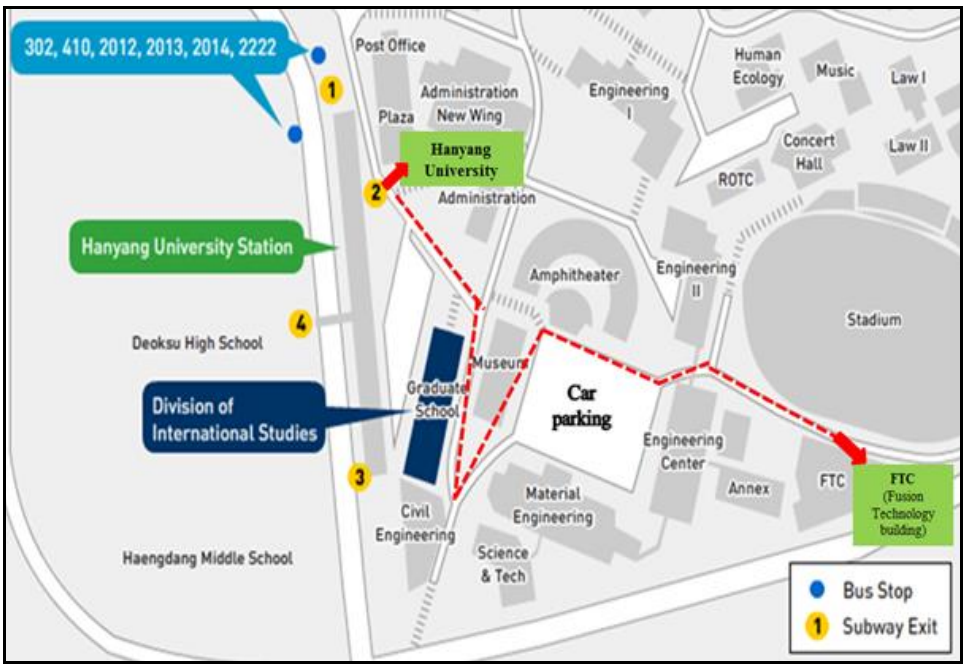
Hanyang University

http://www.hanyang.ac.kr/english/

The conference will be held at Hanyang Institute of Technology (HIT), Hanyang University. Hanyang University is a private research-intensive university in South Korea. Hanyang University began as the nation's first private college of Engineering, producing numerous specialists who have worked as the backbone of the nation's industrialization and modernization. It is considered one of the most prestigious engineering universities in South Korea.

Both the confernece and banquet will be held at the rooms of HIT sixth floor. Luch will be provided at a restaurant of Haengwon square B1 close to HIT. You may download and refer to the campus map so that you can conveniently approach. Mausoleum.

- **Date:** 11-12 April 2017
- **Place:** Room 402, Fusion Tech Center (FTC) Bldg & Room 106, Jae Sung Civil Bldg
- Hanyang University, 222 Wangsimni-ro, Seongdong-gu, Seoul, Korea



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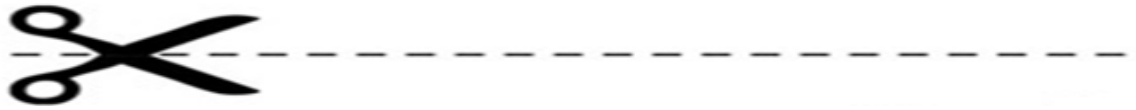

Feedback Information

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Would you please specify the main reason for attending this conference?	
Did the conference fulfill your reason for attending?	Yes– Absolutely □ Yes- But not to my full extent □ No□ (If "No", please tell us the main reason)

Would you please list the top 3 to 5 universities in your city?	
Other Field of Interest	
Any Other Suggestions/Comments	

Thank you for taking time to participate in this conference evaluation. Your comments will enable us to execute future conferences better and tailor them to your needs!