ISASC2017

Indonesian Student Association Scientific Conference

OCTOBER 21st, 2017

ICHO KAIKAN HALL
OSAKA UNIVERSITY
SUITA, JAPAN

Science Technologies, Humanities and Social Sciences for Sustainable Development of Indonesia

ABSTRACT BOOK

- Biotechnology and Genetic Engineering
- Chemical Biology and Natural Product Chemistry
- Material Sciences and Engineering Resources
- Environment and Social Interaction
- Government, Economic and Social Policy

http://isasc2017.ppion.org/

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Preface

Chairman of Organizer
Indonesian Students Association
Scientific Conference 2017
Julinton Sianturi

On behalf of the organizing committee, I would like to express our warm welcome to all of you from different part of the world for your active participation to the Indonesian Student's Association Scientific Conference (ISASC-2017) and our heartfelt thanks to consulate general of the Republic of Indonesia Osaka (KJRI) as well as our partners, especially to the Center for International Education and Exchange (CIEE) and Osaka University for they valuable support to make the conference possible today.

The theme of the conference is *"Science Technologies, Humanities and Social Sciences for Sustainable Development of Indonesia"*. This theme will reflect our belief that many future challenges in our life needed involvement all people from the different subject. Our future target is to reach the sustainable development goals in order to improve the quality life of the community. This conference's goal is to gather leading scientists, researchers, engineers, and technology developers in the role of biotechnology and genetic engineering, chemical biology, materials sciences, and engineering resources, humanities and social sciences resulting in new creative ideas for the sustainable developmental goal of Indonesia. The ISASC-2017 conference will try to consolidate the interplay between science and social interaction for the sustainable development goals.

I genuinely hope that this conference will bring a lot of benefit from the fruitful discussion and be able to build the research collaboration in order to improve the research quality of Indonesian. We also would like to express our appreciation to all invited speaker for unconditionally sharing and their invaluable thoughts during this conference. We would like to thank our sponsor for the support of this event. Finally, we also thank PPI-Japan, PPI-Kansai and PPI Osaka-Nara for their support to this scientific event. Hope each one of us can enjoy this valuable seminar.

Preface

President
Indonesian Students Association
for Osaka-Nara
Ahmad Jafar Arifi

It is our pleasure to welcome all of the participants to the 1st Indonesia Student Association Scientific Conference (ISASC), held on October 21st, 2017 at Osaka University, Osaka, Japan, with the general theme: Science technologies, humanities, and social sciences for sustainable development of Indonesia.

This scientific conference is the first time held in Osaka by Indonesian Student Association of Osaka-Nara. The event is one of the scientific programs which are planned by Indonesian Student Association in Kansai area. In collaboration with Osaka University and Indonesian Consulate general, we can successfully hold this conference.

We organized the program in such a way that many students from various backgrounds can join the discussion. We invited professional researchers to provide fruitful discussion. We are also grateful that the Indonesian Embassy in Japan is able to join and gives insights and share knowledge to all participants about the Indonesian sustainable developments.

We do hope that this conference can give inspiration to many people especially to the participants and can be a good place to build the networking among the students and young researchers in Japan.

Preface

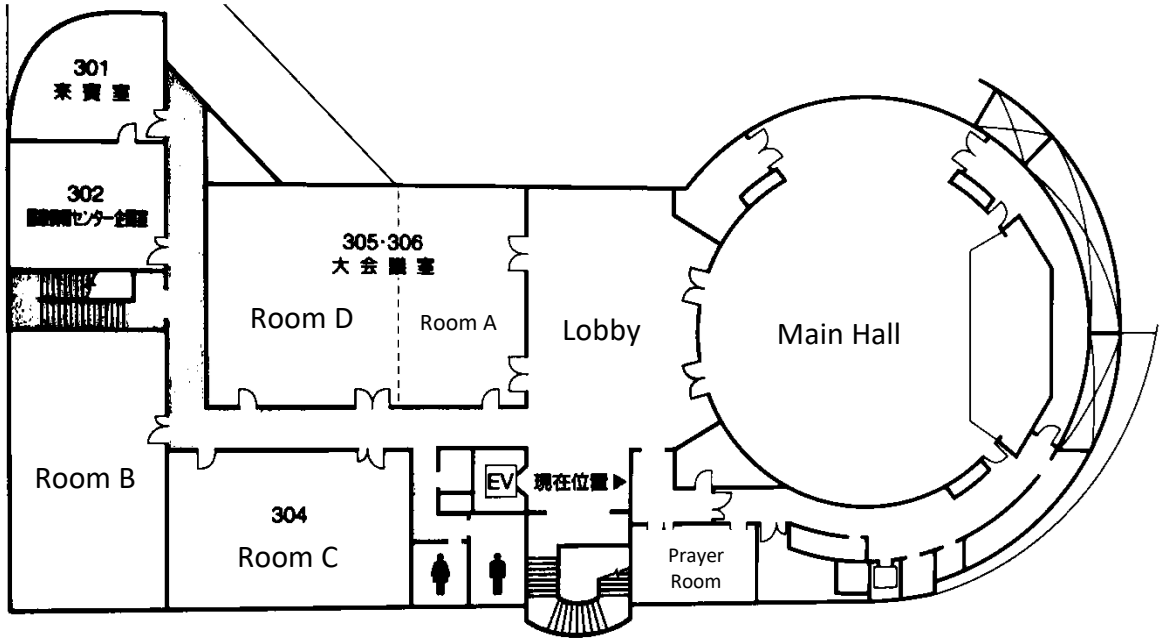
Consul General of the Republic of Indonesia in Osaka, Japan
Wisnu Edi Pratignyo

Welcome to all participants to the Indonesian Student Association Scientific Conference (ISASC) on 21 October 2017 here at the Osaka University (Suita Campus). The ISASC 2017 is a scientific forum which brings together Indonesian and Japanese scholars, researchers and students from diverse disciplines so as to have discussion and exchange of ideas that revolve around one of prominent global issues: sustainable development, in particular that of Indonesia.

I am delighted to share that through this forum we will also have a valuable opportunity to gain insight and knowledge from eminent speakers. A scholarly and academic outlook on sustainable development in Indonesia will be thoroughly addressed by a number of intellectuals whose expertise ranging from Biotechnology and Genetic Engineering to Chemical Biology, as well as from Materials Science and Engineering Resources to Humanities and Social Sciences. As participants you will all be able to engage with these experts and have an exchange of views on sustainable development.

Finally, I would like to take this opportunity to commend the Organizing Committee of ISASC 2017 as well as Indonesian Student Association in Osaka-Nara for their efforts in developing and undertaking such a stimulating and interesting conference program.

Venue Map



Room A : Biotechnology and Genetic Engineering

Room B : Chemical Biology and Natural Product Chemistry

Room C : Material Sciences and Engineering Resources

Room D : Humanities and Social Sciences (Environment and Social Interactions)

Main Hall : Plenary Session; Humanities and Social Sciences (Government, Economic, and Social Policy)

General Schedule

9:30	**-**	**10:00**	Registration
10:00	**-**	**10:05**	Opening by MC
10:05	**-**	**10:10**	Foreword from Julinton Sianturi, Chairman of ISASC 2017
10:10	**-**	**10:15**	Foreword from Wisnu Edi Pratignyo, Consule General of the Republic of Indonesia in Osaka
10:15	**-**	**10:20**	Foreword from Prof. Fujita Kiyoshi, Osaka University
10:20	**-**	**10:50**	Keynote Speech by Ir. Arifin Tasrif, Ambassador of Indonesia for Japan : **"Challenge and Roles of Young Generation for Sustainable Development in Indonesia"**
11:00	**-**	**11:30**	Keynote Speech by Prof. Akihisa Matsuno, Osaka University: **"A New Cosmopolitan Educated Class?: Globalization of The World of Knowledge, and Us"**
11:30	**-**	**11:45**	Photo session
11:45	**-**	**13:00**	Lunch
13:00	**-**	**13:35**	Parallel Session: Keynote Presenter
13:35	**-**	**14:20**	Parallel Session (3 presenters)
14:20	**-**	**14:30**	Coffee Break
14:30	**-**	**15:30**	Parallel Session (4 presenters)
15:30	**-**	**15:35**	Conclusion of 1st Parallel Session
15:35	**-**	**15:45**	Break Time
15:45	**-**	**16:30**	Parallel Session (3 presenters)
16:30	**-**	**16:35**	Conclusion of 2nd Parallel Session
16:35	**-**	**17:00**	Awarding of Best Speakers
17:20	**-**	**17:25**	Afterword from Chairman of ISASC 2017

Keynote Speech

A New Cosmopolitan Educated Class?: Globalization of the World of Knowledge, and Us

Akihisa Matsuno
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Abstract

Why are we all here, and what are we doing? Sometimes it may be good to reflect upon these questions in order to understand where we are going from here. Globalization must be a blessing for the pursuit of modern knowledge as modern knowledge is universal and is to be shared among all human beings regardless of race, nation, religion or gender. At least, that's the theory. Globalization is creating us, a new cosmopolitan educated class, "liberated" from a context of locale, who can work anywhere on the globe, if we so wish. In that sense, paradoxically, we are becoming like European intellectuals in the Middle Ages, replacing Latin with English as the common language, and arguably, theology with a market theory as the system's common denominator. Then, what happenes to our relations with the nation-state? Will there be a violent clash between the nation-state and the market economy? Will we be "liberated" from the nation-state by the market economy? Will it become possible to purchase elements of the nation-state that were once unexchangeable? Perhaps yes, to a certain extent. But the "liberation" only will come to the priviledged, and the fate of the rest is quite uncertain.

Parallel Sessions Schedule

Room A – Biotechnology and Genetic Engineering

Moderator : Yudhi Nugraha, M. Biomed (Nara Institute of Science and Technology)

13.00 – 13.35	**Keynote Presentation** Metabolomics as a Powerful Tool for Quality Improvement of Indonesian Food and Agricultural Products *Dr. Sastia Prama Putri (Osaka University)*
13.35 – 13.50	**(1-A29)** Sustainable Development of Modified Cassava Flour (MOCAF) Production to Decrease Import of Wheat in Indonesia. *Ajeng Septina Arlikah, Desinta Dwi Ristiana, Muftia Chairin Nissa, Ratri Citta Anindya, and Nursigit Bintoro*
13.50 – 14.05	**(1-A41)** Effects Of Gamma-Ray Irradiation on Growth and High Yield Character of Bambara Groundnut (Vigna subterranea (L.) Verdcourt) In M2 Generation. *Hafsah Ashri Noor Azizah, Noladhi Wicaksana, Irma Rahayu, Rikha Nurhasanah*
14.05 – 14.20	**(1-A19)** Effect of Plasticizer and Chitosan Composition on the Plastic Biodegradable Quality from Starch Cassava Rubber (Manihot Glaziovii) as Alternative Plastic *Youges Putra Merly Paradika, Alvin Prayoga, Tia Hanifah Al-Baridah, Uswatun Hasanah*
14.20 – 14.30	Coffee Break
14.30 – 14.45	**(1-A92)** Optimization of chemically defined medium with variation of glutamate concentration for Bordetella pertussis cultivation during Whole Cell-low lipopolysaccharide Pertussis Vaccine production *Yuzy Fauzyah*
14.45 – 15.00	**(1-A93)** Anti-migratory and Anti-invasive Potential of Nerium indicum and Cinnamomum burmannii toward 4T1 Metastatic Breast Cancer Cells *Beni Lestari*
15.00 – 15.15	**(1-A97)** Functional elucidation of lipid phosphatases, myotubularin related protein (MTMR) 3 and 4, in modulating antiviral innate immune response *Dyaningtyas Dewi Pamungkas Putri, Takumi Kawasaki, Taro Kawai*
15.15 – 15.30	**(1-A99)** Antiviral activity test of phospholipase A2 from Acanthaster planci in Human Immunodeficiency Virus *Kenny Lischer*
15.30 – 15.35	Conclusion by Moderator

Keynote Presentation

Metabolomics as a Powerful Tool for Quality Improvement of Indonesian Food and Agricultural Products

Sastia Prama Putri[1,2], Eiichiro Fukusaki[1]
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Abstract

Metabolomics is the study of global quantitative assessment of metabolites in a biological system. Metabolites are the result of the interaction of the system's genome with its environment and are not merely the end product of gene expression but also form part of the regulatory system in an integrated manner. The exhaustive profiling of metabolites is an advantageous feature for quality assessment of agricultural and food products compared to the conventional analysis that only targets specific compounds. Metabolites, target in metabolomics technology, can be directly connected with phenotype that is sensitively affected by any type of perturbation or stress. The capacity of metabolomics to measure metabolites as well as to identify food components favor its usefulness for detection of adulterated crops or food products as well as for food quality improvement. Here, several examples of metabolomics application for discrimination and classification of various Indonesian food and crops such as coffee and tempeh will be provided. In addition, metabolomics profiling for the study of ripening stages of important fruits such as mangosteen and banana will be presented.

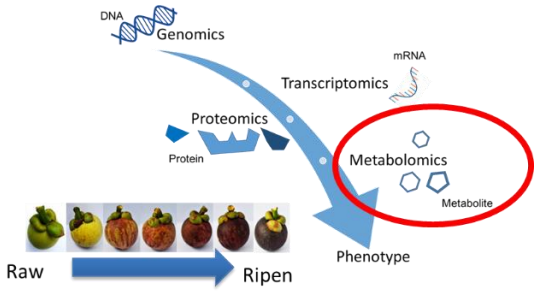

Figure.1. Illustration of metabolomics application for the study of fruit ripening

1-A29

Sustainable Development of Modified Cassava Flour (Mocaf) Production to Decrease Import of Wheat in Indonesia

Ajeng Septina Arlikah[1], Desinta Dwi Ristiana[2], Muftia Chairin Nissa[1], Ratri Citta Anindya[1], and Nursigit Bintoro[1]
Corresponding e-mail: asarlikah@gmail.com

[1] Department of Agricultural and Biosystem Engineering, Faculty of Agricultural Technology, Universitas Gadjah Mada
[2] Department of Chemistry, Faculty of Mathematics and Natural Science, Universitas Gadjah Mada

Abstract

Indonesia is the second largest wheat importer country in the world. However in fact, Indonesia is the third largest cassava production country (FAO, 2012) [1]. Mocaf (modified cassava flour) is a kind of flour produced from cassava which has high potential to substitute wheat flour. However, the available mocaf on the market has some weakness such as low baking expansion, dull color, and still contaminated by cyanide. Therefore, in the following research it was tried to improve the quality of mocaf by addition of hydrogen peroxide, UVC irradiation, and gluten flour. Several parameters were investigated such as moisture content, pH, whiteness, and baking expansion. Obtained data was processed using two ways analysis of variance (ANOVA, α = 5%) and continued using Duncan's Multiple Range Test (DMRT). Statistical analysis indicated that both H_2O_2 and gluten and the combination of the two were the importance factors which had significant effect on several mocaf variables. The variation on addition of 1% of H_2O_2 and 30% of gluten could give the optimal baking expansion. The results of this research potentially increase economic value of cassava and potential to become a reference of the decision to reduce wheat imports in Indonesia.

1-A41

Effects Of Gamma-Ray Irradiation on Growth and High Yield Character of Bambara Groundnut (*Vigna subterranea* (L.) Verdcourt) In M_2 Generation.

Hafsah Ashri Noor Azizah[1], Noladhi Wicaksana[2], Irma Rahayu[3], Rikha Nurhasanah[4]
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[1,2] Department of Agricultural Cultivation, Faculty of Agriculture, Padjadjaran University, Indonesia
[3]Faculty of Pharmacy, Padjadjaran University, Indonesia
[4] Faculty of Industrial Engineering of Agriculture, Padjadjaran University, Indonesia

Abstract

Plant mutations using gamma-ray irradiation is one of the ways to increase genetic variability especially in high yields, and to give some effects. The effects of gamma rays are causing physiological damage and morphological change in bambara groundnuts. This research aims to study the effects of gamma rays on growth and high yield character of bambara groundnuts in M2 generation. The experiment was conducted in November 2016 to April 2017 at Experimental Field of Faculty of Agriculture Universitas Padjadjaran Jatinangor, Sumedang Regency, West Java. The experimental design used is the Spatial Plan, using the method of comparative descriptive research. Accession of bambara groundnuts (KB-29 (1)) was treated with gamma-ray radiation with different doses of 100 Gy, 150 Gy, and 200 Gy. Variations that were obtained of each characters at M_2 generation influences plants growth and development either through qualitative and quantitative that finally will influence plant's production. The results showed that gamma rays cause chimera, dwarf plants, plant death, curled leaves, and albino. In addition, it gives a positive influence to all components of the results.

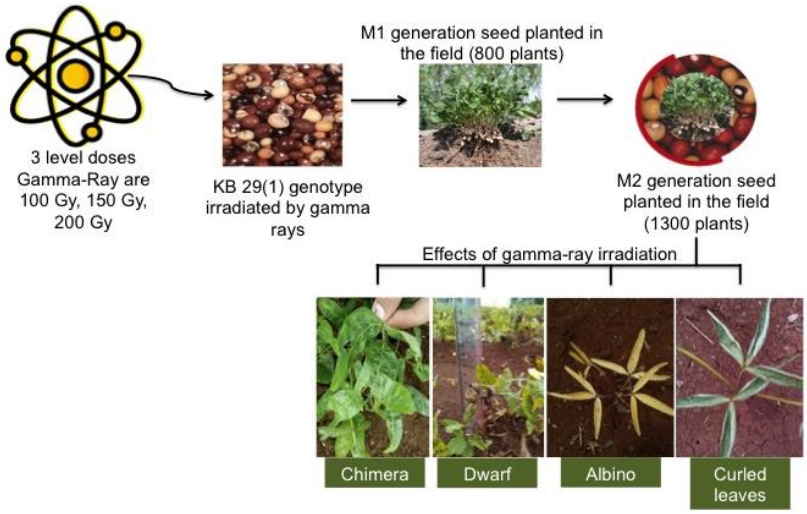

Figure 1. Scheme of Research Bambara Groundnut (*Vigna subterranea* (L.) Verdc) Breeding Irradiated by gamma-ray

1-A19

Effect of Plasticizer and Chitosan Composition on the Plastic Biodegradable Quality from Starch Cassava Rubber (Manihot Glaziovii) as Alternative Plastic

Youges Putra Merly Paradika[1], Alvin Prayoga[1], Tia Hanifah AlBaridah[1], Uswatun Hasanah[1]
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[1] Department of Chemical Engineering, State Polytechnic of Sriwijaya, Indonesia

Abstract

The rapid increase in urban population in Palembang city be accompanied with the waste plastic problem who estimated 14,5 % plastic waste dominate river and soil. The manufacture of biodegradable plastics with the addition of sorbitol, glycerol, chitosan composition variation of 50% by weight of starch that is 5 grams, and physical properties of edible film includes tensile strength, percent elongation, and biodegradation testing. While the addition of chitosan with high levels produces the opposite results. The results showed that the biodegradable plastic obtained the best results by a tensile strength that is on the composition of 0% Sorbitol + 0% Glycerol + 50% Chitosan is 0.00980 MPa. While based on the percent elongation of the best results that the composition 20% Sorbitol + 15% Glycerol + 15% Chitosan is 3 %, and all of the resulting plastic degraded completely less than 60 days. Plastic Biodegradable is a natural polymer that is easily decomposed by microorganisms and Biodegradable plastic can be answered one of environment problem in Palembang city about plastic waste.

1-A92

Optimization of Chemically Defined Medium with Variation of Glutamate Concentration for *Bordetella pertussis* Cultivation during Whole Cell-Low Lipopolysaccharide Pertussis Vaccine Production

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[2] Research & Product Development Division, PT. Bio Farma (Persero)

Abstract

Whooping cough is a disease caused by *Bordetella pertussis*. The most effective way to prevent the disease is through vaccination. Whole-cell pertussis vaccine has a high efficacy, but it can cause fever because of the cell's lipopolysaccharide (LPS). The vaccine's LPS concentration can be minimized by optimizing medium for *Bordetella pertussis* cultivation, known as chemically defined medium (CDM). The aims of this research are to determine the best medium and the optimum level of glutamate concentration in CDM. In this research, *Bordetella pertussis* strain Pelita III was cultivated on animal origin medium (AOM) and CDM, with glutamate variations in CDM were 10 mM, 30 mM, and 50 mM. Some analyses were done on each medium: growth curve, LPS concentration, glutamate consumption rate, cell viability, also fimbriae 2 and 3 antigen of *Bordetella pertussis*. *Bordetella pertussis* that was cultivated on CDM 50 mM glutamate showed the highest growth rate of 0,421/hour with 6,53 x 10^9 CFU/mL as the highest number of cell viability, and the highest glutamate consumption rate of 1,56 ppm/hour. Moreover, the highest LPS formation rate was 4,83 x 10^5 EU.mL^{-1}.$hour^{-1}$ when cultivated on AOM. All *Bordetella pertussis* had the fimbriae 2 and 3 when cultivated on every medium.

1-A93

Anti-migratory and Anti-invasive Potential of *Nerium indicum* and *Cinnamomum burmannii* toward 4T1 Metastatic Breast Cancer Cells

Beni Lestari[1,2], Laeli Muntafiah[2], Ziana Walidah[2], Riris Istighfari Jenie[2,3], Edy Meiyanto[2,3]
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[3]Departement of Pharmaceutical Chemistry, Faculty of Pharmacy, Universitas Gadjah Mada, Indonesia

Abstract

Cells migration and invasion are the central processes in the development of metastasis, the major cause of mortality in cancer patients. Jure leaves (*Nerium indicum*) which contain oleandrin and cinnamaldehyde in cinnamon bark (*Cinnamomum burmannii*) are known of Indonesian natural products that reported to have cytotoxic activity on several cancer cells, but their activities on metastatic process have not been explored. This research aims to reveal and to compare anti-metastatic effect of jure leaves extract (JLE) and cinnamon essential oil (CEO) toward 4T1 breast cancer cells. The cytotoxicity of JLE and CEO was obtained by MTT assay. Cell migration was examined by scratch wound healing assay while MMP-9 expression that described the invasion process was observed by gelatin zymography assay. Molecular interaction between their active compounds toward MMP-9 receptor was predicted by molecular docking. The result showed that treatment with JLE and CEO inhibited the growth of 4T1 cells with IC_{50} value of 125 µg/mL and 2.5 µg/mL, respectively. In addition, JLE performed inhibitory effect of cell migration better than CEO. Meanwhile, both JLE and CEO decreased MMP-9 protein expression. Thus, JLE and CEO are potential to be further developed as an anti-metastatic agent and JLE could be more effective.

1-A97

Functional elucidation of lipid phosphatases, myotubularin related protein (MTMR) 3 and 4, in modulating antiviral innate immune response

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Abstract

Innate immunity senses pathogen infection and plays a critical role in host defense by producing inflammatory cytokines. We previously reported that the activation and phosphorylation of IRF3, a transcription factor that regulates type I IFNs induction during viral infection, was facilitated by binding of PtdIns 5 P that was generated via PIKfyve, a lipid kinase that phosphorylates PtdIns. Myotubularins (MTMRs) family is lipid phosphatases which dephosphorylate PtdIns3,5P to produce PtdIns5P. Moreover, MTMR3 and MTMR4 forms a heteromeric interaction which increases their enzyme activities. However, the contribution of MTMR3 and MTMR4 to IRF3 activation remains unclear. To investigate the regulation of MTMR3 and MTMR4 in immune system, we generated MTMR3 and MTMR4 deficient macrophage cell line (RAW264.7) by genome editing CRISPR/Cas9. The single knockout cells of MTMR3 and MTMR4 did not show any significant decreases in cytokine production. The probably mechanism is the substitution of the function of MTMR3 and MTMR4 in innate immune response. So currently we are analyzing the role of combination function of MTMR3 and MTMR4 in regulation of antiviral innate immunity.

1-A99

Antiviral activity test of phospholipase A2 from *Acanthaster planci* in Human Immunodeficiency Virus

Kenny Lischer[1]
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Abstract

Acanthaster planci has enzyme, phospolipase A2 (PLA2), which has ability as antiviral agent. AIDS had become big pandemic in the world cause of the spread of Human Immunodeficiency Virus (HIV). Furthermore, HIV had become resistance with current drugs, so it decrease the efectivity of drugs. This research conduct to obtain the alternative drug for HIV infection, one of them is PLA2. So, the objective of this research was to observe antiviral activity of PLA2 agains HIV. This research using CV and F20 as the sample PLA2 which had been extracted from *A. planci*. Enzymatic activity will be determined by degradation of phospatidicholin and the purification determine by SDS-PAGE. Activity test was done in vitro by using PBMC (Peripheral Blood Mononuclear Cells) as feeder to increase HIV population. Meanwhile, toxicity test must be done before by LC50. PLA2 F20 had activity and purity by 15.66 times bigger than CV. LC50 of PLA2 was about 1,63799 mg/ml. Meanwhile, antiviral activity test of PLA2 in vitro show inhibition of percentage of infected cells. Where, HIV culture shows infected cells about 9,718±0,802%. After Addition of PLA2, infected cells were drop into 0,299±0,212% from the total of cells.

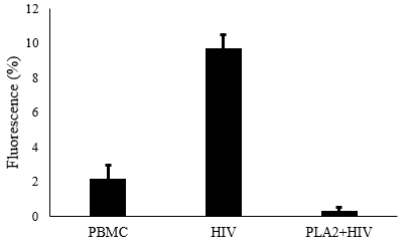

Fig 1. Phospolipase 2 decrease HIV activity

Parallel Sessions Schedule

Room B – Chemical Biology and Natural Product Chemistry

Moderator : Gita Nirmala Sari, S.ST., M. Keb. (Osaka University)

13.00 – 13.35	**Keynote Presentation** Biofunctional Chemistry of Acrolein: Tumor Detection and In Vivo Synthetic Chemistry *Ambara R. Pradipta, PhD (RIKEN)*
13.35 – 13.50	**(2-A89)** Green variant of monomeric photosensitizing fluorescent protein for photo-inducible protein inactivation and cell ablation *Yemima Dani*
13.50 – 14.05	**(2-A26)** Antimalarial Potency of Agarwood Leaf (*Aquilaria Malaccensis* Lamk.) Methanolic Extract on Parasitemic level of Plasmodium BERGHEI VINCKE & Lips in Mice (*Mus Musculus* L.) *A. Atikah, N. Cannadianti, N. Imawati, T. Rini Nuringtyas*
14.05 – 14.20	**(2-A31)** Development of A New Drugs by Modifying Chalcone Derivatives in An Effort to Increase Anticancer Activity in Breast Cancer *Yuda Hardianto, Intan Merita, Irma Rahayu Latarissa*
14.20 – 14.30	Break Time
14.30 – 14.45	**(2-A69)** Total Phenolic Contents in Whole, Refined and Rice Bran Three Locally Cultivars of Indonesian Black Rice (*Oryza sativa* L.) *Ilmi, W, Handayani, R, Pratiwi, D, Nashrurrokhman, M, Sayekti, P.R, Safitri, A, Puswestri Y.A, Pratiwi, R*
14.45 – 15.00	**(2-A70)** Characterization of Anatomical Structure and Antioxidant compounds in Melinjo (*Gnetum gnemon* L.) Based on the Stage of Seed Maturity *Siti Susanti, Rima Izatun Nisa, Fadil Azhari*
15.00 – 15.15	**(2-A85)** The Effect of Light and Oxygen to Grow of Fungus in Fulvic Acid Solution of Gambut Soil of Rawa Pening *Benny Wahyudianto, Mikhael Adikara*
15.15 – 15.30	**(2-A14)** Electrochemical Immunosensor for HER2 Detection Based on Anti-HER2 Serium Oxide Nanoparticles Bioconjugate *Leonard Kristofel Letelay, Shabarni Gaffar, HuseinHernandi Bahti, Santhy Wyantuti, Yeni Wahyuni Hartati*
15.30 – 15.35	Conclusion by Moderator
15.35 – 15.45	Break Time
15.45 – 16.00	**(2-A91)** New Cytotoxic Protolimonoids from the Stem Bark of *Aglaia argentea* (Meliaceae) *Kindi Farabi, Desi Harneti, Nurlelasari, Rani Maharani, Ace Tatang Hidayat, Khalijah Awang, Unang Supratman, Yoshihito Shiono*
16.00 – 16.15	**(2-A94)** A Novel Riboswitch Strategy by Utilize Mismatch Binding Ligand (MBL) *Annisa Ul Huna*
16.15 – 16.30	**(2-A95)** Anti-Aging Effects of Ellagitannin Metabolites, Urolithins, on The Skin *Februadi Bastian*
16.30 – 16.35	Conclusion by Moderator

Keynote Presentation

Biofunctional Chemistry of Acrolein: Tumor Detection and *In Vivo* Synthetic Chemistry

Ambara R. Pradipta[1] and Katsunori Tanaka[1,2,3]
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[1] Biofunctional Synthetic Chemistry Laboratory, RIKEN
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[3] JST-PRESTO

Abstract

Acrolein is a highly toxic α,β-unsaturated aldehyde generated by way of lipid peroxidation or generated by cells under oxidative stress condition through the enzymatic oxidation of polyamines or amino acids. Acrolein has been shown to play role in variety of disorders such as spinal cord injury, multiple sclerosis, and Alzheimer's disease. Recently, we serendipitously uncovered that aryl azide can participate in 1,3-dipolar cycloaddition with acrolein to produce triazoline derivative. Reaction of aryl azide with 10 equiv. of acrolein present in THF at millimolar level smoothly gave the triazole. The reaction is generally complete within 30 minutes at room temperature in the absence of catalyst. Significantly, the 1,3-dipolar cycloaddition between aryl azide and acrolein is highly chemoselective for acrolein. Under the same conditions, no discernable products were found when aryl azide was reacted with α- or β- substituted acrolein and activated olefins. The azide-acrolein 1,3-dipolar cycloaddition reactions also proceed smoothly under physiological conditions, even in the presence of various metals or interferences. Given such impressive reactivity and selectivity, we envisioned that phenyl azide with fluorescent group could be used to detect the extracellular acrolein generated by cells under oxidative stress condition or introduced via environmental exposure. The reaction-based cell imaging approach was put into practice using the tetramethylrhodamine (TAMRA)-labeled phenyl azide. Human umbilical vein endothelial cells (HUVECs) were treated with 10 μM solution of TAMRA-labeled phenyl azide at room temperature for 30 minutes, accompanied by exposure to tobacco smoke; and the presence of hydrogen peroxide, which induced cellular oxidative stress. Accordingly, fluorescently labeled phenyl azide reacted rapidly and selectively with acrolein included in tobacco smoke or that generated from oxidatively stressed cells. Because environmental exposures to acrolein and oxidative stressess cells lead to detrimental diseases, this method provides an important foundation for developing new therapeutic and diagnostic tools. Based on the above results, we have also utilized the fluorescently labeled aryl azides for selective imaging of oxidative stress in cancer cells. Furthermore, the remarkable selectivity and stability of aryl azide under physiologically relevant conditions encouraged us to utilize the azide-acrolein 1,3-dipolar cycloaddition in "therapeutic in vivo synthetic chemistry". These details will be discussed at the symposium.

2-A89

Green variant of monomeric photosensitizing fluorescent protein for photo-inducible protein inactivation and cell ablation

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Abstract

Photosensitizing fluorescent protein, which generates reactive oxygen species (ROS) upon light irradiation, is known to be useful for protein inactivation and cell ablation. Those give us clues to elucidate protein function, intracellular signaling pathway and intercellular interaction. Red fluorescent protein based monomeric photosensitizer, SuperNova Red, has been established and overcame the drawbacks of its original dimeric version, KillerRed. Here, we established SuperNova Green, a green variant of SuperNova which will be useful to control ROS production spatially, temporally and selectively when used in combination with the red variant. In vitro and in vivo ROS measurement showed that SuperNova Green produced ROS through Type I mechanism which produce superoxide. Specific cell ablation and protein inactivation using SuperNova Green and SuperNova Red was successfully performed. In conclusion, SuperNova Green is useful as a new color variant of photosensitizer and can be used in combination with SuperNova Red to perform selective spatio-temporal protein inactivation or cell ablation.

2-A26

Antimalarial Potency of Agarwood Leaf (*Aquilaria malaccensis* Lamk.) Methanolic Extract on Parasitemic Level of *Plasmodium berghei* Vincke & Lips in Mice (*Mus musculus* L.)

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Abstract
Malaria is one of the main worldwide disease with about 270 million infections and one million deaths every year. The efforts to overcame this disease are obstructed by the progressive spread of *Plasmodium* resistant to the standard antimalarial drugs. The aim of this study is to determine the antimalarial potency of Agarwood Leaf (*Aquilaria malaccensis*) methanolic extract on parasitemic level of *Plasmodium berghei* in the mice's erythrocyte. The antimalarial active compound of the extract was detected using Thin Layer Chromatography (TLC) and the activity was determined using "4 days test" method on 18 Swiss male mice. Mice infected with *P.berghei* then divided into six groups. Group I was served as control while Group II-VI were treated with 12,5, 25, 50,100, and 200 mg/kg body weight of *A. malaccensis* leaf extract respectively from 0-3 days. Parasitemias were determined and ED_{50} were counted until the fourth day. The phytochemical constituents of the extract showed the presence of antimalarial active compound like flavonoid, terpenoids, and saponin. The result showed that the different concentration of the extract exerts a growth inhibition of 31,08%, 40,15%, 93,59%, 25.48%, dan 97.85% at 12,5, 25, 50,100, and 200 mg/kg body weight respectively. Probit Analyse showed that ED_{50} dose is 31,792 mg/kg body weight. The agarwood leaf (*A. malaccensis*) methanolic extract has a high antimalarial potency to be developed.

Keywords: *Aquilaria malaccensis* leaf, Antimalarial, methanolic extract, parasitemic level, *Plasmodium berghei*

2-A31

Development of A New Drugs by Modifying Chalcone Derivatives in An Effort to Increase Anticancer Activity in Breast Cancer

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Abstract

The prevalence of breast cancer increases every year. The main problem in treatment is the resistance of chemotherapy drugs and side effects of the drug. Chalcone compounds that have been isolated from natural ingredients function as a breast anticancer. Maximizing the potentiality of the activity can be done by means of modifying the structural compound. The chalcone compound is modified to chalcone derivatives of 20 compounds to increase their affinity for estrogen receptors by computational-simulation approach, molecularly on the hER-α antagonist receptors (GDP ID 3ert). The result of molecular docking of 20 modified chalcone derivative compounds is the best compound with addition of hydroxy group at the para position having free-bond-energy value (ΔG) of -8.67 and forming hydrogen bond with GLU353 and ARG394. This proves that the 4-hydroxy-4-methyl-chalcone compound has anti-cancer activity in silico. The compound can also be synthesized easily by means of claisen-schimdt condensation. The synthesis method of 4-hydroxy-4-methyl-chalcone compound is carried out by reacting 4-hydroxy acetophenone and 4-methyl benzaldehyde under microwave radiation. Therefore, it can be concluded that the 4-hydroxy-4-methyl-chalcone compound can be developed as a new drug that has better-anticancer activity than the chalcone itself, with free energy value of -8.67 and can be synthesized by claisen-schimdt condensation.

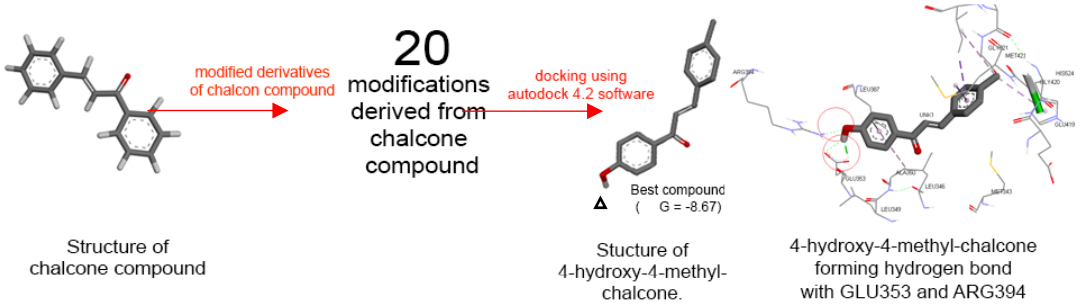

Figure.1 Scheme of Research

2-A69

Total Phenolic Contents in Whole, Refined and Rice Bran Three Locally Cultivars of Indonesian Black Rice (*Oryza sativa* L.)

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Abstract

Indonesian black rice (*Oryza sativa* L.) has high secondary metabolite contents. One of the metabolite contents contained in black rice are phenolic compound that has benefits as antioxidant, anti-inflammatory, anti-carcinogenic. Black rice is potentially to be developed as functional foods. This study aims to determine the total phenolic contents in whole, refined, and rice bran (*Oryza sativa* L.) black pigmented cultivars Cempo Ireng, Toraja and Wajo Laka. Black rice cultivars are 'Cempo Ireng' from Sayegan, 'Toraja' from Sulawesi, and 'Wajo Laka' from East Nusa Tenggara. The parameters observed were total phenolic contents measured by Folin-Ciocalteu method. Measurements were performed with three replicates and analyzed using two-way ANOVA. The results showed that total phenolic content of Cempo Ireng in whole, refined, and rice bran sequentially (144,68; 51,27; and 515,18) mg/100g, Toraja (302,95; 61,94; and 432,69)mg/100g and Wajo Laka (137,48; 65,06; and 652,35)mg/100g. For the conclusion, the total phenolic contents vary between three cultivars of black rice. The highest of total phenolic contents found in bran rice.

Keyword: black rice, cultivar, folin-ciocalteu, functional food, total phenolic contents

2-A70

Characterization of Anatomical Structure and Antioxidant compounds in Melinjo (*Gnetum gnemon* L.) Based on the Stage of Seed Maturity

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Abstract

This study aimed to determine the differences of anatomical structure and antioxidant compounds of the outer seed's skin of melinjo based on four stages of seed maturity. Determination of anatomical structure of the outer skin of melinjo seeds used paraffin embedding method. Total phenolic and flavonoid content was determined spectrophotometrically. Antioxidant activity was carried out by DPPH (2,2-diphenyl-1-picrylhydrazyl) method. Anatomical structure of the outer seed's skin of melinjo known as sarcotesta layer was arranged by epidermal tissue, parenchyma tissue, vascular bundle, and schlerenchyma tissue in the form of sclereids (asterosclereid). The thickest seed skin was found on the red seed of 2487,6 µm and the thinnest skin was in green skin of 1381,8 µm. Epidermis in ripening seeds will be more degraded than in young seeds. There is a series of simple vascular bundles with xylem and phloem. Phytochemical of the melinjo's skin at each stage of maturation contained polyphenols, flavonoids, terpenoids and saponins. The highest levels of phenols and flavonoid content were obtained from red color seed's skin extract of 1.0366% and 0.6410%. The result of antioxidant activity measurements showed that green color seed's extract had the highest antioxidant activity with IC50 value 3.574 ppm (AAI = 4.413).

Keywords: melinjo, antioxidant, anatomical character, DPPH

2-A85

The Effect of Light and Oxygen to Grow of Fungus in Fulvic Acid Solution of Gambut Soil of Rawa Pening

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Abstract

Fulvic acid is one of soil substances which have solubility in all pH range, due to their active sites. Many methods can be used to extract fulvic acid, but the remaining of humic acid will attract fungus to grow. The benefit of this fungus is breakdown humic acid structure to become fulvic acid. The purpose of this research was to determine the important factors for fungus growth. First, the effect of light is determined by placing samples of extracted fulvic acids in the dark room and the light penetrated room. The effect of presence oxygen was determined by placing the same volume of sample into several volumes of Beaker glass. The Beaker glasses were isolated from the ambient atmosphere. The weights of fungus in both variations were calculated after 7 days. Then, the structure transformation was determined by HPLC. Fungus appeared after 2 days in the container of fulvic solution in both rooms. The presence of light will accelerate of growing fungus, but the bodies of fungus can degradation faster. The limited oxygen amount will decrease the weight of fungus. The peak of chromatograms before and after the presence of fungus showed that retention time of fulvic acid slightly shifting.

Figure 1. Micrograph of fungus in fulvic acids solution

2-A14

Electrochemical Immunosensor for Her2 Detection Based on Anti-Her2 Serium Oxide Nanoparticles Bioconjugate

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Department of Chemistry, University of Padjadjaran, Bandung

Abstract

Human epidermal growth factor receptor 2 (HER2) is a protein on cell membrane surface as a tyrosine kinase receptor and involved in transduction signal stripe that roles in the development and differentiation cells. Overexpression HER2 causes breast cancer, so it was needed to diagnose in early. The aim of this research is to synthesize and characterization bioconjugate antiHER2 cerium oxide nanoparticles for HER2 detection. Electrochemical techniques in these researches was using electrode modified bioconjugate cerium oxide nanoparticles as a system that was expected it can give the highest sensitivity, fast, inexpensive, and easy to use. In this research, cerium oxide nanoparticles have synthesized by cerium metallic salt. Then it was continued with antiHER2 cerium oxide nanoparticles bioconjugate forming that should be modified on screen printed gold electrode (SPGE). The bioconjugate will be using to fabricate on HER2. Detection process of HER2 standard was analyzed using cyclic voltammetry to reduction-oxidation current of potassium ferrocyanide. This research result has linear range between 0.001 until 1.0 ng mL^{-1}, coefficient of correlation about 0.9953 and limit of detection amount 0.0124 ng mL^{-1} of HER2. So, it could be concluded that antiHER2 bioconjugate of cerium oxide nanoparticles was selectively very sensitive for HER2 detection than others method which was developed to detect HER2 on breast cancer.

Key words: HER2, bioconjugates, cerium oxide nanoparticles, voltammetry.

2-A91

New Cytotoxic Protolimonoids from The Stem Bark of *Aglaia argentea* (Meliaceae)

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Abstract

Two new protolimonoid compounds, namely, argentinin A (**1**) and B (**2**) along with five known triterpenoid compounds, dammar-24-en-3α-ol (**3**), 3-epi-cabraleahydroxy lactone (**4**), (E)-25-hydroperoxydammar-23-en-3β,20-diol (**5**), mixture of eichlerianic acid and shoreic acid (**6a** and **6b**), and dammar-24-en-3α,20-diol (**7**), were isolated from the stem bark of *Aglaia argentea*. The structure of new compounds were elucidated by spectroscopic methods including one and two-dimensional NMR as well as high-resolution mass spectrometric analysis. All of the compounds were tested for their cytotoxic effects against P-388 murine leukemia cells in vitro. Among those isolated compounds, argentinin A (**1**) showed the strongest activity with an IC_{50} value of 1.27 µg/mL (3.05 µM).

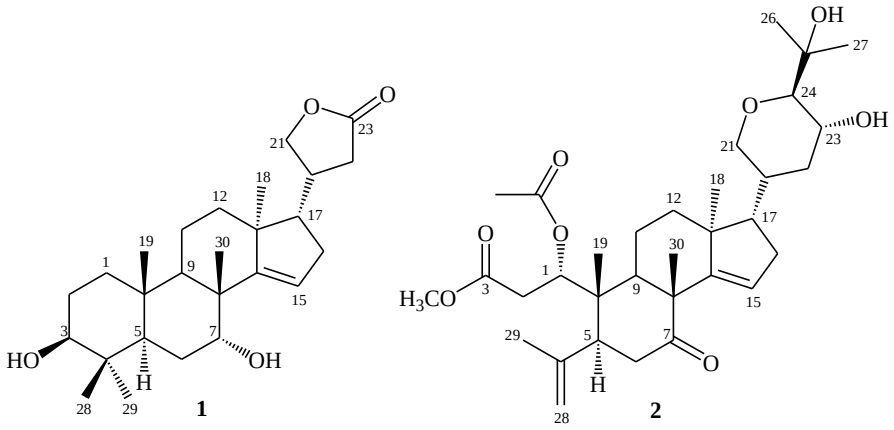

Figure 1. New compounds isolated from the stem bark of *A. argentea*.

2-A94

A Novel Riboswitch Strategy by Utilize Mismatch Binding Ligand (MBL)

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Abstract

Riboswitches are gene regulatory elements in mRNA that respond specifically to small molecules. Over past decade, riboswitches have been shown their potential application in various works. However, riboswitches still have challenges to overcome. The previous research showed possibility of this phenomena probably due to ribosomal block caused by highly structured of ligand-bound riboswitch. We herein develop a new strategy of riboswitch using relatively simple RNA secondary structure. In this study, we utilized Mismatch Binding Ligands (MBL) that can bind specifically to a mismatch sequence in DNA. Our previous study showed that a Naphthyridine Carbamate derivative, Z-NCTS was applicable as a ligand for riboswitch on in-vitro translation. Another series of derivative called Naphthyridine Carbamate Tetramer (NCTn) bound the CGG/CGG mismatch sequence in RNA and served as a molecule glue to induce pseudoknot formation. Pseudoknots are structural motifs that are commonly found in ribosomal frameshifting sites in mRNAs where they stimulate efficient –1 programmed ribosomal frameshifting (–1 PRF) and stop codon read-through. We engineered a naturally occurred –1 PRF pseudoknot sequences to respond to NCTn to serve as an efficient riboswitch. The novel strategy we have developed would provide a simple and efficient tool of synthetic biology for controlling gene expression.

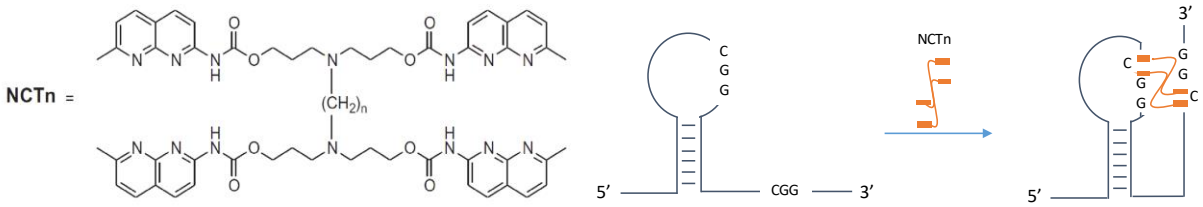

Figure 1. Structure of NCTn and pseudoknot formation by NCTn-binding to CGG/CGG in RNA

2-A95

Anti-Aging Effects of Ellagitannin Metabolites, Urolithins, on The Skin

Februadi Bastian[1], Takenori Nakajima [2], Masatake Kudo [2], Hideo Yazaki [2], Hiroaki Yamamoto [2], and Hideyuki Ito[1],
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Abstract

Various biological activities including antioxidant, antiviral and antitumor activities were reported for several types of ellagitannins. Geraniin is a typical type of ellagitannin is a main component of *Geranium thunbergii* (Geraniaceae) which traditionally used as an anti-diarrheic in Japan. We previously reported the isolation and characterization of seven urolithins as urinary and intestinal microbial metabolites in rats after oral administration of geraniin. In addition, we reported that 3,8-dihydroxy-6*H*-dibenzo[*b,d*]pyran-6-one (urolithin A), a major ellagitannin metabolite, showed stronger antioxidant and anti-inflammatory activities than those of intact ellagitannins. As a part of the further investigation of biological activities of ellagitannin metabolites, 11 urolithins prepared by chemical synthesis were evaluated for degradation activity on advanced glycation end products (AGEs) and skin anti-aging effects by using in vitro assays. Among the 11 urolithins, urolithins D, E, M5, and M7 revealed significant degradation effects on the AGEs than that of ellagic acid. Urolithin A showing antioxidant and anti-inflammatory effects[2)] showed no effect of degradation activity on AGEs. Anti-aging effects of urolithins on skin were evaluated by inhibitory activity of tyrosinase and effects of suppression of matrix metalloproteinase-1, melanin, hyaluronic acid, and collagen induction. Urolithin A exhibited anti-aging effects on skin in all assays. Although further studies are required to develop some understanding of the in vivo effects of urolithins on anti-aging on skin, our findings suggest that ellagitannins metabolites might provide basic data for the application means as cosmetics.

Parallel Sessions Schedule

Room C – Material Sciences and Engineering Resources

Moderator : Abdul Rohman Supandi, M.Eng (Osaka University)

13.00 – 13.35	**Keynote Presentation** Colloidal Quantum Dots and Hybrid Materials for Energy Harvesting Devices: How to Cheat Nature *D.Sc., Satria Zulkarnaen Bisri (RIKEN)*
13.35 – 13.50	**(3-A01)** Radiative Transfer Equation and Its Solution *Galih R. Suwito*
13.50 – 14.05	**(3-A21)** Plastic Recycling of End-of-Life Vehicle Using Combination of Raman Spectroscopy and Data Mining Techniques *Wilem Musu, Akihiro Tsuchida, Hirofumi Kawazumi, Nabuto Oka*
14.05 – 14.20	**(3-A24)** Potential of Garbage Can as Electrode of Simply Solar Cell based on DSSC *Agus Nur Hidayat, Bangun Giri Pamungkas*
14.20 – 14.30	Break Time
14.30 – 14.45	**(3-A64)** Estimation Carbon Stock and Mapping Potency of Mangrove Ecosystem Diversity Using Geographical Information System in Biawak Island, Regency of Indramayu, West Java, Indonesia *Emma Permata Hati, Tien Lastini, Endang Hernawan, Ahmad Jaelani*
14.45 – 15.00	**(3-A84)** Electronic Absorption and Structural Properties of Lanthanide(III) Monoaromatic Sandwich Complexes *Santria, A, Fuyuhiro, A, Fukuda, T, Ishikawa, N*
15.00 – 15.15	**(3-A86)** Doping Effects of Porphyrin on Polyaniline and its Dye-Sensitized Solar Cells *Nunik Nurhayati*
15.15 – 15.30	**(3-A87)** Green Synthesis and Application of Silver Nanoparticles (Ag NPs) using Seaweed and Sodium Alginate Stabilizer *Miftah Faried*
15.30 – 15.35	Conclusion by Moderator
15.35 – 15.45	Break Time
15.45 – 16.00	**(3-A98)** Formation of Large-grain Poly-crystalline Si Layer on Quartz by Al-induced Crystallization from Thin Film Solar Cell *Joko Suwardi*
16.00 – 16.15	**(3-A39)** The Effect of Copper Layer Thickness as Coating on Aluminum Surface to the Anti-bacterial Properties against Eschericia Coli *Luthfi Noviardi Andini, Muhammad Fadlilah, Adimas Habib Iqbal, and Gatot Putramas*
16.15 – 16.30	**(3-A96)** Electrical Molecular Network of Asymmetric Porphyrin-Sandwiched Polyoxometalate/ Single-Walled Carbon Nanotubes Complex *Detiza Goldianto Octensi Hernowo*
16.30 – 16.35	Conclusion by Moderator

Keynote Presentation

Colloidal Quantum Dots and Hybrid Materials for Energy Harvesting Devices: How to Cheat Nature

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Abstract

Energy security is among the vital issues of the 21st century. However, remote areas and the emergent of ubiquitous internet-of-things (IoT) devices demand compact and independent power sources. A revolutionary paradigm shift in material science is required in developing highly efficient generator through energy harvesting by cheating the nature, that "just enough" to power each individual device. The small size of colloidal quantum dots (CQDs) makes them having distinct properties than their bulk forms, governed by quantum confinement effects. Assembling these CQDs can provide us unique capabilities to design new kinds of material properties from bottom-up for many different applications, which nanostructuring is vital. Among them are the possibilities to exploit the discrete energy levels to dramatically enhance thermoelectric properties as well as to obtain solar cell with a quantum efficiency of over 100%. Here we will discuss progress and challenges in controlling the carrier transport in hybrid CQD assemblies where the balance between the quantum confinement preservation and the electronic coupling among QDs is crucial. Furthermore, the introduction of "iontronics" concept allows us to start utilizing some of these quantum confinement properties at room temperature for energy harvesting.

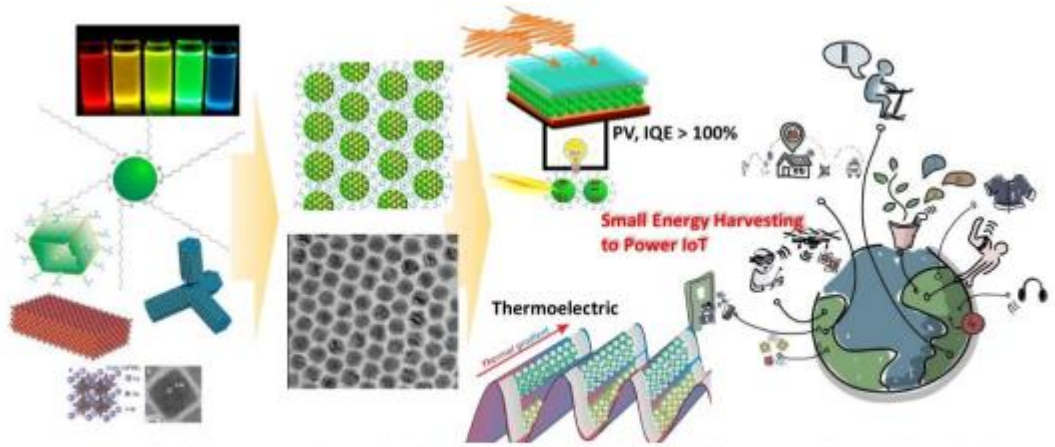

Figure 1. Colloidal quantum dot technologies allow us to build LEGO-like material assemblies that have distinct properties that would be beneficial for revolutionary energy harvesting devices (e.g. photovoltaics, thermoelectrics, etc.) to power up, among other, the IoT ecosystem.

3-A01

Radiative Transfer Equation and Its Solution

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Abstract

Radiative Transfer Equation (RTE) is an important differential equation in any fields of science involving electromagnetic radiation, such as photonics and materials science, where the interplay between radiation and matters is very important. By solving RTE, we aim to obtain specific intensity at all depths of a volumetric object. RTE also provides us with the knowledge about the radiative flux emanating from the source. And its general solution can provide information about the structure of a material source. In this paper, we represent the physical nature of RTE and a typical mathematical technique for solving RTE to extract any valuable information about the radiation source material.

3-A21

Plastic Recycling of End-of-Life Vehicle Using Combination of Raman Spectroscopy and Data Mining Techniques

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[2] Saimu Corporation, Iizuka, Japan

Abstract
Plastics utilization as components of automotive industry such as dashboard, bumpers and even body frames have increased rapidly because it can improve fuel efficiency. However, almost of plastics from end-of-life vehicle (ELV) are processed in incineration and induce carbon dioxide emission on the global warming. Therefore, an industrial scale recycling technique is strongly required. One of the difficult problems in the plastic sorting is black colour of ELV plastics which cannot be easily identified in those components.
In this study, we made a sorting machine to separate plastics by using fast Raman spectroscopy as the identification sensor with data mining techniques as logic of sorting. We analyse kind of plastic which is polypropylene (PP) or others and the sensor works on Support Vector Machine (SVM) algorithm. This machine can sort the PP and PP+Talc. Data mining technique can make Raman spectroscopy apparatus detecting the black plastics with high speed and accuracy.

Keyword: Plastic Recycling, Polypropylene, Raman Spectroscopy, Data Mining, Support Vector Machine.

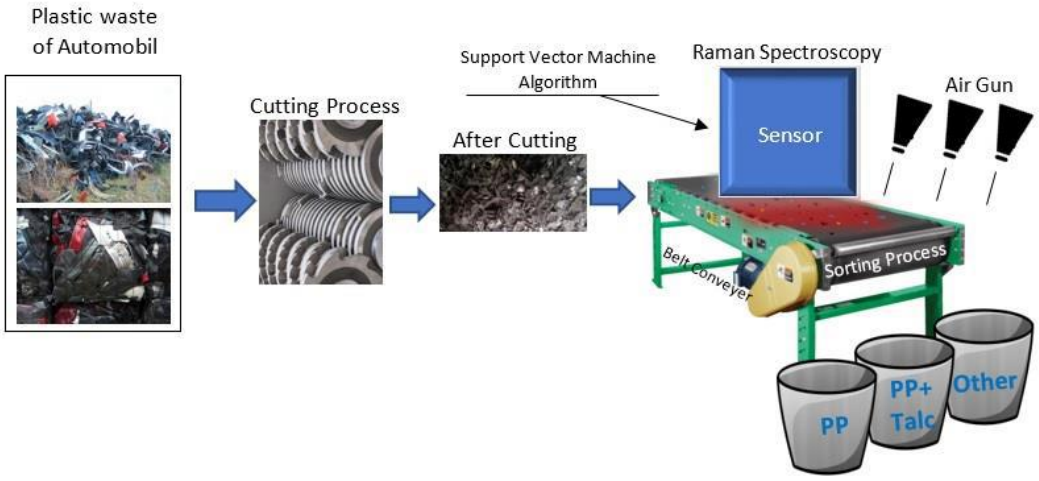

Figure.1 Scheme of Black Plastic Recycling

3-A24

Potential of Garbage Can as Electrode of Simply Solar Cell based on DSSC

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Indonesia

Abstract
Energy needs in the world are continously increasing every year. Energy needs are often tangent to environmental problems. Energy alternative is a solution of energy supply without causing environmental problems. One type of energy alternative is solar cell, that convert sunlight into electrical energy. Rated by value of economicaly, DSSC (Dye Sensitized Solar Cell) type is more low prize than other solar cell. However, the use of ITO glass (Indium Tin Oxide) on the DSSC system is still quite expensive. Research to have an alternative material which have lower economic value than ITO glass are necessary. In this research try to use garbage cans as alternative electrode on simply DSSC solar cell with experiment laboratorium methode and I-V parameter as solar cell standard analysis. The result of maximum voltage and current are 46.8mV and 20uA. Fill factor obtained from characterization I-V parameter is 0.77.

Keyword : Solar Cell, DSSC, Cans electrode

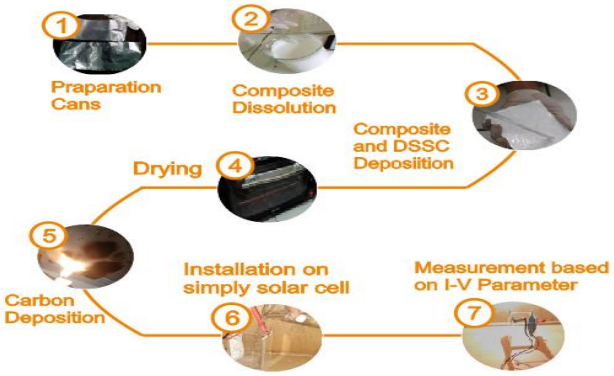

Figure.1 Methode of Research

3-A64

Estimation Carbon Stock and Mapping Potency Of Mangrove Ecosystem Diversity Using Geographical Information System In Biawak Island, Regency Of Indramayu, West Java, Indonesia

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[1] Department of Biomanagement, Institute Technology of Bandung

Abstract

Ecologically, mangrove ecosystems function as spawning ground and nursery ground of various aquatic species and various other types of life, so that mangrove forests provide high biodiversity and function as life support systems. By knowing the large reserves of carbon stored in the forest it can be known the function of the area. Calculation of carbon stock estimation using vegetation analysis method and allometric method to know carbon value. While mapping the potential for diversity using Geographical Information System. There are species of Mangroves from Rhizoporaceae, Sonneratiaceae, and Meliaceae, another species like reptiles, macroalgae, seagrass, crustacea, echinoderms, and mollucs. From 7 plots in the field, the biomass of mangrove is 87.89496284 ton/ha, and the value of carbon stock is 41.31063254 ton/ha. With this result, Biawak Island have has considerable potential in Indonesia

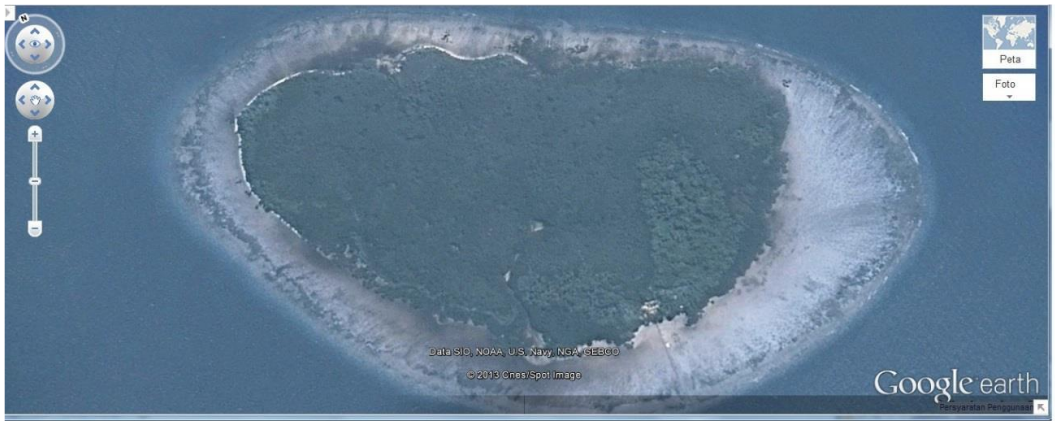

Figure 1. Location of Biawak Island, Regency of Indramayu, West java, Indonesia.

3-A84

Electronic Absorption and Structural Properties of Lanthanide(Iii) Monoaromatic Sandwich Complexes

Santria, A[1], Fuyuhiro, A[1], Fukuda, T[1], Ishikawa, N[1]
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[1] *Osaka University, Osaka, Japan*

Abstract

The electronic absorptions and crystal structures of several lanthanide(III) complexes (Ln=Tb, Dy, Ho, Er, Tm, Yb) which formed with tpp, 5,10,15,20-tetraphenylporphyrin, and cyclen, 1,4,7,10-tetraazacyclododecane, ligands have been analyzed by UV-visible spectroscopy and X-ray diffraction. The analysis of the absorption spectra in dichloromethane solution reveals that the complexes have lower number of peaks compared with free base tpp due to lanthanide ions existence. All complexes have one soret band peak with a shoulder and two Q band peaks in the range of 421 nm – 423 nm and 548 nm – 586 nm, respectively. The structure of the complexes in the solid state which were analyzed by single crystal X-ray diffraction are isostructure and crystallized in the tetragonal system. Both of tpp and cyclen ligands are coordinated to a lanthanide ion in eight-nitrogen coordination environment with square antiprismatic (SAP) geometry (ω in range of 43.01-43.67°). The mean plane formed with four nitrogen donor atoms from tpp, N_4^t, and thatof the cyclen, N_4^c, are parallel with dihedral angle less than 1°. The lanthanide ions lie between N_4^t and N_4^c. The different charge of the ligands, size of N_4 square ligands and steric factor presumably caused the lanthanide(III) ions closer to N_4^t than N_4^c. The effect of lanthanide contraction has been observed through several distances such as Ln-N and interplanar distances which decrease with decreasing lanthanide(III) ionic radii. The skew angles, opening angles and N-N distances are nearly unchanged, keeping the rigid square antiprismatic throughout the series.

3-A86

Doping Effects of Porphyrin on Polyaniline and Its Application in Dye-Sensitized Solar Cells

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Institut Teknologi Bandung

Abstract

The purpose of this study is to observe the doping effects of porphyrin on polyaniline (PANI) as counter electrode on DSSC device. Heat treatment was also applied in the measurement. On the heat treatment at various temperature, deprotonation and oxidation occured on both PANI and porphyrin/PANI due to the heating. The phenomenon was confirmed by Raman shift. Optimum condition of heat treated PANI and porphyrin/PANI show the maximum conductivity. As the counter electrode in a DSSC device, they can enhance efficiency of DSSC more than 25% for PANI and 96% in case of porphyrin/PANI compared to bare graphite as counter electrode.

Keywords : Polyaniline, Emeraldine Salt, Porphyrin doped Polyaniline, Emeraldine Salt Deprotonation, Meso-tetraphenyl Porphyrin, Conductivity, Counter Electrode

3-A87

Green Synthesis and Application of Silver Nanoparticles (Ag NPs) using Seaweed and Sodium Alginate Stabilizer

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Abstract

Nowadays, a new nanotechnology approach has grown rapidly due to the unique properties of this material. In size from 1 to 100 nm of the particles, the nanomaterial can exhibit high attention in many applications such as electronic, sensor, medical devices, catalyst, and so on. Silver nanoparticles (Ag NPs) is one of the famous metal nanoparticles that has been applied in many research areas. With the special physicochemical property as well as inexpensive metal, Ag NPs has been produced with a few of methods. Herein, an alternative method for producing Ag NPs using green approach is proposed. The green method with applied of natural stabilizers which are Seaweed and Sodium Alginate is the advantage of this method compared to the common method (chemical method). The result of the Ag NPs under green method has been evaluated using UV-Vis, XRD, TEM, FESEM-EDX, zeta potential and FTIR. These characterizes have been suggested that Ag NPs has the surface plasmon resonance, pure crystallinity, good morphology, spherical shape, high element atom of Ag, good stability of the metal, and the possible interaction of van der Walls forces between Ag and stabilizers. In addition, the application of Ag NPs as the antibacterial agent has been evaluated as well.

3-A98

Formation of Large-grain Poly-crystalline Si Layer on Quartz by Al-induced Crystallization from Thin Film Solar Cell

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Abstract

Aluminum-induced crystallization (AIC) have been intensively investigated as one of the alternative for low temperature post-crystallization Si [1]. The effect of Al thickness to poly-Si formation was shown in Figure 1. These results indicated the thinner Al layer sample had larger grain size and higher (111)-orientation fractions. The best AIC sample was obtained for a 50 nm Al thick sample with preferential (111)-orientations 97% and grain diameter up to ~333μm. The 50 nm,100 nm and 200 nm Al thick layer had different roughness RMS by ~ 2.6nm, 3 nm and 5 nm respectively. Rough interface lead to rapid Si diffusion and make the nucleation occurs at AlOx/Al interface, while the smooth interface cause slow Si diffusion and hence the nucleation taking place at the Al/quartz interface for thin Al samples, produced the low energy surface Si crystal in (111)-direction.

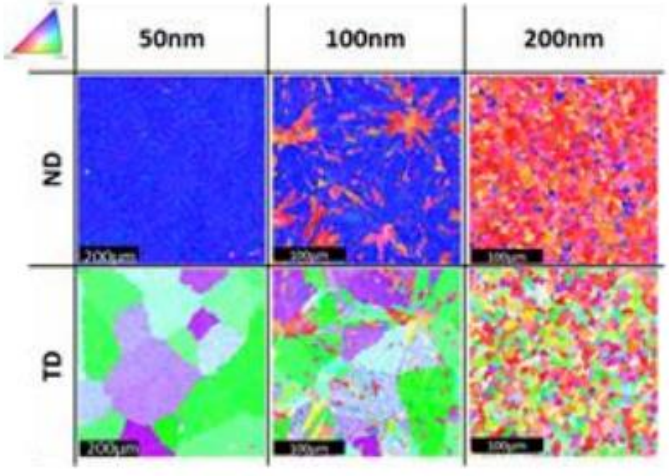

Figure 1. EBSD of poly-Si of varied Al-thickness and annealed at 425°C for 100 h

[1] J. Chen, J. Suwardy *et* al., Vol. **19**, No. 17, 2275-2436 (2017)

3-A39

The Effect of Copper Layer Thickness as Coating on Aluminum Surface to the Anti-bacterial Properties against *Eschericia Coli*

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Abstract
Copper is a material that have anti-bacterial properties. These properties will be used to the medical equipment that needs a high degree of sterilization. This study aimed to determine the effect of the copper layer thickness to the anti-bacterial properties to improve the sterilization against *Eschericia coli*. This study uses copper as a coating material with an aluminum-based metal in which aluminum is often used as medical equipment. The method is made by anodizing to form an oxide layer at first, which is the oxide layer is the place where the copper can be deposited and then perform the electroless plating of the copper to make a plating on the aluminum surface. The variable in this study is the duration of the electroless plating process, that is 13, 26, and 39 minutes. The results obtained from the copper coating on aluminum surface with electroless plating. The best coating thickness was obtained at 26 minutes process where the thickness of 8 – 24 µm was obtained. Anti-bacterial testing is also done by the Kirby-Bauer method. It was found that the thicker copper thickness, the better anti-bacterial properties properties obtained. However, the layers of coating need to be leveled to prevent corrosion.

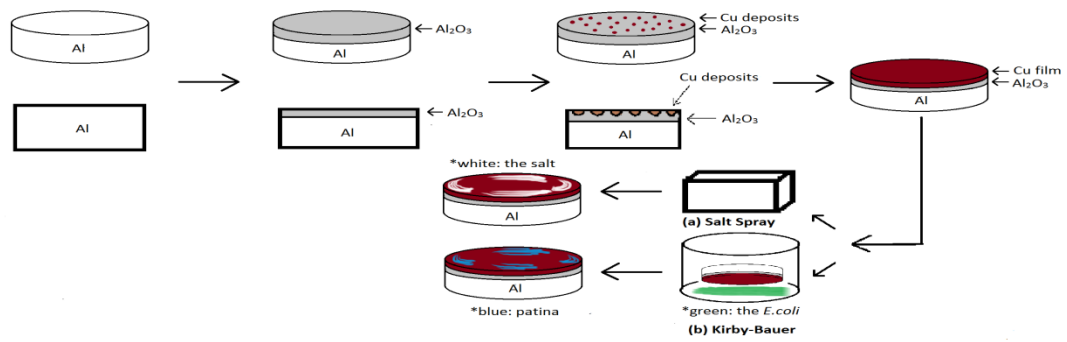

Figure.1 Schematic illustration for the number of processing steps in this study

3-A96

Electrical Molecular Network of Asymmetric Porphyrin-Sandwiched Polyoxometalate/ Single-Walled Carbon Nanotubes Complex

Detiza Goldianto Octensi Hernowo[1], Yoshito Yamazaki[2], Takuji Ogawa[2], and Hirofumi Tanaka[1]
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Abstract

The field of molecular electronics has a huge interest in explaining electron transfer moving through single molecule. The advancement technology of fabrication single molecular device led us to understand charge carrier transport in single-molecule level for the future emergence of brain-like devices. Therefore, porphyrin(por)-sandwiched polyoxometalate(POM)/ single-walled carbon nanotubes(SWNTs) complex are demonstrated as shown in Fig.1(a). We firstly investigated asymmetricity of polyoxometalate, $SV_2W_{10}O_{40}[H_4TPP]$, surrounded by four porphyrins to improve interaction between SWNTs and POM for adsorption (Fig.1(b)). The results showed the asymmetricity of por-sandwiched POM/ SWNTs complex affect to pulse generation phenomena. When 15 V of bias voltage were applied onto the system, porphyrin as a donor, transfer electron to POM where the hole involved to negative pulse generation (Fig.1(c)). Otherwise, when the higher voltage were applied 100 V, electron in POM involved to positive pulse generation (Fig.1(d)). The results showed pulse generation phenomena changed drastically by tilting the angle of two sandwich porphyrins.

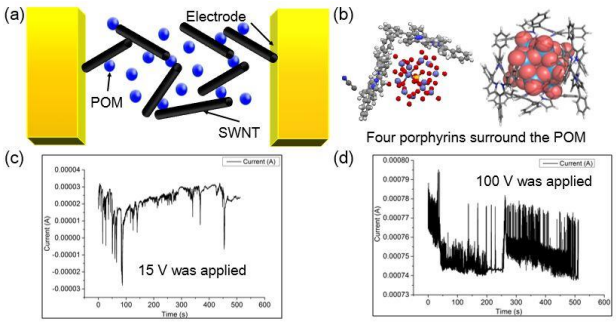

Fig1.(a) Design of $SV_2W_{10}O_{40}[H_4TPP]$ with SWNT complex. **(b)** $SV_2W_{10}O_{40}[H_4TPP]$ structure. **(c)** Negative pulse generation of time dependence by applying 15 V. **(d)** Positive pulse generation of time dependence by applying 100 V.

Parallel Sessions Schedule

Room D – Humanities and Social Sciences (Environment and Social Interaction)

Moderator : Sugahara Yumi, PhD (Osaka University)

13.00 – 13.35	**Keynote Presentation** People Centered Disaster Management The Disaster Management by ICT with Safety Confirmation Building Disaster Resilient Community by Young people Empowerment in Indonesia *Prof. Stefano T. Tsukamoto (Osaka University)*
13.35 – 13.50	**(4-A88)** A Study of Peri Urban Air Quality and Land Use Changes Using GIS Application *Sintha Prima Widowati Gunawan*
13.50 – 14.05	**(4-A34)** The Semantic Extension of Japanese Color Terms Through the Usage of Phrasal Metonymy *Samsul Maarif*
14.05 – 14.20	**(4-A06)** Cultural Landscape Pattern of Javanese and Sundanese Ethnicity in the Borderline Region of West Java and Central Java *Titius Kurnia Dinata, Triarko Nurlambang, and Tuty Handayani*
14.20 – 14.30	Break Time
14.30 – 14.45	**(4-A03)** Exploring the Potential of Disability Inclusive Budgeting for Realising the Rights of Persons with Disabilities in Indonesia *Antoni Tsaputra*
14.45 – 15.00	**(4-A51)** "Teman Baik" Movement: Do Not Be Afraid, Here I Am! *Faris Mujahid, Saefuddin Robbani*
15.00 – 15.15	**(4-A66)** Criteria for Making Walkable City to Achieve Sustainable Urban Design *Setyo Nugroho*
15.15 – 15.30	**(4-A10)** Optimization of the Provincies for Food Self-Sufficiency in Indonesia Using Kohonen Self Organizing Mapping (SOM) *Rabiatul Adawiya, Khusnul Hajar N, Ahmad Husain A*
15.15 – 15.20	Conclusion by Moderator
15.35 – 15.45	Break Time

Keynote Presentation

People Centered Disaster Management
The Disaster Management by ICT with Safety Confirmation
Building Disaster Resilient Community by Young people Empowerment in Indonesia

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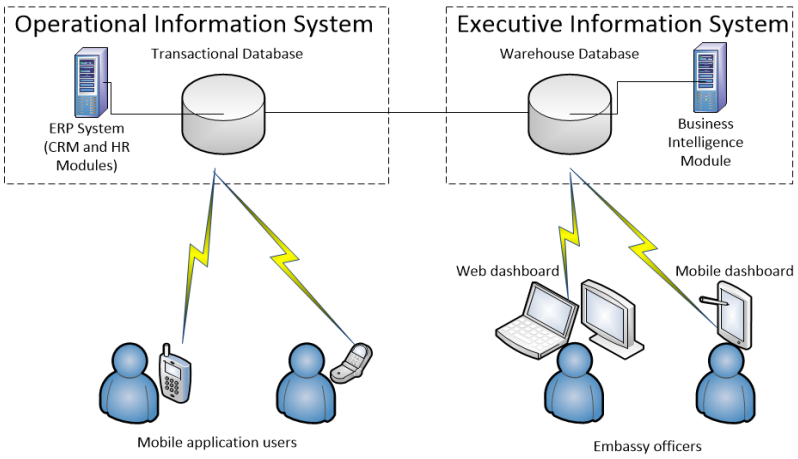
[1] RESPECT Doctoral Program for Multicultural Innovation, Osaka University, Japan

Abstract

CARED is a mobile app for a **Multilingual Wide View Disaster Information System**. Based on affected people's response to simple questions in an app on their cell phones, disaster damage is visually displayed on a map. The damage levels are plotted according to severity as red (most), yellow, or green (least) dots on a map. To predict damage and assist in emergency aid planning, the information can also be organized into data sorted by municipality. CARED was developed by the Revitalizing and Enriching Society through Pluralism, Equity, and Cultural Transformation (RESPECT) program at Osaka University led by Professor Toshiya Tsukamoto and piloted in the Yogyakarta Special Region in partnership with the Department of International Relations, Universitas Gadjah Mada. The system is currently available in 11 languages, like Indonesian, Javanese, English, Japanese, Korean, and Chinese, Spanish, Portuguese, Thai, Vietnam and Tagalog versions.



4-A88

A Study of Peri Urban Air Quality and Land Use Changes Using GIS Application

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Division of Sustainable Energy and Environmental Engineering, Graduate School of Engineering, Osaka University, Japan

Abstract

The urban growth in northern fringe of Yogyakarta City caused enormous loss of agricultural lands and spread lead pollution from vehicular emission. This study tried to seek the correlation of land use changes to the ambient lead level in 15 points acquired by air samplings in 2007. Parameters in use were Building Density (BD), Roadside Vegetation(RV), Traffic Density(TD), Travel Speed(TS) and V/C Ratio(VCR). Landuse changes were also spatially interpreted from satellite image Quickbird 2005 and DigitalGlobe 2007 with Arcmap Software. Methods used were multiple linear-regressions using Ordinary Least Square. Result showed high level of ambient lead (1-2 μg/m^3) detected in congested area where VCR was high, BD was high and RV was low, TD was high and TS was extremely below the speed standard in medium city. Meanwhile, lower ambient lead (>0.1μg/m^3) was identified in area where VCR was low with low BD and RV, TD was high but TS was close to the standard. Regression result revealed 96% of ambient lead level was influenced by all five parameters and they were collectively significant in α=0.001. However, in partial, it was found that the most significant parameter was VCR and consecutively followed by TS, BD, TD and RV.

Keywords: land use changes, Quickbird, air quality, peri-urban area, multiple linear-regression

4-A34

The Semantic Extension of Japanese Color Terms Through the Usage of Phrasal Metonymy

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Graduate School of Language and Culture, Osaka University, Japan

Abstract

In the Japanese language, the terms the term black (kuro) can also mean “guilty” and white (shiro) also means “innocent” on law related context. This phenomenon shows that for communicative purpose color terms can show different meaning from its basic meaning. In consideration of language as the tool to convey meaning, the purpose of this paper is to clarify the cognitive process on the extension of Japanese color terms meaning. Using Balanced Corpus of Contemporary Written Japanese (BCCWJ), the meaning of Japanese color terms based on phrasal metonymy extends its color lexical meaning with respect to the co-occurred noun in phrasal form as a result of pragmatic inferences that exploited on a certain context. For example, the color terms “akai” from the phrase “akai kao” (literally means ‘red face’) may indicate that the color “red” that appeared on someone’s face, but in this case, it also indicates that someone is “drunk” or “shy”. Furthermore, we propose that there is a color semantic extension model as shown below that can explain the extension meaning of phrasal level metonymy of Japanese color terms.

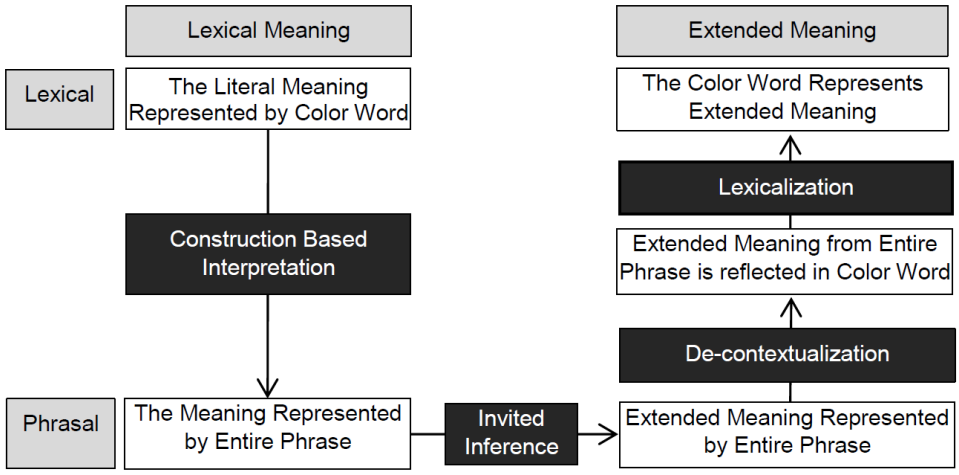

Figure.1 Semantic Extension Model of Japanese Color Terms Through Phrasal Metonymy

4-A06

Cultural Landscape Pattern of Javanese and Sundanese Ethnicity in the Borderline Region of West Java and Central Java

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Abstract

The district of Cirebon, Kuningan and Brebes has a problem in which the boundary between the Sundanese and Javanese ethnicity is obscure, since those districts are located in the borderline are of West and Central Java. Therefore, we need to conduct exploration research on the cultural landscape patterns of Javanese and Sundanese, in the borderline region of West and Central Java. The exploration method aimed to search and find new problems in filling the void of knowledge that are either has not existed or that has been there. Hence this method is suitable to look for a cultural landscape pattern of Javanese and Sundanese ethnicity, in the border region of West and Central Java. The variables of this method include:(1) topography to observe the physical factors and accessibility;(2) toponimy to observe from historical factors; (3) traditional languages to see aspects of communication in the present;(4) art as a link between history and the present. From the four variables, it can be concluded that topography and historical factors can influence the dominance of Javanese and Sundanese tribes in the borderline region of West and Central Java.

Keywords: Art, Culture, Cultural Landscape Pattern, History, Linguistic, Toponymy.

4-A03

Exploring the Potential of Disability Inclusive Budgeting for Realising the Rights of Persons with Disabilities in Indonesia

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[1] School of Social Sciences, University of New South Wales, Australia

Abstract

The Indonesian government ratified the UN Convention on the Rights of Persons with Disabilities in 2011. A new disability law, which confirms disability as an issue of democracy and human rights, was already enacted. However research evidence suggests that little practical progress has been made in advancing the rights of people with disabilities in Indonesia. This research presents the first applied policy study utilising a multi-method qualitative design which extrapolates Disability Inclusive Budgeting (DIB) and its application within disability rights framework in a developing country context in the global south (Indonesia). Therefore this research empirically investigates the potential of DIB for realising the rights of persons with disabilities in Indonesia. This study engaged Indonesian national and local Disabled People's Organisations, people with disabilities and relevant Indonesian government officials at both the national and local levels as the research participants in Jakarta and Yogyakarta. The qualitative data collected from semi-structured interviews, focus groups, document review and the participant observations were analysed by employing the Framework analysis. The research findings identify what DIB is, the underlying complexities of DIB implementation processes for all stakeholders and the most importantly better mechanism for its future implementation from disability rights perspective.

4-A51

"Teman Baik" Movement: Do Not Be Afraid, Here I Am!

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[2] Department of Psychology, Universitas Padjadjaran, Indonesia

Abstract

The phenomenon of Bullying on this day is still inherent in social interaction among students in Indonesia. According to data released by the International Center for Research in Women (IRCW) by 2015, there are 84% of Indonesian students who had experienced bullying in their schools. This is a serious concern because bullying will cause the low psychological well-being or even lead to suicide. In fact, in the big mission of SDGs mentioned that psychological well-being is one of the criteria of developed country. It is necessary to make serious efforts in handling bullying cases that often occur in schools. "Teman Baik" is a movement that wants to improve the psychological well-being of the victims of bullying with a more egalitarian and supportive approach within social interaction.

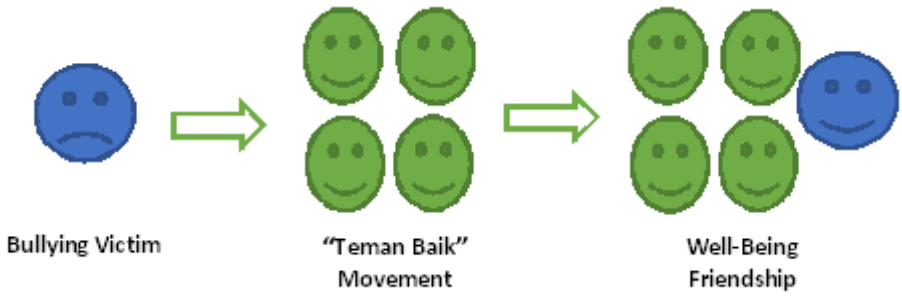

Figure.1 "TemanBaik" Scheme

4-A66

Criteria for Making Walkable City to Achieve Sustainable Urban Design

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Hiroshima University, Japan

Abstract

As the number of motorized vehicles have been increasing in most Asian cities, the opportunity of walking is decreasing. People prefer driving a car or riding a motorcycle to walking. As matter of fact, walkable neighborhood plays significant role not only for environmental improvement but also accessibility, affordability, healthy issues and economic productivity. This paper discusses the criteria for making walkable city from various literature review in order to achieve sustainable urban design for Indonesian cities. Several case studies are also employed to give better understanding of walkability's implementation. The criteria can be implemented in the field of urban planning and design. The result shows that walkable city does not mean only focus on walking activity, but also consider the disable and elderly people.

4-A10

Optimization of the Provinces for Food Self-Sufficiency in Indonesia Using Kohonen Self Organizing Mapping (SOM)

Rabiatul Adawiyah[1], KhusnulHajar N[1] and Ahmad Husain A[1]
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[1] Department of Statistics, Islamic University of Indonesia, Indonesia

Abstract
Indonesia is an agricultural country, because many residents work as farmer. Indonesia also has more land from 31 million ha. So, Indonesia has the potential to developmentself-sufficiency in the field of agriculture, especially rice. But, to bring into reality, the government needs to identify the potential of agriculture in Indonesia. One way is classifying the province in Indonesia to know the characteristics of it. Then, clustering method can be used to solve the problems. Clustering is method that uses the approach Self Organizing Maps (SOM). Based on the analysis, the result are three clusters. The first clusters are North Sumatra, South Sumatra, Lampung, and South Sulawesi. The second clusters are West Java, Central Java and East Java. The third clusters are NAD, West Sumatera, Riau, Jambi, Bengkulu, Bangka Belitung, Riau Islands, DKI, DIY, Banten, Bali, NTB, NTT, Kalimantan West, Central Kalimantan, South Kalimantan, East Kalimantan, North Sulawesi, Southeast Sulawesi, Gorontalo, West Sulawesi, Maluku, North Maluku, Papua, and West Papua. Based on these three clusters, the group that has the ability to optimization of self-sufficiency is a group 2.

Keywords: Agriculture, Food self-sufficiency, Clusters, SOM

Parallel Sessions Schedule

Main Hall – Humanities and Social Sciences (Government, Economic and Social Policy)

Moderator : Tengku Munawar Chalil, ST, MPP (Osaka University)

13.00 – 13.35	**Keynote Presentation** Impacts of cross-buying behavior in online shopping mall: The moderating role of store loyalty and relationship duration *Dr. Dony Danaha Wiriawan*
13.35 – 13.50	**(4-A79)** Integrated Financial Accounting Recording and Reporting Platform on the Village Bureaucracy Level Throughout Indonesia in Order to Improve Internal Control, Accountability, and Corruption Practice Prevention on Grant Funds: Case Study of Dana Desa One Billion Rupiah for Every Village -President Joko Widodo Cabinet Program *Jhoice Noor Syahid Admaja, Taufiq Anggara Lesmana, Muhammad Hanif Arrazi and Rizal Al Fahmi*
13.50 – 14.05	**(4-A57)** Trade and Environment in Indonesia: Study Case of ASEAN-China Free Trade Agreement *Romi Hartarto, Muhammad Azizurrohman*
14.05 – 14.20	**(4-A55)** Communication Strategy of Governmental Development in Bantaeng through The New Bantaeng program *Imawati*
14.20 – 14.30	Break Time
14.30 – 14.45	**(4-A49)** Application of Geographically Weighted Regression on Abating Poverty Problem in Indonesia Through 2030 *Fiqry Revadiansyah, Lukman Permadi*
14.45 – 15.00	**(4-A46)** Poverty Alleviation Strategy with Improving Mental Health As Part of Efforts to Improve The Quality of Life of Indonesian to Preparation Face Demographic Bonus on 2020-2030 *Novialdi Ashari, Azzam Mohammad Hafidz, Farah Husnika F*
15.00 – 15.15	**(4-A45)** Indonesian Foreign Debt Optimization by QHM-ARIMA (Quadruple Helix Model –Autoregressive Integrated Moving Average) through 2030 as Indonesian Demographic Bonus *Lukman Permadi, Fiqry Revadiansyah, Muhammad Arief Bayuaji, and Priani Nadhira Sudarma*
15.15 – 15.30	**(4-A33)** Hard and Soft Infrastructure as a Trade Facilitation Indicators and Export Performance for Indonesia's Economy Sustainability in ASEAN *Amalia Wardhani, Sabrina Asrianty Putri*
15.30 – 15.35	Conclusion by Moderator
15.35 – 15.45	Break Time

4-A79

Integrated Financial Accounting Recording and Reporting Platform on the Village Bureaucracy Level throughout Indonesia in Order to Improve Internal Control, Accountability, and Corruption Practice Prevention on Grant Funds: Case Study of *Dana Desa* One Billion Rupiah for Every Village-President Joko Widodo Cabinet Program

Jhoice Noor Syahid Admaja[1], Taufiq Anggara Lesmana[2], Muhammad Hanif Arrazi[3]and Rizal Al Fahmi[4]
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[1]Department of Accounting, Universitas Padjadjaran, Indonesia [2] Department of Islamic Economics, Universitas Padjadjaran, Indonesia [3]Department of Political Science, Universitas Padjadjaran, Indonesi [4]Department of International Relations, Universitas Padjadjaran, Indonesia

Abstract
The existence of Sustainable Development Goals (SDGs) makes The Government of Indonesia has indicators that must be maintained in order to improve the public welfare. There needs to be decentralized development strategy for welfare can occur throughout Indonesia. The central government needs to get funding for villages in Indonesia to grow.
Nowadays, The Government of Indonesia has a program named *Dana Desa* to allocate fund for all village in Indonesia. Because of the success of *Dana Desa* program, the trend indicates that this program will most likely continue in the next cabinet program, but the problem that emerged until now is the control of allocated funds amount 60 trillion rupiah for 74,954 villages.The method used in this research is the qualitative method through literature review and case study.Based on research, until now the supervision of funds is still bad. The solution we offer is the creation of an integrated financial accounting platform for recording and reporting that can be accessed through mobile applications facilitated by the government for every village that receives grant funds. With this platform, it is expected that the use of grant funds can be maximally in order to achieve SDGs in all regions of Indonesia.
Keywords: Platform, Accounting, Control, Grant Funds, Accountability

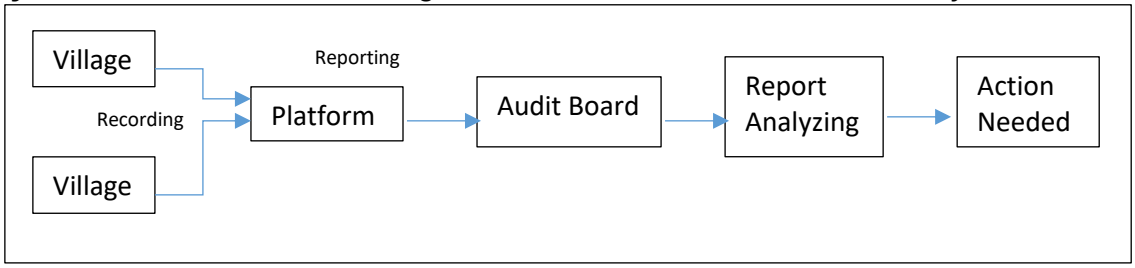

Figure.1 The Framework of The Platform Process

4-A57

Trade and Environment in Indonesia: Study Case of ASEAN-China Free Trade Agreement

Romi Hartarto[1] and Muhammad Azizurrohman[1]
Corresponding e-mail: romi.hartarto@gmail.com

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Abstract

In recent decades, the debate about the impacts of economic globalization has become attention to public policy. One important issue to address is related to environmental quality. It has been fifteen years since ASEAN-China Free Trade Agreement (ACFTA) was firstly signed. Under the ACFTA commitment, tariff rates for exports from China to ASEAN countries have been reduced gradually and so have the tariff rates of ASEAN exports to China. Since the production of goods often had environmental impacts, would these impacts increase or decrease with trade liberalization? This paper attempts to investigate whether expanded trade causes environmental damage in Indonesia. As the largest economy in ASEAN, Indonesia has greatly contributed to the pollution released in ASEAN area. Using industrial pollution projection system developed by World Bank in 1995, it has been found that the estimated amounts of pollution have been increasing by approximately five times in Indonesia after fifteen years of ACFTA implementation. Even though the share of export of most polluting sectors has been decreasing, its contribution on the pollution intensity remains the largest. Since chemicals become the most polluting sector with its rapid growing in export to China, this sector needs to be considered in trade negotiations.

4-A55

Communication Strategy of Governmental Development in Bantaeng through *The New Bantaeng* program

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Abstract

The New Bantaeng became the motto and program of Bantaeng district government. There are many new programs that make the city a new Bantaeng appears to have been doctored in brain development and other infrastructure. Certainly there is a strategy in building construction with a program that can be used as a pilot area for learning and more particularly in Bantaeng himself, once known simply as areas left behind and only a transit point. Development communication is a form of communication that was instrumental in realizing the communication between the society and the government is in the process of development planning. In carrying out its activities and development communication activities, a much-needed strategy so that all things run smoothly. Development planning would be the bull's-eye, done with good and useful results if implemented to meet the needs of the community. These studies focus on the communication strategy on the development of Government in Bantaeng in building the new program through *The New Bantaeng*. The ideal development planning is the development planning based on the needs of the community in the lower level, so that the implementation can achieve development objectives by meeting development needs at the lower level. Government in Bantaeng using a bottom up approach in building its territory and also synergy between other stakeholders (Government, NGO & society).

Key Words: Communication, The New Bantaeng, Bottom up, stakeholder

4-A49

Application of Geographically Weighted Regression on Abating Poverty Problem in Indonesia Through 2030

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Abstract
Since now, poverty is one of the most phenomenal problem throughout the world, including Indonesia as a developing country. Poverty will provide various impacts, such the rise of unemployment, criminality, and student drop-out rate. However, the government predicted on 2020-2030, Indonesia will step at bonus demographic state, that is approximately 180 million of people are in productive age. It could be two edges of sword. Indonesia could reap the benefits from demography bonus to alleviate the poverty but on the other hand the unemployment rate could be increased astronomically because of their competitiveness skills. Human development index (HDI) is one of the promising factor of bonus demographic utilization to increase national economy growth as well alleviating the poverty. In this paper, we will provide poverty percentage model to map Indonesian poverty within provinces as a breakthrough for the government to alleviating the poverty. We applied Geographically Weighted Regression by persuade poverty percentage data as dependent factor while human development index (HDI) as independent factor for each province in Indonesia. The result shown that east Indonesia should be recognized as the main focus of government to enhance their human quality while west Indonesia should be stabilized on their performance.

Keywords: Poverty Allevation, Human Development Index, Demographic Bonus, Geographical Weighted Regression, Poverty Map

4-A46

Poverty Alleviation Strategy with Improving Mental Health As Part of Efforts to Improve The Quality of Life of Indonesian to Preparation Face Demographic Bonus on 2020-2030

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Abstract
Poverty is a phenomenal problem in many parts of the world, including in Indonesia. According to the central statistical agency in 2013 the number of poor people in Indonesia is about 28.55 million, or 11.47% of the 248.8 million poor Indonesians. Poverty alleviation programs that have always been a concern in many countries have been largely undertaken by the local government, but not least from these efforts precisely the cause of the decline in the quality of mental health, so growing mentally greedy who always feel less about everything, such as power, and money . Human life is always surrounded by efforts to adjust, both to the physical environment and social environment. Able to not someone in adjusting to the environment will be very decisive to the mental subject. Where the impact of a mentally healthy person will always have a calm soul, away from envy and envy so as to adapt to the community of any environment. Therefore mental health has a close relationship with adjustment. Studies conducted by the Mental Health Foundation suggest that problems with mental health can disrupt the process of improving the quality of human development, where productivity will be low.

Keywords: Demographic Bonus, Mental Health, Poverty, Productivity.

4-A45

Indonesian Foreign Debt Optimization by QHM-ARIMA (Quadruple Helix Model –Autoregressive Integrated Moving Average) through 2030 as Indonesian Demographic Bonus

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Abstract
As a developing country, Indonesia still need to grow on multidimensional sectors, particularly on economy growth. Foreign debt is one of the solution due to fulfill the high demand on economic investments and national development. Bank of Indonesia stated on the first quarter of 2016, Indonesia has USD 314.3 millions of foreign debt, grew 2.9% since last year. This condition could be two-edges sword, whether it could help Indonesia to develop faster or it could pierce the economic state from high-return loan and remarkable interest. Stabilize the balance of foreign debt is one of the best way to maintain a rapid demand. We applied two-stages of analysis, constructing ARIMA as statistical modelling then finalize by quadruple helix model as literature review. We used Indonesian multilateral foreign debt data from 1976 to 2016 from World Bank. As the result, we found the best model for foreign debt model is ARIMA (1,2,1), where the forecast shown on 2030 reach USD 2,150,196,795. Hence, this result could be strategies for the government to optimize the balance of foreign debt based on the combination of forecast analysis and quadruple helix model strategy through 2030 as the year of Indonesian demographic bonus.

Keywords: Indonesian Foreign Debt, ARIMA, Quadruple Helix Model, Indonesian Demographic Bonus

4-A33

Hard and Soft Infrastructure as a Trade Facilitation Indicators and Export Performance for Indonesia's Economy Sustainability

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Abstract

Nations' trading boundaries have been significantly blurred by the globalization. However, trade facilitation which consists of both hard and soft facilitation plays a major role in succeeding this. The method used in this research, which analysis the effect of trade facilitation in export performance in 2008-2014, is Random Effect Data Panel Model with indicator divided into two groups, hard infrastructure and soft infrastructure. While the hard infrastructure is divided into Technological Readiness and Physical Infrastructure, the soft infrastructure is divided into Border and Transport Efficiency and Business and Regulatory Environment. The result shows that the improvement of trade facilitation affects the export performance with Physical Infrastructure, Business Environment Border and Transport Efficiency give the most significant rise, and it is followed by Technological Readiness. All in all, trade facilitation has an important role in intensifying the quality and quantity of a nation's export, especially for developing countries, since it determines the trading charged fee which also affects the effectiveness and efficiency of the trading as well.

Key words: Trade Facilitation, Export Performance, Indonesia, Random Effect Model

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