INTRODUCTION

First International Conference on Applied Sciences, Mathematics and Informatics
1st ICASMI 2017
13-15 July 2017

Faculty of Mathematics and Natural Sciences, University of Lampung (FMIPA, UNILA) is honored to organize the 1st international conference on Applied Sciences, Mathematics and Informatics (1st ICASMI 2017) which is sponsored by FMIPA-UNILA.

ICASMI is a biennial event with the aims to bring together scientists, academicians, students from around the country and from around the world for exchange the ideas, knowledge sharing, networking, research collaboration and present research results on applied sciences, mathematics and informatics.

The conference will provide an opportunity for the presenters as an arena to exchange ideas, to establish networking and research collaboration, and to build up friendship. The conference will present some keynote speakers from Germany, Malaysia, Qatar, Japan and Indonesia, and oral presentation of the accepted papers.

Good Luck and we welcome you to ICASMI2017 in Bandar Lampung, INDONESIA

Organized by
Faculty of Mathematics and Natural Sciences (FMIPA) UNILA

CONTENTS

SPEECH FROM RECTOR OF UNIVERSITY OF LAMPUNG

Head of all Lampung Provincial Offices or their representatives, Vice Rectors, Dean of all faculties. Director of Postgraduate Program, Head of LPPM and LP3M in the University of Lampung, Distinguished Keynotes and Invited speakers, participants and visitors.

Ladies and Gentlemen
AssalammualaikumWr. Wb.
Good Morning and Welcome to ICASMI 2017
Tabik pun…

First of all I would like to thank all of you for participating in " The 1st International Conference on Applied Sciences - Mathematics and Informatics (ICASMI) 2017 which held by the Faculty of Mathematics and Natural Sciences of the University of Lampung.

I should like to take this opportunity to express my appreciation to our keynote and invited speakers:
Prof. Dr. Klaus JURKSCHAT, from Technische Universitat Dortmund - Germany
Prof. Dr. Hideaki KASAI, from The National Institute of Technology (NIT) - Japan
Prof. Dr. R. Wickneswari RATNAM FASc, from Universiti Kebangsaan Malaysia
Prof. Dr. Faiz A.M. ELFAKI, from Qatar University
Prof. Dr. Bohari M. YAMIN, from Universiti Kebangsaan Malaysia
Prof. Dr. Dwi HENDRATMO, from Institute Technology Bandung
Dr. Anto Tri SUGIARTO, from Indonesian Institute of Science
Dr. Raihan Bin OTHMAN, from International Islamic University Malaysia

Welcome to Bandar Lampung the land of Krakatoa.

To remind you all, ASEAN Economic Community (AEC) and Trans Pacific Partnership (TPP) has already can launched in the last several years ago. They could be as seriuos threat or huge challenge and opportunity for Indonesia, especially and to all developing countries. For Indonesia: Global market, product innovation and the quality skill of foreign

workers could be such real threat, if the Indonesia people did not prepare for themselves for getting ready with the global changes. One of the ways to overwhelmed with these global changes, is strengthening the potency of people with better and suitable skills and increase quality and variety of local products by altering the threat to be opportunities. Improving and creating more innovation of sciences will be one of the key to answer it. This is long side with the University of Lampung value "Creation and Innovation for Nation".

To increase the quality and the variety of local products, varieties of invention on the field of biology, chemistry, computer science and informatics, as well as mathematics and phycics is needed. Since we all knew that Math and Sciences including Informatics is the heart of all applied and social sciences including laws. Last but not least, improving the quality of people resources is also engaged. It is essential to bring together experts in the field of Applied Sciences, Mathematics and Informatics so that we can knowledge together the potential of technology to increase the varieties of invention at our countries. I would also like to thank participants, especially those of who coming from abroad, for joining us and sharing your valuable researches, experiences and ideas.

Hopefully in this 1st International Conference on Applied Sciences and Mathematics and Informatics, with the latest development and invention of Sciences, Mathematics and Informatics and their application in many fields of study can be presented well through thriving communication and discussion. I do strongly believe, that through this 1st international conference, we are able to heighten the strengthening of local potency and products to reach our opportunities facing the ASEAN Economic Community (AEC) and Trans Pacific Partnership (TPP).

Finally, I just hope that this conference is able to inspire and deliver benefits to all participants, in which together we are able contribute to development of in our countries as well as to global.

Once again, welcome to Bandar Lampung and have a wonderful stay in Bandar Lampung.

We look forward to working with you and getting to know you in years ahead.
Thank You.

WassalammualaikumWr. Wb.

SPEECH FROM DEAN OF FMIPA

Assalaamu'alaikum wa rohmatulloohi wa barokaatuh,

In the Name of Allah, the Most Beneficent, the Most Merciful.

It is my great pleasure that on behalf of faculty of mathematics and natural sciences, I welcome the participants of the International Conference of applied sciences, mathematics, and informatics (ICASMI) 2017. We're sure and hope that ICASMI 2017 as our first international conference will be a platform to gather and disseminate the newest knowledge in sciences, mathematics, informatics, and their applied. Academicians, Scientist, Researchers and practitioners of sciences, mathematics, and informatics will be able to share and discuss new findings and applications of sciences, mathematics, and informatics. We encourage that the intellectual and professional discourse will result in future collaborations between universities, research institutions and industry both nationally and internationally. In particular in this international conference it is expected that focus will be given to issues on the role and innovation of sciences in the strengthening of natural resources.

The faculty of mathematics and natural sciences is one of the latest faculties in the University of Lampung. Now, we have more than 2.900 students, who spread across 11 study programs (1 diploma program, 5 undergraduate programs, 4 master's programs, and 1 doctoral program). The faculty currently has 11 professors and more than 50 assistant professors, therefore with that opportunity; research performance in our faculty is growing very rapidly. The national seminar activities (SNSMIAP) we have done regularly more than 4 times, therefore in this year we hold this international conference. This conference is organized by our faculty in cooperation with the institute of research and community services.

Finally I would like to congratulate the organizing committee for their tremendous efforts in organizing the conference, the head of the institute of research and community services, the keynote speakers, the rector and all other supporter. I pray to Allah SWT that the conference will be a success. Thank you very much..

Wassalaamu'alaikum wa rohmatulloohi wa barokaatuh,

Prof. Warsito, S.Si., DEA., Ph.D.
Dean

SPEECH FROM CONFERENCE CHAIRMAN

Assalamualaikum wr.wb.
Honorable Rector Universitas Lampung, Prof. Dr. Hasriadi Mat Akin
Vice Rectors, Dean FMIPA Unila, FKIP, FH, FP, FT, FK, FISIP, FE.
Keynotes speakers: Prof.. Dr. Klause Jurkschat, Dortmhund University; Prof. Hideaki Kasal, NIT, Japan; Prof. Dr. Wickneswari Ratnam, UKM; Prof. Faiz AM Elfaki, Qatar University; Prof. Dr. Bohari M Yamin, UKM; Dr. Anto Tri Sugiarto, LIPI; Prof. Dr. Dwi Hendratmo, ITB; Prof. Raihan Othman, IIUM. SC, OC, participants.

Ladies and Gentlemen,
Firstly I would like to express my thanks to the Rector UNILA and DEAN FMIPA who have strong encouragement and financial support to make this conference succesful. This event is the first International conference conducted by FMIPA UNILA and hopefully it will become anuall event for the faculty of Science and Mathematics UNILA. The FMIPA UNILA has pleasure to organize the 1st ICASMI2017. The activities of the International conference is in line with the vision and mission of UNILA to promote training and education as well as research in these areas. On behave of the 1st ICASMI 2017 SC; we are very pleased with the very good responses especially from the keynote speakers and participants. There are about 100 tecnical papers wil be presented in this conference. It is hope the participant will use the conference to interact and exchange ideas to enhance research and development activities in the areas of Scince, Mathematics and Computer sciences.

Ladies and Genteleman
I am very happy to report that participants to this first international conference (ICASMI2017) come from many well known universities: UKM, IIUM, Qatar Univ., Dortmhund Univ, ITB, LIPI, NIT Japan, Andalas Univ, Riau Univ, Jambi Univ, Unila, UGM, UNDIP, Brawijaya, Parahiyangan, UNPAD, UNILA and many others. This is as an indication that the ICASMI has become an important arena for scientist from many Institution to share their knowledge and experiences and most important is to build up scientific colaboration in the future. Therefore to all of my friends please use this arena to develop your scientific carrier as optimal as possible. I would like to express my gratitude to

the International Advisory Board members, sponsors and also wellcome to all keynotes speakers and participants. I am also grateful to all OC and SC and all the reviewers whom contribute to the high standard of the conference. I also to express my deepest gratitude to the Rector Unila and Dean FMIPA who give us endless support to these activities, such that the conference can be administrated on time.

Before I close my speech, let me share with all of the audiences. Before the end of my study in Ph.D Program, my advisor advised me : His wise word: *Mustofa start from now on you have to learn to answer I don't know.* When I depended my disertation in front of 5 Profs, the first three questions I answered " I dont know". But in my mind, If I always answered " I dont know", then what I know? I have been looking for the meaning of his advice, at least one of them, to become scientist we must be a responsible man toward academic ethic. Three years later, when I had sabatical leave, I met my advisor and I asked him about his advice. Then he told me a story, He told me when he depended his disertation in Michigan State University he was asked many question by his profs until then he could not manage the answers and finally he said " I dont know".

Altogether, the profs pointed to him and said we have been waiting for you to answer " I dont know".
I thank you very much for your attention and wish you enjoy in the conference.

Wassalamualaikum wr.wb.

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MASTER PROGRAMME

Date	Time	Activity	Place
13 July 2017	07.30 – 08.30	Registration	Horison Hotel
	08.30 – 09.00	Opening ceremony	
		- Do'a	
		- Traditional Dance	
		- Speech by Chair of the Conference	
		- Speech by Rector and Officially Open the Conference	
		- Closing Remark	
		- Photo Session	
	09.00 – 09.15	Morning Break	
	09.15 – 10.00	Prof. Dr. Klaus Jurkschat (Sutopo Hadi)	
	10.00 - 10.45	Prof. Dr. Faiz A.M. Elfaki (Mustofa Usman)	
	10.45 – 12.00	Parallel Session 1	
	12.00 – 13.00	Lunch Break	
	13.00 – 13.45	Prof. Dr. Dwi Hendratmo (Kurnia Muludi)	
	13.45 - 14.30	Prof. Dr. Bohari M. Yamin (Wasinton Simanjuntak)	
	14.30 – 15.30	Parallel session 2	
	15.30 – 16.00	Afternoon Break	
	16.00 – 17.30	Parallel session 3	

Date	Time	Activity	Place
14 July 2017	08.00 – 08.45	Prof. Dr. Wickneswari Ratnam (Endang L. Widiastuti)	Horison Hotel
	08.45 - 09.30	Dr. Anto Tri Sugiarto (Posman Manurung)	
	09.30 – 09.45	Morning Break	
	09.45 – 11.30	Parallel Session 4	
	11.30 – 13.00	Lunch Break, Friday Prayer	
	13.30 – 14.15	Prof. Hideaki Kasai (Warsito)	
	14.15 - 15.00	Dr. Raihan Bin Othman (Mustofa Usman)	
	15.00 – 16.00	Parallel session 5, Afternoon Break and Closing ceremony	

PARALLEL SESSIONS SCHEDULE

PARALLEL SESSIONS 1 13 July 2017				
Chair	Suripto Dwi Yuwono	Endang Nurcahyani	M. Ali Sadikin	D.Y. Setiyawan
Time	Chemistry	Biology	Math/CS	Physics
10.45 To 11.00	Isolation and Purification of a-amylase from a local bacteria Bacillus subtilis ITBCCB148 using carboxymethylcellulose (CMC) Arum Widyasmara, Yandri A.S, Sutopo Hadi, Tati Suhartati, Ezra Rheinsky Tiarsa	Taurine and Oyster Mushroom (Pleurotus ostreatus) Prevents Oxidative Damage in Mice Liver Induced by Paraquat Bayu Putra Danan Jaya, Endang Linirin, W, Endang Nurcahyani	Solution on Three Basic Epidemic Models: Comparison of Fourth Order Runge-Kutte and Homotopy Analysis Methods Beny Yong, Livia Owen	The Effect of Ozone Dielectric Burrier Discharge (DBD) Towards Reduction of Microorganism in Eggs Siti Mudrikah, Nita Melinda, Norma Faizatun Nikmah, Ilham Alkian, Siti Magfiroh, Zaenul Muhlisin
11.00 To 11.15	Synthesis of Nanocellulose-Polylactic Acid Using Mechanical and Acid Hydrolisis Methods Ridho Nahrowi, Suripto Dwi Yuwono, Andi Setiawan, Irza Sukmana	Anticancer Effectivity of Kenikir (Cosmos caudatusKunth) Leaves Ethanolic Extract and Tautin on Hepar Histophatology of Male Mice Induced by Benzopyrene Iffa Afiqa Khairani	Statistical Test NIST Ramdoness Testing on PRNG Based on Digital Imaging Processing Mohammad Ali Sadikin	Resolution Increasing of Earthquake Early Warning System Throuhg Calibration and Characterization Fluxgate Magnet Sensor, Soil Temperature Sensor, Receiver and Transmitter FM Setyawan, D.Y., Yuliawati, D.,Warsito
11.15 To 11.30	Co-Pyrolysis of Sugarcane Bagasse and Castor Oil Using Aluminosilicate with Different Si/Al Ratios as Catalyst Endah Pratiwi, Wasinton Simanjuntak, Simon Sembiring, Zipora Sembiring, and Kamisah D. Pandiangan	Efektivitas Ekstrak Daun Bunga Kupu – Kupu (Bauhinia purpurea L.) dan Taurin Terhadap Antidiabetes dan Jumlah Spermatozoa Mencit Jantan (Mus musculus L.) yang Diinduksi Aloksan Fhora Chandra Sari	Mean-Var Portfolio Optimizations Based on Multiple Index Models With Non Constant Volatility and The Long Memory Effects Sukono, Eman Lesmana, Herlina Napitupulu, Alit Kartiwa, Yuyun Hidayat	A Facile Microwave-Assisted Synthesis of Carbon Dot and Their Application as Sensitizers in Nanocrystalline TiO2 Solar Cells Ilham Alkian, Adi Prasetio and Hendri Widiyandari

PARALLEL SESSIONS 1 (CONT'D) 13 July 2017				
Chair	Suripto Dwi Yuwono	Endang Nurcahyani	M. Ali Sadikin	D.Y. Setiyawan
Time	Chemistry	Biology	Math/CS	Physics
11.30 To 11.45	Effect of Dilution and Electrolysis Time on Recovery of Mg2+ As Mg(Oh)2 from Bittern by Electrochemical Method Hanif Amrulloh, Wasinton Simanjuntak, and Rudy Tahan Mangapul Situmeang	Study of Inhibitor of Leather extract and Heart of Muli Banana as Natural antimicroba in reducing E. coli on Chiken meat Dewi Sartika, Novita Herdiana, Suci Nata Kusuma	Multiple Imputation Methods for Missing Covariate Values in Recurrent Event Data Rianti Siswi Utami and Danardono	Identification of Science Process Skill on Science Subjects in Junior Schools Siti Patonah, Duwi Nuvitalia, Ernawati Saptaningrum
11.45 To 12.00	Isolation, Characterization, Modification and Bioactivity Test of Artonin E from Roots Bark of Kenangkan (Artocarpus rigida) Hernawan, Tati Suhartati, Yandri AS. And Jhons F. Suwandi	The Effect of Steroid Extract of Sea Cucumber (Holothuria scabra) and 17α Mhyltestosterone at Different Temperature on Juvenil Fresh Waer Crayfish Fadhli Dzil Ikrom	The Hybrid of Modified Prim's and Modified Penalty Algorithms to Solve The Multiperiods Degree Constrained Minimum Spanning Three problem Wamiliana, Asmiati, Astria Hijriani, and Rahmat Wika Kencana	Measurement of Impact of Runner's Foot During Stance Phase Flaviana, Risti Suryantari

PARALLEL SESSIONS 2 13 July 2017				
Chair	Diding Suhandy	Asep Yusup H	Dwi Marisa E	Junaidi
Time	Chemistry	Biology	Math/CS	Physics
14.30 To 14.45	Luwak Coffee Classification Using UV-Vis Spectroscopy Data: Comparison of LDA and SVM Methods Diding Suhandy	The Effect of Soaking Duration and Dose Variations of Steroid Extract of Sea Cucumber (Holothuria scabra) Towards Sex Reversal of Juvenile Fresh Water Crayfish (Cherax quadricarinatus) Asep Yusup Hamdani	The Modified Prims's Algorithm To Solve The Multi Periods Installation Problem Wamiliana, Warsito and Wibi Cahyo Hastono	Thin Film Silver Nanorods Prepared by Dip Coating Process for Optoelectronic Applications Junaidi and Kuwat Triyana
14.45 To 15.00	The Use of Support Vector Machine Regression (SVR) and UV-Vis Spectroscopy in Determination of Luwak Content in Coffee Blends Meinilwita Yulia, Diding Suhandy	Determination Ploidi of Banana Germplasm Origin From Bandar Lampung Based on The Number of Cromosomes Eti Ernawati and Eka Nurhasanah	Bayesian Method for Big Data Vemmie Nastiti Lestari, Subanar and Muhammad Ifdhal Zaky Elyasa	Design of Phonocardiography Which Equipped Heart Sound Feature Extraction Using Wavelet Transform Arif Surtono, Dian Kartika Ratnasari, , Gurum Ahmad Pauzi, Amir Supriyanto and Warsito
15.00 To 15.15	Reflectance Spectroscopy Study on Copper Oxide Plate Preparation Rahadian Zainul, Budhi Oktavia, Indang Dewata dan Jon Efendi	Antibacterial Effectivity Test of Leather Extract and Heart of Muli Banana (Musa acuminata) Against Growth of Echerichia coli Suci N. Kusuma, Dewi Sartika, and Novita Herdiana	Implementation of The Artificial Neural Network Algorithm for Prediction of Credit Feasibility in Cooperation BINA BERSAMA LAMPUNG UTARA Dwi Marisa Efendi	Resolution Analysis of Simple Turbidity Meter Using LED-LDR and Its Data Recording System Warsito*, Akhfi Zamri, Gurum A. Pauzi, Arif Surtono, and Amir Supriyanto
15.15 To 15.30	Influence of Increasing Concentration of Citric Acid Toward The Effectiveness in Metal Ion Pb2+ and Cd2+ Adsorption of Chitosan Membrane Sabila Akbar Rasyid, Fathur Al Baani, Erlina Haryono, Hendryanto, Bela Claudya Pratama, Retno Ariadi Lusiana	The Relation of Root Type and Development with Abuscular Mycorrhiza Fungi Infection in Oil Palm Seedling Maria Viva Rini	Financial Feasibility Study Of New Product In Koperasi Sae Pujon Ceria Farela Mada Tantrika, Raditya Ardianwiliandri, and Ratih Ardia Sari	Developing ultrafine (micro-/nano) bubble generator and their application Anto Tri Sugiarto*, Hilman Syaeful Alam, Bahrudin and Grace Gita Redhyka

PARALLEL SESSIONS 3 13 July 2017				
Chair	Edward R.T. T	Nuning Nurcahyani	Raditya A	Agus Irawan
Time	Chemistry	Biology	Math/CS	Math/CS
16.00 To 16.15	Nano Alpha- Cellulose Acetate Membrane Innovation Coconut Coir Based as Selective Membrane on Water Purification Process Wini Fitriana, AfitenRahmin Sanjaya, DikiPrabowo Atan, Radinal Yogie Nurcahyo, Galih Aditya Mahendra Putra, RetnoAriadi Lusiana	Using Corn Stalk as Media for Feces Decomposition in a manually Pedal Mixing Bio-Toilet System HENDRI Wilan Mutia1, a, NILAWATI Dewi2,b , SISTANTO Bambang Aris3,a and SINTAWARDANI Neni	The Influence Of Marketing Environment And Marketing Mix Towards Customers Satisfaction To Enhance The Local Sme's Competitive Advantage Raditya Ardianwiliandri, Remba Yanuar Efranto, and Rio Prasetyo Lukito	Performance Appraisal Analysis For Spinning Operator With Combination Of Objective And Subjective Measures Remba Yanuar Efranto 1, a *, Arif Rahman 2,b and Raditya Ardianwiliandri
16.15 To 16.30	Antioksidant Activity from Limonen Nanoemulsion Encapsulated by Nanochitosan Rosydha Ulfa, Bonita Ariestiani, Alfana Bagus Kusuma, Nur Esti Darmastuti, Jihadul Hanif Fadlur Rohman, Purbowatiningrum Ria Sardjono, M.Si	Vegetation Diversity As A Basis Community-Based Forest Management In The Conservation Forest Christine Wulandari1*, Afif Bintoro2, Rusita2, Erwin2, and Pitojo Budiono3	Project Resources Scheduling In Post-Harvest Machinery Industry Using Pert Method Ratih Ardia Sari, Ceria Farela Mada Tantrika, and Nasir Widha Setyanto	The Simulation of Intensity of Type 2 Right Censoring in Estimation of Parameters Weibull Distribution Using R Dian Kurniasari, Andro Pranajaya Ramadhan, and Warsono
16.30 To 16.45	The Study of Blocking Agent on Lengkeng (Euphoria logan lour) Fruits Shell and Sees for Adsorption of Pb (II) From Aqueous Solution Desy kurniawati, Rahmiana zein, Zulkarnain Chaidir dan Hermansyah aziz	Common Indirect Signs of Wild Sumatran Elephant in Its Natural Habitat Bukit Barisan Selatan National Park Firda Nur Islami, Elly L. Rustiati, Firdaus F Affandi , Priyambodo	Determination Of Standard Time In Packaging Processing Using Stopwatch Time Study To Find Output Standard Of Shrimp Feed Bag Rio Prasetyo Lukodono, Ratih Ardia Sari, Remba Yanuar Efranto	k-Nearest Neighbor (k-NN) Classification for Recognition of The Batik Lampung Motifs Rico Andrian , Muhammad Adib Naufal, Bambang Hermanto, Akmal Junaidi

PARALLEL SESSIONS 3 (CONT'D) 13 July 2017				
Chair	Edward R.T. T	Nuning Nurcahyani	Raditya A	Agus Irawan
Time	Chemistry	Biology	Math/CS	Physics
16.45 To 17.00	Utilization Coconut Coir Waste as Potassium Fertilizer Encapsulation Activated Zeolite Nanoparticle Chitosan Afiten Rahmin Sanjaya ,Mastho'ah ,Radinal Yogie , Nesti Dwi Maharani , Abdur Rokhim , Ismiyarto	Cytotoxic Effect of Pare (Momordica charantia L) Extract on Fetal Development of Mice ((Mus musculus L.) Nuning Nurcahyani, Siska Yuliani, Hendri Busman, Sutyarso	Using Husk Ash As An Alternative Material To Improve The Quality Of Roof Made Of Clay Nasir Widha Setyanto, Rio Prasetyo Lukodono, Ceria Farela Mada Tantrika	The Locating-Chromatic Number of Subdivision Firecracker Graphs Agus Irawan and Asmiati
17.00 To 17.15	Chalcogen Bonding and Perplexing Coordination Behaviour of Bipyridine Donors in the Coordination Chemistry of Zinc-Triad 1,1-Dithiolate Compounds Edward R.T. TIEKINK	Germination and growth of F1 tomato seeds induced 0.2mT of magnetic field infected by Fusarium sp. Rochmah Agustrina*, Lusiati, Endang Nurcahyani, and Bambang Irawan		
17.15 To 17.30	The Effect of Cu Addition on Ni1-xFe2O4 Spinel Nanomaterials Sion, Rudy Situmeang, Wasinton Simanjuntak	Evaluation of Copoly (Eugenol-DVB) as a Career for Transport of Phenol with Polymer Inclusion Membrane (PIM) Agung Abadi Kiswandono, Dwi Siswanta, Nurul Hidayat Aprilita, Sri Juari Santosa		

PARALLEL SESSIONS 4 14 July 2017				
Chair	Wasinton Simanjuntak	Novianya	Astria Hijriani	
Time	Chemistry	Biology	Math/CS	
09.45 To 10.00	Chemical Composition of Liquid Fuel Produced By Co-pyrolysis of Sugarcane Bagasse and Rubber Seed Oil Using Zeolite-Y Synthesized From Rice Husk Silica and Aluminum Metal as Catalyst Wasinton Simanjuntak, Zipora Sembiring, Kamisah D. Pandiangan, Rudy Situmeang, and Yunitri Sianturi	Phytochemical Analysis of Some Leguminosae Plants Used in Traditional Medicine Novianya,*, Erva Al Husnaa, Hidayatul Mufidaha, Nur Laelatul K.a, Sutopo Hadia	NCI : Propose Design of Key Establishment Protocol to Reducing Key Storage in Server Rizqy Aulia Ashari, Mohamad Ali Sadikin, Annisa Dini Handayani	
10.00 To 10.15	Effect of Temperature on Composition of Liquid Fuel Result From Pyrolysis Mixed Rubber Seeds Oil and Sugarcane Baggase Using Aluminosilicate Catalysts Faradilla Syani, Wasinton Simanjuntak, Simon Sembiring	Applications Utilization of White Shrimp Skins (Fenneropenaeus Merguiensis) as Purifier Salt on Hydroextraction Method Anjar Setyaji, Hilaria Deanti, Aditya Chandra Sukma	Design of Flood Early Warning System with Wifi Network Based on Smartphone Ahyar Supani1,a*, Yuli Andriani2,b and Ahmad Taqwa3,c	
10.15 To 10.30	Characteristics of Ni0.7Zn0.3Fe2O4 Nano Material Prepared by Sol-Gel and Freeze Drying Methods Miranti Safitri1, Rudy Situmeang2, Wasinton Simanjuntak2	Extract of Yellow Pumpkin Encapsulated Nanopartical Chitosan as Anthyhiperglycemia With In Vitro Assays Fonisyah Marspianko Habibah, Novianita Rizki, Tantri Nevi Astuti, Muhammad Fajar Shodiq, Muhammad Rizky Caniago	String Matching Algorithm on Chatbot Engine for BMKG Information Using Telegram Messenger Astria Hijriani1, a * , Feri Krisnanto2	

PARALLEL SESSIONS 4 (CONT'D) 14 July 2017				
Chair	Wasinton Simanjuntak	Novianya	Astria Hijriani	
Time	Chemistry	Biology	Math/CS	
10.30 To 10.45	Utilization of Resin SAP Jernang (Daemonorops sp) as the Basic Ingredients ff the Drug Wound Liquid Yusnelti and Muhaimin	Exctraction and Dealumination Silica from Sugar Cane Bagasse Ash Using Alcaline Method as A Precursor in ZSM-5 Synthesis Mita Rilyanti, Nur Hastriana, Buhani and Suharso	Role and Innovation of Science (Maritime /Marine Informatics) in Strengthening Natural Resources Raden Arum Setia Priadi, S.Si., M.T.	
10.45 To 11.00	Chemical analysis of triphenyltin(IV) o-hydroxybenzoate and triphenyltin(IV) m-hydroxybenzoate by square wave voltammetry Hardoko Insan Qudus#, Ria Dwi Yunita, dan Sutopo Hadi *	Intercorrelation Among Coral Fish and Plankton on The Percent Coverage of Coral Reefs in Umang-Umang Island of Teluk Lampung-Lampung, Indonesia Sri Murwani, K. Wisne, E.L. Widiastuti, H. W. Maharani	Modelling and Forecasting Data Industri Edwin Russel, Erica Virginia and Mustofa Usman	
11.00 To 11.15	The Antimalarial Activity of Some Organotin(IV) benzoate against Plasmodiun falcifarum Sutopo Hadi*, Noviany, Mita Rilyanti and Tati Suhartati		Recognation of Offline Lampung Handwrittten Characters and Its Performance Using Support Vector Machine Akmal Junaidi	
11.15 To 11.30	Spectroscopic Analysis of Betulini Acid Isolated from The Roots of Sisbania Gradiflora Noviany, Hasnah Osman		Solving The Multi Periods Degree Constrained Minimum Spanning Tree Using Modified Primm's Algorithm and GNU Octave Warsono, Wamiliana, and Mas Dafri Maulana	

ABSTRACT KEYNOTE SPEAKER

Klaus Jurkschat

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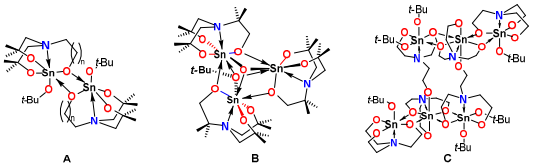
Amino Alcohols and their Tin Derivatives. Simple Chemistry with Economic Potential

To the best of our knowledge, the first report on amino alcohol derivatives of tin dates back to 1967[1]. Since then a number of papers have appeared on both Sn(IV) and Sn(II) compounds of this type including so-called stannabicyclo[3.3.0]octanes, $RN(CH_2CH_2O)_2M$ (M = Sn, SnX_2, X = organic substituent, halogen, alkoxide etc.), and stannatranes, $N(CH_2CH_2O)_3SnR$, as their most prominent representatives. The chemistry of these compounds has been thoroughly reviewed [2-4].

Supported by a grant from Covestro and motivated by the extraordinary delayed-action catalytic activity of novel inorganic, non-toxic representatives of these compounds in polymerization reactions[5], we looked again into this chemistry and report in this oral communication the syntheses, the structures in solution and in the solid state, and the reactivity of novel Sn(II) and Sn(IV) derivatives that are based on structurally modified amino alcohols[6]. By controlled hydrolysis of selected stannatranes, novel tin oxoclusters such as **A** – **C** were obtained.



Keywords: tin, amino alcohol, oxocluster, X-ray diffraction analysis, NMR spectroscopy, polyurethane, catalysis.

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SEMI-PARAMETRIC MODEL BASED ON IMPUTATIONS TECHNIQUES FOR PARTLY INTERVAL CENSORED DATA

The term survival analysis has been used in a broad sense to describe collection of statistical procedures for data analysis for which the outcome variable of interest is time until an event occurs, the time to failure of a particular experimental unit might be censored and this censored can be right, left, interval, and Partly Interval Censored data (PIC). In this paper, the analysis of this particular model was based semi-parametric Cox model via PIC data. Moreover, several imputation techniques are use, that is; midpoint, left & right point, random, mean, and median. The maximum likelihood estimate was consider to obtain the estimated survival function. These estimates were then compared to the existing model such as Turnbull and Cox model based on clinical trial data (breast cancer data), for which it showed the validity of our models. In contrast, the data needed to be modified to PIC data for the proposed of the researcher's needs. From the simulation study for this particular case, we can conclude that the semi-parametric of Cox model proved to be more superior in terms of estimation the survival function, likelihood ratio test and their P-value. In additional to that, based on imputation techniques, the midpoint, random, mean and median showed better results with respect to estimate of the survival function.

Dwi Hendratmo Widyantoro

School of Electrical Engineering & Informatics Institute Technology Bandung

Summarization of Scientific Papers

Summarization is a task of transforming original text into a shorter version while retaining essential information. This first part of the talk will discuss various approaches to text summarization that had been developed, from the classical approach, corpus-based, discourse-based and knowledge-based approaches to the one that views summarization as an optimization problem. The Summarization based on discourse analysis is a preferred, well-studied approach for scientific paper summarization. The second part of the talk will discuss how discourse analysis based on rhetorical structures can be used to generate a summary from a single scientific paper. The talk then proceeds to extending this method to multi-document summarization, which is useful when handling a large number of related scientific papers. Multi-document summary is particularly helpful for new doctoral students or researchers who switch to a new research topic because it helps quickly grasp state-of-the-art of the research topic. This talk will conclude by highlighting research questions that are still open in this research area.

Keywords: Text summarization, Rhetorical Structures, Scientific Papers, Multi-document Summary

Bohari M Yamin

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METATHESIS REACTION OF PALM OIL

Our first work on the metathesis of palm oil started way back in 1991. By using Chauvin catalyst, WCl_6/Me_4Sn, metathesis of palm oil was carried out and followed by transesterification with methanol. 6-pentadecene, 9-octadecene, dimethyl 9-octadecenedioate and other methyl esters were identified by Gas chromatography-mass spectrometer[1]. The treatment of crude palm oil with rice husk ash prior metathesis had improved the catalytic life cycle[2]. Cross metathesis of the oil with ethene was also reported[3]. The air sensitive nature of the catalyst is a problem for an industrial effort. Recently, moderately air and functional tolerance ruthenium catalysts were discovered. The discovery of the new generation metathesis catalysts have received world recognition by the award of Nobel Laureate to Grubbs, Chauvin and Shrock in 2005. To continue with our work on the palm oil a detailed study on the self and cross metathesis of methyl oleate with terminal and internal olefin was carried out to understand the factors affecting the efficiency[4]. In this presentation the tolerance of the ruthenium catalyst with respect to the functional groups including allylthiourea[5]will be discussed.

Wickneswari Ratnam

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Major challenges to *Acacia* plantation forestry. Can genomics help?

Acacia mangium, *A. auriculiformis*, and *A. crassicarpa* are the most popular *Acacia* species planted in Southeast Asia for timber and pulpwood production. The ASEAN region has an estimated 2 million hectares of plantations of these tropical *Acacia* species and there is a growing demand for improved planting materials. The other notable industrial *Acacia* species is *A. mearnsii* grown mainly in South Africa (120,000 ha) and Brazil (250,000 ha). Besides timber and pulpwood production, *Acacia* is important for afforestation of degraded lands, controlling desertification, and reclamation of poor sandy soils due to its nitrogen fixing ability. However, the genome structure and organization of this plant is poorly understood, thereby limiting the effective use of its genetic resources. The *Acacia* hybrid (*Acacia mangium* × *Acacia auriculiformis*) has been found to be more desirable than its parents with tolerance to diseases, lower lignin, better tree form, longer fibre and higher adaptability. Therefore, the *Acacia* hybrid is of high potential for sustainable productivity, particularly under changing climatic conditions. Elite planting materials of the *Acacia* hybrid can be developed efficiently through marker assisted breeding. The understanding of its genome and development of DNA markers are crucial to accelerate the breeding of *Acacia*. We attempted to understand the lignin biosynthesis and wood formation in the *Acacia* species through genomics approaches (EST, microRNA and transcriptome sequencing). At the same time, we have developed various DNA markers (SSR, CAPS and SNP) and established two mapping populations (wood density and fibre length) for linkage mapping and quantitative trait locus (QTL) analysis. We have obtained QTLs for four main agronomic traits (wood density, plant height, diameter at breast height and biomass) for the breeding of *Acacia* with better wood and fibre properties in the future through marker-assisted breeding and gene manipulation.

Keywords: *Acacia species*, wood formation, lignin genes, defense genes, expressed sequence tags, transcript profiling, small RNAs, transcriptome sequencing, single nucleotide polymorphisms, high density linkage map

Anto Tri Sugiarto

Technical Implementation Unit for Instrumentation Development,
Indonesian Institute of Sciences

Developing ultrafine (micro-/nano) bubble generator and their application

Recently, the development of ultrafine bubble including of microbubble and nanobubble technologies is increasingly in demand, this is because of their wide applications in many fields. This paper report of our research related to developing of ultrafine generator using swirl flow method. Swirl flow method is one method that is quite efficient in mixing gases and liquids and relatively require less energy. We has been developing of swirl type microbubble generator. Bubble size analyzer was measured using particle image velocimetry. Online monitoring of dissolve oxygen and water quality also developed to monitoring characteristics of water quality due to micro-/nanobubble exsisting in water. The application of micro / nano bubble generator for fishery and processing industrial wastewater will reported too.

Keywords: Ultrafine bubble, microbubble, nanobubble, oxygen, ozone

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Computational NanoMaterials Design: From Basics to Actual Application

The increasing demand for more advanced technology, coupled with the astonishing development of nanotechnology in the 21st century, necessitates the more advanced techniques in the elucidation of material function formation mechanisms and realization of new generation functional materials. With the advent of advanced computational facilities and techniques, Computational Materials Design (CMD®) [1] is now a reality. Here, the fundamental properties of materials are accurately calculated through first-principles (*Ab-Initio*) calculations; that is, the properties of materials are calculated accurately from fundamental equations of quantum theory without empirical parameters. It's impact on industrial research and development has become very significant in the past years and is expected to grow in the coming years with the explosion of the number of granted patents purely based on CMD.

In the conference, the current state-of-the-art facilities in Materials Design, esp., efforts being made to employ CMD techniques (cf., e.g. [1,2]), together with the associated (Surface) Reaction Design (CRD) techniques [3] will be discussed; highlighting benchmark systems such as bio-inspired materials design, role of inducing spin polarization, surface design through alloying and controlling the dynamics of reaction partners, with special attention to Fuel Cell, Spintronics, Gas Purification System, Steam Methane Reforming and Memory Device applications [1-14].

Abdul Aziz Ahmad and Raihan Othman

Faculty of Engineering
International Islamic University Malaysia

Recycling of Agrowaste into Electricity – A Zero Emission, Nature's Solution

Malaysia and Indonesia contribute approximately 85% of world's palm oil production. The industry, however, has raised considerable concerns with regards to the environmental sustainability. Among others, a tremendous amount of agrowaste and residues is generated. The present work introduces an economical green route in converting agrowaste and its effluents into environmentally benign by-products and also electricity. It is a nature's solution by means of biocatalytic activities of the naturally occurring white-rot fungi. This fungal strain excretes ligninolytic enzymes such as laccase as it degrades lignin-rich and organic agrowaste. Concomitantly laccase enzyme catalyzes the reduction of ambient oxygen. Hence coupling the reductive fungal metabolisms with an electropositive metal such as zinc, shall generate e.m.f. and subsequently electricity. Unlike the electricity harvested from existing biomass technology (syngas, solid boiler fuel, biofuel), the electricity produced from the biological system is a carbon-free energy technology. Recycling the agrowaste and reproducing them into environmentally benign by-products and green energy will eventually transform palm oil industry into a zero-waste agroindustry.

ABSTRACT ORAL PRESENTATION

Chemistry

1. **Utilization Coconut Coir Waste as Potassium Fertilizer Encapsulation Activated Zeolite Nanoparticle Chitosan**

Afiten Rahmin Sanjaya[1)] ,Mastho'ah[1)] ,Radinal Yogie[1)] , Nesti Dwi Maharani[1)] , Abdur Rokhim[1] , Ismiyarto[1)]

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Abstract. Indonesia is faced with the critical problems of agricultural land and the scarcity of fertilizer. Agricultural land in the archipelago has been more than 60% in critical condition, where the nutrient soil is far below the normal level of 4 - 5%. Nutrient grinding occurs due to the use of synthetic chemical fertilizers, as well as excessive pesticides and chemicals. In addition, ammonia-based fertilizers such as urea will decrease soil pH, making the soil getting harder (tighter) and barren. Therefore, in order to improve agricultural yields required fertilizer that is safe for the soil and environmentally friendly. Coconut is a potential plantation crop to be developed. In 2010 the area of coconut plant was recorded 3,739, 35 thousand hectares and was dominated by smallholder plantation. The composition of coconut is 35% coconut husk, 12% shell, 28% fruit flesh and 25% fruit water. In coconut husk ash contains 20-30% potassium and 2% phosphorus, so it is potentially used as fertilizer. The purpose of this research is to make fertilizer from coconut husk which have slow release ability. The method used is sol gel in the process of synthesis and encapsulation in formulation making. Test results with FTIR of chitosan obtained wave number in group of NH_2 equal to 1300cm^{-1}, CO group at wave number 1700cm^{-1} and OH group at wave number 3400cm^{-1}. This shows that the samples obtained by synthesis are chitosan. For XRD analysis and composition, the content of SiO_2 and Al_2O_3 is composed of zeolite components. SEM-EDX analysis get information topography and composition our slow release fertilizer. Then after in soil formulation along 14 days shown that our modified fertilizer has good SRF number (Slow Release Fertilizer) Where 30% modified potassium fertilizer encapsulation activated zeolite nanoparticle chitosan compare with 98% conventional potassium fertilizer, It has big opportunity for farmer and absorption fertilizer by plant would be optimum and in the end we can solve the coconut coir waste to be an innovation fertilizer and solution for our agriculture problem in Indonesia.

Keywords: Coconut Coir, Potassium Fertilizer, Encapsulation, Slow Release Fertilizer

2. Evaluation of Copoly(Eugenol-DVB) as a Carrier for Transport of Phenol with Polymer Inclusion Membrane (PIM)

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Abstract. In the present work, the evaluation tranport of phenol by PIM (Polymer Inclusion Membrane) using copoly(eugenol-divinyl benzene, co-EDVB) has been explored. The copolymers were used as membrane carriers based on polyvinylchloride (PVC) as membrane support. The membranes were characterized by FTIR and SEM. The experimental conditions for investigation of the transport of phenol through the membranes including membrane liquid (ML) loss. The result of study showed that the increasing of $NaNO_3$ salt concentration could both fade ML loss away and affect the transported phenol concentration. Such a decrease of ML loss was supported by a morphological appearance on the membrane resulted from SEM, it was pores closing. Another fact revealing during the study was that membrane could be used more than once with few ML loss. The result of SEM showed which phenol can transport by pore that it has side active.

Keywords: crosslinked, polymer inclusion membranes, membrane carrier, DVB

3. APLIKASI PENGGUNAAN KITOSAN KULIT UDANG PUTIH (*Fenneropenaeus merguiensis*) SEBAGAI PEMURNI GARAM PADA METODE HIDROEKSTRAKSI

Applications Utilization of White Shrimp Skins (Fenneropenaeus merguiensis) as Purifier Salt on Hydroextraction Method

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Abstract. Indonesia is a maritime country, but still faced with the problem of salt import is still very important. This is because the production capacity is still small

and the quality of salt produced is still low. The condition of raw material quality and processing that is still done traditionally becomes the main problem of domestic salt quality. Chitosan from white shrimp skin is known to purify water that will be used to purify the salt. The purpose of this research is to know the effect of chitosan from white shrimp (*Fenneropenaeus merguiensis*) as a salt purifier in the hydroextraction process to improve the quality of salt. This research method is experimental laboratories by using Completely Randomized Design (CRD). The applied treatments were the difference of mesh size of salt (small, medium and large) of the quality control salt III used as a comparison. The data obtained will be tested by normality test, homogeneity test, ANOVA, and HSD test. The results were obtained on control salt Na 34.874%, Cl- 28.151%, Ca 0.149%, Mg 0.215%. Salt mesh ukurun -20 + 30 Na 34.255%, Cl- 35.450%, Ca 0.169, Mg 0.160%. Salt mesh size -10 + 20 Na content 35.821%, Cl- 30.725%, Ca 0.118%, Mg 0.916%. Salt mesh ukurun -5 + 10 Na content 27.695%, Cl- 37.286%, Ca 0.147%, Mg 0.093%. Based on the results of research indicates that the size of the salt mesh shows a real effect on the salt quality of hydro-extract results. The best treatment is on the size of small mesh salts seen from the values of Na and Cl-.

Keywords: Salt, Chitosan, Hydroextraction

4. Isolation and Purification of α-amylase from a local bacteria *Bacillus subtilis* ITBCCB148 using carboxymethylcellulose (CMC)

Arum Widyasmara, Yandri A.S, Sutopo Hadi, Tati Suhartati, Ezra Rheinsky Tiarsa, Hardoko Insan Qudus, and Suripto Dwi Yuwono

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Abstract. Amylases are one of the main enzymes used in industry. Such enzymes hydrolyze the starch molecule into polymers composed of glucose units. Amylases have potential application in a wide number of industrial processes such as food, fermentation, and pharmaceutical industries. The aims of this research are to isolate and purify α-amylase from a local bacteria *Bacillus subtilis* ITBCCB148. The purification of enzyme was conducted by few steps such as fractionation with ammonium sulphate, dialysis and carboxymethyl cellulose (CMC) cation exchange column chromatography. α-amylase crude extract was produced by *Bacillus subtilis* ITBCCB148 at the fermentation temperature 60ºC, the fermentation media at pH 6.0 and the duration time of fermentation was 72 hours with specific activity of 925.75 U/mg. The specific activity of purified enzyme by fractionation with ammonium sulphate was 4315.31 U/mg, increasing 4.67 times than the crude enzyme extract. The specific activity of purified enzyme by dialysis was 5586.77 U/mg, increasing 6.04 times than the crude enzyme extract. The specific activity of purified enzyme cation exchange column chromatography using carboxymethyl cellulose (CMC) was 10387.11 U/mg, increasing 11.22 times than the crude enzyme extract. The optimum pH of purified enzyme was 6.0 and the optimum temperature was 60ºC, while the K_m and V_{max} value approximately were 6.18 mg mL^{-1} substrate and 909.09 μmol mL^{-1} min^{-1}.

Keyword : α-amylase, *Bacillus subtilis* ITBCCB148, isolation and purification, CMC

5. THE STUDY OF BLOCKING AGENT ON LENGKENG (*Euphoria logan* lour) FRUIT SHELL AND SEED FOR ADSORPTION OF Pb (II) FROM AQUEOUS SOLUTION

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Abstract. The study focuses on the roles played by mayor functional groups(carboxyl) in the lengkeng shell for sorption of Pb (II). The biosorbent was characterized by FTIR and elemental analyses. The parameters such as pH, initial concentration, particle sizes, adsorbent dose and flow rate were also studied. The results showed that the optimum condition was at pH = 3, concentration 400 mg/l, 250 µm particle sizes, adsorbent dose 0,5 g and 2 ml/min flow rate with adsorption capacity 4,8933 mg/g(shell) and 5,2720 mg/g(seed). It is show that ion exchange play as a more important role in the sorption of Pb (II) on lengkeng shell and seed. Blocking of COOH groups by chemical esterification resulted in Pb important reduction in metal binding.The result showed that adsorption capacity of lengkeng shell uncreases until 63.67 % and lengkeng seed uncreases 98.70%.

Keyword: *Biosorption, Blocking, Euphoria logan lour shell and seed, Pb*

6. Luwak Coffee Classification Using UV-Vis Spectroscopy Data: Comparison of LDA and SVM Methods

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Abstract. UV-Vis spectroscopy has been used as a promising method for coffee quality evaluation including in authentication of several high-economic coffee types. In this paper we have compared the abilities of linear discriminant analysis (LDA) and support vector machines (SVM) methods for luwak coffee classification. UV-Vis spectral data of 30 samples of pure luwak coffee and 30

samples of non-luwak coffee were acquired using a UV-Vis spectrometer in transmittance mode. The results show that UV-Vis spectroscopy combined with LDA and SVM was effective method to classify luwak and non-luwak coffee samples. The classification result was acceptable and yielded more than 90% classification accuracy for both LDA and SVM methods.

Keywords: Luwak coffee, authentication, adulteration, linear discriminant analysis, support vector machines, UV-Vis spectroscopy.

7. Co-Pyrolysis of Sugarcane Bagasse and Castor Oil Using Aluminosilicates with Different Si/Al Ratios as Catalyst.

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Abstract. In this investigation, a mixture of sugarcane bagasse and castor oil was subjected to pyrolysis for liquid fuel production. The pyrolysis process was carried out using aluminosilicates with different Si/Al ratios of 7, 5, 4, 3, and 1 as catalyst, with the main objective to investigate the effect of the Si/Al ratios of the catalyst on the hydrocarbon content of liquid produced. The experimental results show that production of liquid was achieved at the temperature range of 330 to 440 °C, and the liquid fuels produced were analyzed using gas chromatography-mass spectrometry (GC-MS) technique for component identification. Analysis of the product using GC-MS technique revealed the presence of a series of compounds in the liquids, and broadly belongs to hydrocarbon, alcohol, ester, ketone, aldehyde, and acid. The results display significant effect of the catalyst composition on the composition of the liquid, the hydrocarbon contents in particular, in which the smaller the Si/Al ratio, the higher the hydrocabon content of the liquid, with the higest content of 67.8%.

Keywords: Liquid fuel, pyrolysis, sugarcane bagasse, castor oil, aluminosilicate.

8. Effect Of Temperature On Composition Of Liquid Fuel Result From Pyrolysis Mixed Rubber Seeds Oil And Sugarcane Baggase Using Aluminosilicate Catalysts

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Abstract. In this research has been synthesized aluminosilicate with different calcination temperature, that is 600, 700, 800 and 900 ^{0}C from husk rice silica and aluminum metal using electrochemical method. Aluminosilicates used as catalysts for cracking mixture of rubber seed oil and sugarcane bagasse at 350-380 ^{o}C to produce liquid fuel. The experiment was carried out by mixing 50 grams of sugarcane bagasse and 300 mL of rubber seed oil, with an additional 15 grams of catalyst. The result of liquid fuel was analyzed by gas chromatography mass spectrometry (GC-MS) to determine chemical components in liquid fuel. The results showed that aluminosilicate was calcined at 600 ^{0}C produced liquid fuel with the higher hydrocarbon content of 85.58%.

Keywords: aluminosilicate, pyrolisis, liquid fuel, rubber seed oil, sugarcane bagasse

9. Extract of Yellow Pumpkin Encapsulated Nanopartical Chitosan as Anthyhiperglycemia With In Vitro Assays

Fonisyah Marspianko Habibah[1)a], Novianita Rizki[1)b], Tantri Nevi Astuti[1)c], Muhammad Fajar Shodiq[2)d], Muhammad Rizky Caniago[2)e]

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Abstract. Diabetes mellitus (DM) is still a serious health problem of the world, including Indonesia. Even the number of diabetics continues to increase from year to year, especially for type 2 diabetes. WHO data estimates the number of patients with type 2 diabetes in Indonesia will increase significantly to 21.3 million in 2030. One such solution is a natural antihyperglycemic agent by utilizing the

flavonoid and beta-carotene content of the yellow pumpkin extract. The use of natural extracts to lower blood glucose levels gives optimum results because it produces a considerable IC50. To maximize the working mechanism of the extracts, a study aimed at combining chitosan-extracted yeast nanoparticles with inclusion method as an in vitro-tested compound had antihyperglycemia activity. The combination of both has a dual function of protecting the natural extract from degradation and delivering natural extracts to the target-site. The results of chitosan analysis using FTIR obtained percentage Deacetylation Degrees (% DD) of 54.7% indicated that most of chitin have been hydrolyzed to chitosan. The results of nanocitosan analysis using PSA showed chitosan particle size of the synthesis result that is equal to 64.9 nm. The efficiency of encapsulation of tomato-chitosan nanoparticle extract is known through UV-VIS spectrophotometry test and 60% of encapsulation percentage is obtained. In vitro antihipercholesterol activity test showed yellow pumpkin extract-nanopelel chitosan 400 ppm can inhibit 398,0946 ppm alfaglukosidae enzyme. It can be concluded that yellow pumpkin extract can be encapsulated with chitosan nanoparticles and has been shown to decrease glucose levels after being tested in vitro.

Keywords: Antihipergliemia, Yellow Pumpkin Extract, Chitosan, Nanoparticles

10. Effect of Dilution and Electrolysis Time on Recovery of Mg^{2+} As $Mg(Oh)_2$ from Bittern by Electrochemical Method

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Abstract. This research was conducted to study the effect of dilution and electrolysis time on recovery of Mg^{2+} as $Mg(OH)_2$ from bittern by electrochemical method. The electrochemical process was carried out using 2-compartment electrochemical cell, connected by salt bridge prepared from NaCl suspended in gelatin. The experiment was carried out using nickel as cathode and carbon as anode. The electrolysis process was carried out at potential of 18 volts with dilution factors of 0, 2, 4, 6, and 8x, and electrolysis time of 1, 2, 4, 6, 8, 10, and 12 hours. The results show that percent of conversion increased with dilution with the best result was obtained for 4x dilution factor and 4 hours electrolysis time with percent conversion of 85.857% and purity of $Mg(OH)_2$ 91.207%.

Keywords: bittern, 2-compartment electrochemical cell, $Mg(OH)_2$, dilution factor, electrolysis time.

11. Chemical analysis of triphenyltin(IV) o-hydroxybenzoate and triphenyltin(IV) m-hydroxybenzoate by square wave voltammetry

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Abstract. Chemical analysis of triphenyltin (IV) -o- hydroxybenzoate, and triphenyltin (IV) m-hydroxybenzoate compound has been performed by square wave voltammetry. These compounds are new compounds that have been synthesized, characterized, and applied as anti-corrosion and anti-cancer inhibitors. The square wave voltammetry method is used because it has good sensitivity, and its chemical analysis process can be done more easily. This study aims to prepare a method for analyzing the new compounds triphenyltin(IV) o-hydroxybenzoate, and triphenyltin(IV) m-hydroxybenzoate by square wave voltammetry. To validate the method, a standard solution of triphenyltin(IV) o-hydroxybenzoate, and triphenyltin(IV) m-hydroxybenzoate, each of which was varied by concentration, ie 1.6 x 10^{-4} M; 3.2 x 10^{-4} M; 4.8 x 10^{-4} M; 6.4 x 10^{-4} M; and 8.0 x 10^{-4} M. Measurements against such standard solutions are observed by the square wave voltammetry method under conditions: potential windows +700 mV up to +1400 mV; scan rate potential : 100 mV / sec; working electrode (Au); auxiliary electrode (Pt); pseudo reference electrode (Ag); and 0.02 M NaCl as supporting electrolyte in H_2O-DMSO (3: 1). The results showed that the validation of the method of analysis on the triphenyltimah(IV) o-hydroxybenzoate compound had the value of the linear regression equation: i_p = 7.42 C + 7.89; correlation coefficient (r) = 0,99055; limit of detection (LoD) = 1.59 x 10^{-4} M; and sensitivity (S) = 7.42 μA / mM. While on the triphenyltin(IV) m-hydroxybenzoate compound has the value of linear regression equation: i_p = 8.39 C + 7.91; correlation coefficient (r) = 0.99071; limit of detection (LoD) = 1.41 x 10^{-4} M; and sensitivity (S) = 8.39 μA/mM.

Keywords: square wave voltammetry, triphenyltin(IV) *o*-hydroxybenzoate, triphenyltin(IV) *m*-hydroxybenzoate

12. ISOLATION, CHARACTERIZATION, MODIFICATION, AND BIOACTIVITY TEST OF ARTONIN E FROM ROOTS BARK OF KENANGKAN (*Artocarpus rigida*)

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Abstract. Several organic compounds had been already isolated from natural products which is common used as drugs. *Artocarpus rigida* or kenangkan is one of natural product that contains flavonoid as derivate compounds. Flavonoid is known as a good antibacterial agent. The research phases done were as following : preparation, extraction, isolation, purification, identification, modification, and antibacterial test. The isolation of flavonoid compound is obtained from semipolar fraction of Kenangkan's rootbark and visualized using TLC. Purification using VLC and CC method. The molecular structure of this compound is determined by physical and spectroscopic data (UV-Vis and IR). The yield of artonin E as an isolated compound is 1.3043 g. An isolated artonin E has a yellow solid form with melting point of 250-252ºC, while a modified artonin E with acetic anhydrid has a white solid form with melting point of 192-194ºC. In the result test of bioactivity, an isolated artonin E had given a better antibacterial activity than a modified artonin E towards *Bacillus subtilis*, even both of activities are not included in a high category.

Keywords: Artocarpus, artonin E, modification, antibacterial, *Bacillus subtilis*

13. The Use of Support Vector Machine Regression (SVR) and UV-Vis Spectroscopy in Determination of Luwak Content in Coffee Blends

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Abstract. In this study, an investigation of UV-Vis spectroscopy combined with support vector machine regression (SVR) was evaluated for luwak coffee authentication. For this purpose, we provide 50 samples of coffee blends (mixed of luwak and non-luwak coffee). The range of luwak content in coffee blends was 50-90%. UV-Vis spectral data of the all samples were acquired using a UV-Vis spectrometer in transmittance mode. The coefficient of determination (R^2), root mean square error of calibration (RMSEC), and residual prediction deviation (RPD) were used to evaluate the accuracy of the developed SVR calibration model. The results show that UV-Vis spectroscopy combined with SVR method was a promising method to quantify luwak content in coffee blends with high R^2 and low RMSEC. The RPD value of more than 3 was also obtained.

Keywords: Support vector machine, Luwak coffee, authentication, adulteration, UV-Vis spectroscopy.

14. CHARACTERISTICS OF $Ni_{0.7}Zn_{0.3}Fe_2O_4$ NANOMATERIAL PREPARED BY SOL-GEL AND FREEZE DRYING METHOD

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Abstract. $Ni_{0.7}Zn_{0.3}Fe_2O_4$ nanomaterial has been prepared using a mixture of sol – gel and freeze drying method. Preparation of material was carried out by dissolving nitrate salts of iron, nickel, and zinc in pectin solution and then the sample was stirred throughly using magnetic stirrer while adjusting pH to 11 until gel formed. After freeze – drying process, the precursors was subjected to calcination treatment at 600°C for 7 hours and subsequently characterized using the techniques of X-ray diffraction (XRD), Particle size Analyzer (PSA), and TEM analysis. The results of XRD characterization indicated that material consist of a majority crystalline phase of spinel $Ni_{0.5}Zn_{0.5}Fe_2O_4$. Then, TEM analysis proved that the grain size of this spinel is in the range of 20 nm.Crystallite size calculation using Scherrer equation, proved that the size is 8,8834 nm and particle size analysis found that the distribution of particle size is still microns, between 105,7 nm until 1,281 μm.

Keywords: Nanosize, spinel, freeze-drying, sol-gel.

15. Extraction And Dealumination Silica From Sugarcane Bagasse Ash Using Alkaline Method As A Precursor In ZSM-5 Synthesis

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Abstract. ZSM-5 was synthesized by using natural silica from sugarcane bagasse ash with hydrothermal method.. Zeolites are crystalline aluminosilicate material which has pores in the micro size (< 2 nm). ZSM-5, widely used as as heterogeneous catalyst in different crude oil upgrading and chemical refinery processes. Even, it has been used in the development of nanoelectronic technology. Generally, ZSM-5 synthesis uses commercial silica precursors such as fumed silica, Ludox and tetraethyl ortho silicate (TEOS). Besides commercial silica, natural silica from biomass waste can became a sources for zeolite synthesis. One of biomass waste with high silica content is sugarcane bagasse (SCB), resulting from the sugar and ethanol industry. Burning sugarcane bagasse produces sugarcane bagasse ash (SCBA) which is known containing silica about 50-70% by weight. The high silica in sugarcane bagasse ash can be used as silica

source in synthesis low cost of ZSM-5. In addition, this process can be one of the solution to manage the waste product of sugar industry. Sugarcane bagasse ash has been obtained from burning processes of bagasse at 600 °C. Dealumination process of silica from SCB using HCl 1 M has increased SiO_2 and Al_2O_3 content from 70.25% and 12.89% become 96.395% and 2.359 % respectively by using X-ray fluorescence (XRF). Characterization by X-Ray Diffraction (XRD) showed that the silica is in amorphouse phases. Scanning Electron Microscope (SEM) showed the morphology of the resulting silica was spherical shape with particle size about 80 nm. ZSM-5 synthesis was prepared by hydrothermal method at 170 °C for 5 days with the following molar composition precursor; 1 SiO_2: 0.014 Al_2O_3: 0.229 NaOH: 0.24 TPA-Br: 30H_2O. The pure ZSM-5 phase without impurities was confirmed by XRD data. Furthermore, SEM images showed irregular morphology spherical with particle size about 2 μm.

Keywords: ZSM-5, sugarcane bagasse ash, silica, hydrothermal method

16. Phytochemical Analysis of Some Leguminosae Plants Used in Traditional Medicine

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Abstract. The preliminary phytochemical screening of twelve medicinal plants belonging of Leguminosae family from Lampung District was conducted. The plants were *Adenanthera pavonina* L., *Parkia speciosa* Hassk, *Erythrina fusca* Lour, *Tamarindus indica* L., *Saraca asoca* (Roxb.) Wilde, *Calliandra calothyrsus*, *Acacia mangium, Cassia siamea* Lamk, *Albazia falcataria* (L.) Fosberg, *Leucaena leucocephala*, *Mimosa pudica, Caesalpinia pulcherima.* The screening of the stembarks of these selected plants was carried out using standard methods for detection of the bioactive principles present in the plants such as tannins, flavonoids, terpenoids, saponins, steroids, and alkaloids. The presence of the various phytochemicals indicated the correlation of the potential used of these plants as traditional medicine.

Keywords: Leguminosae, Traditional Medicine, Preliminary, Screening, Phytochemical.

17. Spectroscopic Analysis of Betulinic Acid Isolated from the roots of *Sesbania grandiflora*

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Abstract. A known triterpenoid, betulinic acid, was isolated for the first time from the methanol extract of the roots of *Sesbania grandiflora*. Its structure was established by extensive spectroscopic techniques including UV, IR, FABMS, 1D and 2D-NMR.

Keywords: Betulinic acid, *Sesbania grandiflora,* spectroscopic analysis

18. SYNTHESIS OF NANOCELLULOSE-POLYLACTIC ACID USING MECHANICAL AND ACID HYDROLYSIS METHODS

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Abstract. The synthesis of nanoselulose-poly lactic acid (PLA) has been conducted. using 3.5% of HCl solution and magnetic stirrer. The obtained nanomaterial was then analyzed by FTIR, SEM, and PSA. The obtained nanomaterial was white and small grains form . The uptake of a hydroxy group (3446 to 3429 cm-1) and carbonyl group (1757 to 1759 cm-1) indicate cellulose-PLA bonding. The particle size distribution of cellulose-PLA was 100 to 17730 nm. It was indicates that the combination acid hydrolysis and mechanical methods were effective for nanomaterial synthesis. Based on the SEM analysis, the rod like of cellulose was enterapted in two molecules of PLA which had a sheet morphology.

Keywords : Cellulose, Poly Lactic Acid, Acid Hydrolysis.

19. Antioksidant Activity from Limonen Nanoemulsion Encapsulated by Nanochitosan

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Abstract. Antioxidants have become the topic of interest recently. Antioxidants act as radical scavengers, and inhibit lipid peroxidation and other free radical mediated processes. Therefore, these are able to protect the human body from several diseases attributed to the reaction of radicals. A limonene extract from orange peel has antioxidant activities, but this compound still provide unsatisfactory results due to its degradation during the absorption process. The solution offered to solve the problem is by encapsulated it within chitosan nanoparticles. The value of encapsulation efficiency (EE) of limonene nanoemultion which encapsulated within chitosan nanoperticles is about 46%. Antioxidant assays (1,1-diphenyl-2-picrylhydrazyl) results showed that limonene-chitosan nanoparticles have highest precentage at 33% was exhibited by the 100ppm. So it can be conclude that limonene nanoemulsion can be encapsulated with nanoparticles of chitosan and proved that it can give contribute as antioxidant activities.

Keywords: *limonene, nanoemulsion, Encapsulation, Chitosan nanoparticles, antioxidants*

20. Influence of Increasing Concentration of Citric Acid Toward The Effectiveness in Metal Ion Pb^{2+} and Cd^{2+} Adsorption of Chitosan Membrane

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Abstract. River is known as a one of the water resource that normaly used by human for living. But nowadays, the waste from the iresponsible industry was dumped directly to river causing contamination in the water. One of the component of industrial waste is a heavy metal ion such as Pb and Cd. Heavy metal content in water can lead to several health problem such as circulatory disorders, bone fragility, and even a cancer [1]. Has been reported that chitosan has an ability to adsorp heavy metal and also, citric acid has a multi-carboxilates groups that can strengthen chitosan membrane [2][3]. Based on previous fact, the manufacturing of chitosan cross-linked with citric acid membrane is a suitable method for solve the recent problem. The membrane was made with a variation of chitosan and citric acid mol ratio (1:0,5; 1:0,75; 1:1). The effect of citric acid addition in manufacturing chitosan membrane were investigated by means of FT-IR, AAS, and BET analyses. The results showed that citric acid addition remove the –NH functional group and bring up C=O group by the appearance of spectra at 1072 cm^{-1}. BET analysis gave the information of decreasing size of the pore. The pore size was resulted $3,811x10^{1}$ Å. The adsorption test showed a result that 99,787% of Cd^{2+} ion was adsorbed by membrane with 1:0,5 mol ratio and 99,945% of Pb^{2+} ion was adsorbed by membrane with 1:1 mol ratio.

Keywords : Metal, Ion, Membrane, Adsorbtion

21. The Effect Of Cu Addition On $Ni_{1-X}fe_{2O4}$ Spinel Nanomaterials

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Abstract. $Ni_{1-x}Fe_2Cu_xO_4$ nanomaterials have been prepared using a mixture of sol – gel and freeze drying method. After calcinations, the sample was characterized by X-ray diffraction to know qualitatively the crystalline phase formed and quantitatively cell parameter and distribution of crystalline phases

using rietveld method and crystalline size using scherrer equation. The results showed that crystalline phase of $Ni_{1-x}Fe_2Cu_xO_4$ increased as Cu content augmounted, from 43,9 to 87,4 % and its crystalline size as well, from 5,8 to 8,7 nm.

Keywords: Nanomaterial, sol gel, freeze-drying, spinel

22. **The Antimalarial Activity of Some Organotin(IV) benzoate against *Plasmodiun falcifarum***

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Abstract. The strong biological activity of organotin(IV) carboxylate and its derivatives have long been known, and most of them are active even at very low concentration making these compounds continue to attract more attention to be explored. In this paper, we report the antimalarial activity of some organotin(IV) benzoate compounds following and continuing our success in the syntheses and activity studies of some organotin(IV) carboxylates in our previous investigation, the initial study of antimalarial activity of two compounds, i.e. diphenyltin(IV) dibenzoate and triphenyltin(IV) benzoate were performed. The targeted compounds were prepared from their organotin(IV) chlorides via the intermediate products of diphenyltin(IV) dihydroxide and triphenyltin(IV) hydroxide, respectively and reacting the intermediate products with benzoic acid. The antimalarial activity was performed against *Plasmodium falcifarum.* The results indicate that the triphenyltin(IV) compound is more potent to be used as antimalaria and has potential to be developed as antimalarial drug in the near future.

Keywords: antimalarial, inhibition concentration, organotin(IV) benzoates, P. Falcifarum

23. Chemical Composition of Liquid Fuel Produced By Co-pyrolysis of Sugarcane Bagasse and Rubber Seed Oil Using Zeolite-Y Synthesized From Rice Husk Silica and Aluminum Metal as Catalyst.

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Abstract. In this investigation, a mixture of sugarcane bagasse and rubber seed oil was subjected to pyrolysis for liquid fuel production. A series of pyrolysis experiments was conducted using zeolite-A synthesized from rice husk silica and aluminum metal through sol-gel route as catalyst, with the main objective to investigate the effect of calcination temperatures on the chemical composition of the liquid fuel obtained. The pyrolysis experiments were conducted at the temperature range of 250 to 500 ^{o}C, and the liquid fuels produced were analyzed using gas chromatography-mass spectrometry (GC-MS) technique for component identification. The experimental results show that optimum production of liquid took place at the temperature range of 350 to 480 ^{o}C, while at lower temperatures gaseous product emerged as the main product. Analysis of the product using GC-MS technique revealed the presence of a series of compounds in the liquids, and broadly belongs to hydrocarbon, alcohol, ester, ketone, aldehyde, and acid. The results display significant effect of the calcination temperatures on the composition of the liquid, the hydrocarbon contents in particular, in which the higher the calcination temperature, the lower the hydrocarbon content. The liquid fuel with the highest hydrocarbon content of 85% was obtained using the catalyst calcined at 700 ^{o}C.

Keywords: Liquid fuel, pyrolysis, bagasse, rubber seed oil, zeolite

24. Utilization of Resin SAP Jernang (*Daemonorops sp*) as the Basic ngredients ff the Drug Wound Liquid

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Abstract. Jernang (*Daemonorops sp*) produces fruit where the fruit contains resin from the SAP of the fruit jernang. Jernang (*Deamonorops sp*) is a rattan plant having economic value and has been used as traditional medicine in Indonesia and China. Besides being beneficial to the drug, resin SAP jernang is used to make drugs, the SAP nutritious jernang can dispel blood static, reduce pain (relieve pain), injury due to trauma fractures (traumatic injuries causing fracture) cure bruises, veins (sprains) stop bleeding due to injuries (bruising and stops bleeding) protects the surface wounds festering rot, regenerate living tissue (kind of flesh), and eliminate the sense of poignant on chronic wounds (chronic non-healing sores). The characterization of compounds using UV-vis spectroscopy and FTIR, and the results of the measurements gave data as follows: brownish yellow crystall, melting point 243-246°C; IR (KBr) υ (cm^{-1}) 3425 (OH); 2924, and 2852 (C-H); 1739, 1703 and 1660) (benzene); 1577, 1462 and 1379 (C = C aromatic); 1238, 1163, 1111 and 1029 (C = O aromatic); and 669.30 (O-H of carboxylic

group), UV (MTC) λ_{max}. 238 and 258 nm (5, 6, 7) (benzene). The results indicated that the resin (SAP jernang) may be used as the basic material as drug wound liquid mixed with ethanol and propyleneglycol.

Keywords: Resin, SAP Jernang, daemonorops draco jernang, wound medicine liquid

25. Chalcogen Bonding and Perplexing Coordination Behaviour of Bipyridine Donors in the Coordination Chemistry of Zinc-Triad 1,1-Dithiolate Compounds

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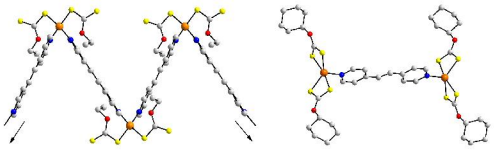
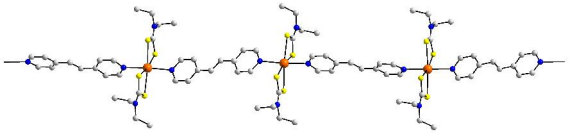
Abstract. In the solid-state, binary zinc-triad dithiocarbamates, *i.e.* $M(S_2CNRR')_2$ [M = Zn, Cd and Hg; R/R' = alkyl, aryl] usually self-associate *via* M···S chalcogen bonding to form dimeric or higher nuclearity aggregates but, when R/R' is large, M···S interactions may be mitigated resulting in monomeric species [1]. Thus, steric control of R/R' may be employed as a design element to control supramolecular association in species capable of forming secondary bonding interactions [1]. It is also usually observed that M···S interactions are "turned-off" in the presence of pyridine donors leading to the formation of monomeric species in the case of pyridine (py), *e.g.* $M(S_2CNRR')_2(py)$. In the case of bipyridine-type donors, aggregated species may be expected based on the vast experience in the formation of coordination polymers. Thus, one-, two- and three-dimensional species may anticipated owing to the bridging propensity of molecules such as 4,4'-bipyridine (bipy) and *trans*-1,2-bis(4-pyridyl)ethylene. The two principles cited above can be exploited to form specific aggregates in the case of zinc(II) xanthates, $Zn(S_2COR)_2$ [R = alkyl]. Thus, one-dimensional, zig-zag chains can be formed with *trans*-1,2-bis(4-pyridyl)ethylene, when R is small, *e.g.* ethyl (as shown in the left-hand image below) or zero-dimensional, when R is large, *e.g.* cyclohexyl (right-hand image; hydrogen atoms in most images in this Abstract are omitted for clarity):



Such control over supramolecular aggregation has implications for solid-state luminescence responses [2].

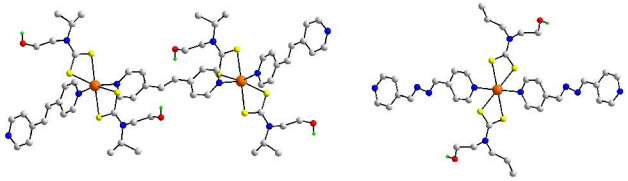
During the evaluation of analogous chemistry with zinc and cadmium dithiocarbamates, $M(S_2CNRR')_2$ (M= Zn or Cd), quite distinctive behaviour is

observed. Sometimes, 1:1 reactions between $Cd(S_2CNRR')_2$ and a bipyridine ligand can lead to a one-dimensional coordination polymer as in the case when R = R' = Et [3] with *trans*-1,2-bis(4-pyridyl)ethylene:



Analogous chemistry with $Zn(S_2CNRR')_2$ failed to give more than zero-dimensional aggregation.

In attempts to connect one-dimensional chains formed by $Cd(S_2CNRR')_2$ and bipyridine molecules into two- or even three-dimensional architectures, *via* hydrogen-bonding interactions, the dithiocarbamate ligands have been functionalised with hydroxyethyl groups. The two published examples illustrated below show that monodentate coordination, rather than the desired bidentate, bridging mode of the bipyridine molecules are often observed. Thus, in $\{Cd[S_2CN(iPr)CH_2CH_2OH]_2\}_2$[*trans*-1,2-bis(4-pyridyl)ethylene]$_3$, one molecule was bidentate, bridging, whereas the remaining two were terminally bound (left-hand image below; acidic H atoms shown) [4], allowing for the formation of hydroxyl-O-H···N(pyridyl) hydrogen-bonding in the crystal. In $\{Cd[S_2CN(nPr)CH_2CH_2OH]_2\}$[4-pyridinealdazine]$_2$, both bipyridine molecules were terminally bound (right-hand image below) [5], again allowing for the formation of hydroxyl-O–H···N(pyridyl) hydrogen-bonding in the crystal.



The purpose of this presentation is to contemplate issues concerning the fascinating crystal chemistry of this class of compound, such as the competition between the formation of Cd–N coordinative (dative) bonds and hydroxyl-O–H···N(pyridyl) hydrogen-bonds, as seen in the previous examples.

Keywords: Chalcogen bonding; supramolecular chemistry; zinc; cadmium; dithiocarbamate; xanthate; bipyridine molecules

26. REFLECTANCE SPECTROSCOPY STUDY ON COPPER OXIDE PLATE PREPARATION

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Abstract. This research aims to examine the reflectivity of the copper plate in the indoors light-photovoltaic cell. The copper plate preparation is carried out through calcination at a temperature of 380° C to change the surface of the copper plate into a copper oxide plate. The copper oxide plate formed is used as the cathode of the indoors light-photovoltaic cell space. The changes occurring on the electrode surface are evaluated with the DRS-UV Spectrophotometer (Diffuse Reflactance Spectra-Ultra Violet) and X-Ray Fluorescence (XRF). The evaluation of the oxide copper plate also involves a change in the semiconductor gap energy formed, so that the copper oxide plate can act on visible light as the cathode of the indoors light-photovoltaic cell

Keywords : Cooper Plate , Photovoltaic, Indoors Light , DRS-UV, XRF

27. Nano Alpha-Cellulose Acetate Membrane Innovation Coconut Coir Based As Selective Membrane On Water Purification Process

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Abstract. Industrial waste and household waste that are not well managed result in water pollution containing a variety of dangerous heavy metals, one of them Al and Pb. To overcome these problems, the author tries to provide a solution that is modification of nano alpha-cellulose acetate membrane based coconut husk as a selective membrane in the process of water purification. The purpose of this research is to produce membrane filtration which can absorb and bind heavy metals in water treatment, especially Al and Pb. The method used is phase inversion, which is the conversion of polymer solution from liquid faca to solid phase conducted in a controlled manner in membrane making. Isolation of green coco aloe cellulose alpha (*Cocosnucifera L.*) includes prehydrolysis stage using

aquadest, delignification using 20% Na2SO3, and bleaching using 3% H2O2. The isolated alpha cellulose quality was analyzed using FTIR spectroscopy, and continued capability testing between alpha cellulose delignifiedNaOH and alpha cellulose delignified Na2SO3 decreased levels of Al and Pb heavy metals in 25 ml of 10 ppm CdSO4 solution, with each variation of alpha cellulose concentration 100mg, 200 Mg, and 300 mg. The metal solution after bioadsorption was analyzed using AAS (Atomic Absorption Spectrophotometer). The best results showed that alpha cellulose delaminated Na2SO3 15 mg can decrease Al and Pb heavy metals to 0.2307 mg / ml, and 0.2318 mg / ml with absorptive effectiveness of 78.93% and 73.90%.

Keyword :Alpha-cellulose, membrane, heavy metal

Biology

1. The Effect Of Soaking Duration And Dose Variation Of Steroid Extract Of Sea Cucumber (Holothuria Scabra) Towards Sex Reversal Of Juvenile Fresh Water Crayfish (Cherax Quadricarinatus)

Asep Yusup Hamdani

Abstract. Freshwater crayfish (Cherax quadricarinatus) is one of fishery commodities which is in demand. In order to increase the number of male critters, it is important to know about sex reversal on crayfish. One of the methods of manipulating sex reversal is by soaking the crayfish in steroid hormones. Sea cucumber is one type of marine commodities that has domestic and international value as a potential fishery commodities. The sea cucumber contains a bioactive substance called steroid compound. The aim of this research is to know the effect of soaking duration and dose variation extract of sea cucumber on sex reversal to male sex on juvenile freshwater crayfish (Cherax quadricarinatus). The research used Factorial Randomized Design (RAL) with 9 treatments and 3 repetitions . The data analysis was done using analysis of variety (Anara) in accordance with the design used, that is Completely Random Design (RAL) of two variables, and when there was a real difference, the test must be continued with the Smallest Different Test with α = 5%. The results showed that giving steroid extract of sea cucumber with different soaking time would effect the success rate of male genital formation on freshwater crayfish. The highest percentage of males obtained in the treatment dose (2 mg / L 18 h) was 79.86% and the lowest percentage was obtained in the control treatment at 31.03%. Giving steroid extract of sea cucumber with different soaking time has resulted the formation of male monosex freshwater crayfish with the best treatment of 18 hours of soaking and 2 mg / L dose.

Keywords: sea cucumber, steroid, freshwater crayfish, sex reversal (male)

2. **Taurine and Oyster Mushroom (*Pleurotus ostreatus*) Prevents Oxidative Damage in Mice Liver Induced by Paraquat**

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Abstract. Paraquat is a toxic substance that can cause oxidative damage through increased ROS production. Oxidative damage can be prevented by supplementing with antioxidants, such as taurine and oyster mushrooms. This study aims to determine the ability of taurine and oyster mushrooms prevent oxidative damage to the liver of mice induced by paraquat. This study uses a completely randomized design. A total of 30 DDY mice were divided into five treatment groups for 3 weeks, namely: 1) control, 2) the oyster mushroom (6.25% in feed and 2.5 g/L in drinking water), 3) paraquat (20 mg/kg, IP), 4) paraquat and taurine (15.6 g/kg) and 5) paraquat and oyster mushrooms. Parameters measured were MDA, glutathione, SOD enzyme activity and histopathological changes in liver. The results showed paraquat increases in liver MDA levels significantly but decreases in liver glutathione levels significantly compared to controls, while taurine and oyster mushrooms reduce the levels of MDA ($p < 0.05$) and increase glutahion levels ($p < 0.05$). Paraquat also increases the activity of SOD ($p < 0.05$), while taurine and oyster mushroom are able to inhibit the increased activity of SOD although they do not show significant ($p > 0.05$). Paraquat induces liver histopathology change which is characterized by congestion, hydropic degeneration and cloudy swelling. In conclusion, paraquat causes oxidative damage to the liver, while taurine and oyster mushrooms can prevent the damage.

Keywords: antioxidants, oxidative damage, oyster mushrooms, ROS and taurine.

3. **Vegetation Diversity As A Basis Community-Based Forest Management In The Conservation Forest**

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Abstract. The University of Lampung (Unila) has 1,143 hectares of educational forest area and used for research, education and community service. The forest is mentioned as Wan Abdul Rachman (WAR) – *Taman Hutan Raya* (Tahura) or Forest Park for Integrated Conservation and Education Forest consisting of protected block devoted for the protection of plant and animal species from the effects of exploitation activities and utilization block or social forestry (SF) block. Especially for SF block, this forest area can be managed with Community Based Forest Management (CBFM) scheme. Although it is actually prohibited but now most of this conservation forest area is cultivated land of the surrounding community. Consider to this condition it should be a strategy in this education forest management so that the function of the forest is not getting damaged. The study was conducted from November 2015 – February 2016 in the utilization block in order to identify the composition, structure and vegetation diversity that can be utilized for implementation of the CBFM scheme. The method is random sampling with total sample of 19 plots. From the results it is known that majority of Multi Purposes Tree Species (MPTS) and there are 275 species of sub-plants 97 species of seedlings phase, 137 species of stake phase, 76 species of poles phase, and 143 species of tree phase. Based on the high diversity of the vegetation and evenly distributed, then the block can be declared suitable for applied of CBFM scheme. Further research is needed to specify the suitable CBFM scheme to be developed in the area of Forest Park forest because based on Ministry Decree of Environment and Forestry (PermenLHK) number P.83/2016 there are several CBFM schemes that can be applied in the forest areas in Indonesia.

Keywords: Vegetation Diversity, Social Forestry Block, Community Based Forest Management, Forest Park, Conservation Forest

4. Study of Inhibitory of Leather Extract and Heart of Muli Banana (*Musa acuminata*) as Natural Antimicroba in Reducing *Echerichia coli* on Chicken Meat (*Gallus domesticus*)

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Abstract. Chicken meat is one of food that plays an important role as source of animal protein in the fulfillment of the nutritional needs of the community. The aims of this study were to (1) determine the inhibition of leather extract and the heart of banana muli as a natural antimicrobial in reducing contamination of *Echerichia coli*, (2) determine the best concentration of leather extract and heart of muli banana as a natural antimicrobial in decreasing contamination of *Echerichia coli*, (3) know the effect of leather extract and heart of muli banana as a natural antimicrobial in decreasing contamination of *Echerichia coli* in chicken meat. The data were analyzed with Randomized Block Design and analyzed further with Least Significant Different test as a comparison between treatments at 5% rate level. The result showed that leather extract and heart of muli banana had inhibitory power as a natural antimicrobial in decreasing contamination of *Echerichia coli* bacteria. Banana muli leather extract was able to inhibit the growth of *E.coli* bacteria was 6.45 mm of inhibitory zone significantly $\alpha_{0.05}$ and was categorized as medium antibacterial activity, and muli banana heart extract was able to inhibit the growth of *E.coli* bacteria was 5.63 mm of inhibitory zone significantly $\alpha_{0.05}$ and was categorized as medium antibacterial activity. The best concentration of leather extract and heart of banana muli as natural antimicrobial in decreasing contamination of *Echerichia coli* was 100% at 5% rate level. Leather extract and heart of banana muli as a natural antimicrobial gave effect on the decrease the contamination of *Echerichia coli* bacteria in chicken meat, decrease total of banana leather extract was $1.5x10^8$ colony/gram and banana heart extract was $1.2x10^8$ colony/gram.

Keywords: Antimicroba, Inhibitory, Echerichia coli, Letaher extract and heart Muli banana, Chicken meat.

5. Determination Ploidi Of Banana Germplasm Origin From Bandar Lampung Based On The Number Of Cromosomes

Eti Ernawiati and Eka Nurhasanah

Abstract. Indonesia is one of the centers of banana diversity in the world, so the collection of banana germplasm is very important. Morphological identification and characterization, anatomy and cytology are the next important step. Although not as accurate as molecular markers, the identification and characterization of banana morphology needs to be done to prevent name duplication. Lampung is the largest banana production center in Indonesia, but scientific studies of bananas are still far behind from other regions. Given this, this study aims to obtain information on the level of ploidi diversity of banana germplasm in Bandar Lampung based on the number of chromosomes. Banana germplasm collection was taken randomly from the residentyard in 12 districts of all of 20 districts in Bandar Lampung. Furthermore, bananas from the collection are grown in soil media in polybags to grow secondary roots for the purposes of their chromosomal preparations.

Chromosome preparation was performed using a modified squash method. Microscopic data from chromosome preparation were transferred to the computer to determine the number of chromosomes and ploidi levels. The results of the data

analysis showed that from the collection of bananas obtained 27 accessions of bananas from two sections of the genus of Musa, 26 accessions including the Eumus section and 1 suspected allegedly included the Rhodhoclamys section. The result of observation of chromosome number on the 27 accessions of bananas obtained 2n = 22 chromosome number as much as 6 accessions, 2n = 33 as many as 19 accessand 2n = 44 as much as 2 accessions. From the observation result it can be concluded that the diversity of accession of bananas from Bandar city of Lampung there are 3 ploidy levels, namely diploid (2n = 2x), triploid (2n = 3x) andtetraploid (2n = 4x).

Keywords: Ploidi, Banana, number of chromosomes

6. The Effect Of Steroid Extracts Of Sea Cucumber (*Holothuria Scabra*) And 17α Methyltestosterone At Different Temperature On Juvenil Fresh Water Crayfish (*Cherax Quadricarinatus*)

Fadhli Dzil Ikrom

Abstract. Red claw (*Cherax quadricarinatus*) is one kind of fresh water cray fish with high economic value which encourages farmers to increase their production. However, there are several obstacles where the growth of female individuals is faster than male. To overcome this problem, it is important to undergo a monosex (single gender) cultivation. The aim of this research is to find out the effect of sea cucumber's steroid extract and 17α methyltestosterone at different temperature to sex reversal to males on juvenile freshwater crayfish, *Cherax quadricarinatus*. This research was designed using Factorial Complete Random Design Method. The treatments were observed at temperatures of 27° C and 31ºC as follows: 50 mg/kg of sea cucumber's steroid extracts at temperatures of 27°C and 31ºC, and 50 mg/kg of 17α methyltestosterone at temperatures of 27 ° C and 31 ° C. The results showed that the most effective use of steroid extracts of sea cucumber and 17α methyltestosterone was at 27°C to increase the male percentage of 75.16% and 73.79% respectively and gave a significant effect on female genital decrease, total length, daily weight gain and biomass. While giving the steroid hormone did not make a significant effect on survival rate, intersex percentage and feed conversion of juvenile freshwater crayfish.

Keywords: sea cucumber, steroid, freshwater crayfish, 17α methyltestosterone, temperature

7. Antidiabetic Effectivity Of *Bauhinia Purpurea* L. Leaves Extract And Taurine On Number Of Spermatozoa Of Male Mice (*Mus Musculus*l.) Induced By Alloxan

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Abstract. This research aim to know the effect of leaf extract *Bauhinia purpurea* L. and taurine in antidiabetic to the number of sperm in male mice (*Mus musculus*) induced by alloxan. This Study used a Completely Randomize Design (CRD) using 24 mice were divided into four treatment groups, such as control groups K+ (without treatment), K- (induced by alloxan), (P1) induced alloxan treatment groups and given a leaf extract *Bauhinia purpurea* L. 400 mg/kg body weight and (P2) induced alloxan treatment groups and given a leaf extract *Bauhinia purpurea* L. 400 mg/kg body weight and taurin 15,6 mg. The parameters in this study is the weight (g), the blood glucose levels (mg/dL), the number of spermatozoa (million/mL), and testis organ weights (g). The data were analyzed with ANOVA ($p<0.05$). Results of the study showed that award *Bauhinia purpurea* L. leaf extract 400 mg/kg and 15.6 mg taurine has not been able to lower blood glucose levels, but can maintain the number of spermatozoa of male mice (*Mus musculus*) induced alloxan.

Keywords: Alloxan, *Bauhinia purpurea* L., The Number of Sperm, *Mus musculus,* Taurin.

8. Common Indirect Signs Of Wild Sumatran Elephant In Its Natural Habitat Bukit Barisan Selatan National Park

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Abstract. Sumatran elephant (*Elephasmaximussumatranus)*is critically endangered due to illegal logging, poaching, trading and conflict with human.Its population is continuously decreasing. Saving sumatran elephant in its natural habitat is an urgent.Learning indirect sign of its existence is conducted on July 2017 along its active daily track in Bukit Barisan Selatan National Park by purposive direct observation. Four different indirect signs included dungs (83%), foot print (9%), body scracth (4%) and foot slide (2%). Dung is the most common indirect sign,

found in fresh and old form. Foot prints found included the young and adult individuals. Body scratches were found on *Sorea sp,* 185-240 cm height.Indirect signs are very usefull in finding the wild elephants.

Keywords: Sumatran elephant, Bukit Barisan Selatan National Park, indirect signs

9. Using Corn Stalk as Media for Feces Decomposition in a manually Pedal Mixing Bio-Toilet System.

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Abstract. Bio-toilet could be a solution for bad sanitation handling in Indonesia. Bio-toilet is a dry toilet based on Onsite Wastewater Differentiable Treatment System (OWDTS), which is one of domestic environmental-friendly waste handling methods. Sawdust is normally used for matrix in the bio-toilet, but many lignocellulose agriculture waste products could potentially be used to support the feces and urine decomposition. Surface characteristics and chemical compositions of the lignocellulose media could support the aerobic microbes to degrade the faces and or urine to CO_2 and H_2O. The waste used in this research was corn stalk. The research was done into four steps, from materials preparation, start-up preparation, material decomposition, to samples observation and analysis stage. A Bio-toilet M-15 manually pedal system type that it was developed by LIPI's team is used in this research. Collected feces from omnivore animals in Bandung's zoo was used in the research to imitate human feces. The Bio-toilet was able to decompose feces of 13 humans per day using corn stalk media. Start-up process was done in 7 days, and then resumed to decomposition process for 43 days. The pH of corn stalk samples taken from bio-toilet during the process increased gradually from pH 6.4 in the beginning to 8.4 in day 37. The pH was slightly decreased to 7.4 during stabilization of the used media to compost. The color of the de-composted media was dark brown-black with soil light odor. Water content of the corn stalk was kept from initial content of 35.3% to 50% by adding water to the system. After 25 days with daily feces discharge, the water content increased slowly to 71% in the day 43. The organic dry matter (OTS) slowly decreased from ca. 96% to 92%. This type of bio-toilet could be used as an alternate toilet to overcome sanitation problem. The amount (in volume) of corn stalk media will be determind the capacity of toilet users.

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Keywords: Bio-toilet, feces, corn stalk, decomposition, compost.

10. Anticancer Effectivity Of Kenikir (*Cosmos caudatus* Kunth.) Leaves Ethanolic Extract And Taurine On Hepar Histophatology Of Male Mice (*Mus musculus* L.) Induced By Benzo(α)pyrene

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Abstract. The aim of this study was to determine the anticancer effectivity of kenikir (*Cosmos caudatus* Kunth.) leaves extract and taurine on the hepar histopathology of male mice (*Mus musculus* L.) induced by benzo(α)pyrene. This study was conducted in a complete randomized design by using four treatments (K1, K2, K3 and K4), each in six replications. K1 used as control were not given any treatment. K2 were induced by 0,3 mg/bw benzo(α)pyrene subcutaneously for 10 days without being given kenikir extract nor taurine. K3 were given 20,2 mg/bw of kenikir leaves extract for 15 days after being induced by benzo(α)pyrene. K4 were given 15,6 mg/bw of taurine which was combined by 20,2 mg/bw of kenikir leaves extract for 15 days after being induced by benzo(α)pyrene. The data were analyzed using ANOVA (Analysis of Variance) then continued by calculating least significant difference at 0,05 level of significance. The results indicated that taurine which was combined by kenikir leaves extract had the ability to recover the damage of hepar histophatology of mice induced by benzo(α)pyrene.

Keywords: *Cosmos caudatus* Kunth., Taurine, *Mus musculus* L., Benzo(α)pyrene, Hepar Histophatology.

11. The Relation of Root Type and Development with Abuscular Mycorrhiza Fungi Infection in Oil Palm Seedling

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Abstract. This study aimed to evaluate the relationship between root type (primary and secondary roots) and their development with the success of arbuscular mycorrhiza fungi (AMF) infection in oil palm seedling. Two experiments were carried out to achieve this objective.The first experiment was inoculating germination seeds of oil palm with two different AMF (*Glomus* sp. and *Enthrophospora* sp.) by placing 300 spores of each AMF 5 cm below radicle tip. The seeds were then planted in 1 x 20 cm polybag containing sterilized sand as media. Twelve polybags were prepared for each AMF type and other 12 polybags for control (without AMF inoculation). Three polybags for each treatment were harvested at 2,3,4, and 5 weeks after inoculation (WAI) to observe root system development and AMF infection in the primary and secondary root. The second experiment was the same with the first one, however, AMF inoculation were done to one month old of oil palm seedling. The result showed that no AMF (both *Glomus* sp. and *Enthrophospora* sp.) infection were observed in the primary and secondary roots of oil palm seedling at 2, 3, 4, 5 WAI in the 1st experiment. In the 2nd experiment, no AMF infection also observed in the primary roots of oil palm seedling during this experiment, but AMF infection were already observed at 3 WAI for both type of AMF, i.e. 9.2% for *Glomus* sp. and 13.4% for *Enthrophospora* sp.

Keywords: Root Type, Root infection, Arbuscular Mycorrhizal Fungi

12. Cytotoxic Effect Of Pare (*Momordica Charantia* L) Extract On Fetal Development Of Mice (*Mus Musculus* L.)

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Abstract. Pare (*Momordica charantia* L.) is widely known as a vegetable that is consumed and used by the community as a traditional medicine such as appetite enhancer, stomach ache, and menstrual syndrome. Pare contains a bitter active compound such as K and L momordicosida which are cytotoxic and can cause cell death, also triterpen glycosides which are inhibiting the growth and development of highly potent cells. The aim of this study is to prove the cytotoxic effect of pare extract given to pregnant mice (*Mus musculus* L.). Parameters observed in this research are number of fetus, fetal body weight and length, also fetal abnormality. Pare extract obtained by maceration using 95% ethanol as solvent. The design of the study was a complete randomized design, with 20 pregnant mice divided into 4 groups, namely [K], [P1], [P2], [P3]. Each group consists of 5 pregnant mice. All treatment groups [P1], [P2], [P3] were given orally pare extracts starting on the 6th day until the seventeenth day of pregnancy, with a dose of [P1] 22.5 mg / 30 gr

body weight, [P2] 30 mg / 30 gr body weight, [P3] 37,5 mg / 30 gr body weight, and control [K] given aquabides. The results showed that the pare extract did not reduce the number of fetus, did not cause death in fetal mice, but reduce fetal body weight and length significantly ($p < 0,05$). In general all treatment do not cause abnormalities in fetal morphology of mice.

13. Germination and growth of F1 tomato seeds induced 0.2mT of magnetic field infected by *Fusarium* sp.

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Abstract. Exposure of 0.2 mT magnetic field to tomato seeds is known to increase germination, growth, as well as resistance of plants to *Fusarium* sp. In this study, F1 tomato seeds obtained from parental plants were tested for germination and growth after reinfection with *Fusarium oxysporum* f.sp *lycopersicui* (*Fol*).

The study was arranged factorially in Completely Randomized Design (RAL). The first factor is a seed type consisting of 8 types: M_0F_0, M_0F_{60}, M_7F_0, M_7F_{60}, $M_{11}F_0$, $M_{11}F_{60}$, $M_{15}F_0$, and $M_{15}F_{60}$. The numbers after letter M and F indicate that F1 tomato seeds were obtained from parental tomato plants whose seeds were induced by 0.2 mT of magnetic fields each for 0, 7, 11, and 15 min were then infected by suspension of *Fusarium* sp. monospore respectively each for 0 and 60 minutes. The second factor is *Fol* infection. The data obtained were analyzed using anova and further tested by Fisher's Test at $\alpha = 5\%$.

The results show that the parental tomato seeds induced by 0,2 mT magnetic field produce F1 tomato seeds that have a higher germination percentage and rate as well as dry weight than the parental tomato seeds of control although reinfected by *Fol*. These results suggest that the vigor properties of the F1 tomato seeds are the same as the vigor properties of the parental seeds induced by magnetic fields.

Keywords: F1 tomato seed type, germination rate, *Fol*, germination percentage, and dry weight.

14. Intercorrelation Among Coral Fish And Plankton On The Percent Coverage Of Coral Reefs In Umang-Umang Island Of Teluk Lampung - Lampung, Indonesia

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Abstract. The study was conducted to determine inter-correlation between the diversity of coral fish and plankton on the percent coverage of coral reefs in Umang-umang Island of Teluk Lampung – Lampung, Indonesia. Data were collected from October – November 2016. *Line Intercept Transect* (LIT) with *Underwater Visual Cencus* (UVC) were applied to determine the coral reefs and fish of two depth, 5 and 10 m, from which the plankton also collected by using plankton net in vertical collection at 09.00-10.30 am. All data were collected three times from three sites of study. Data was analyzed for diversity and dominance indexes as well as their correlation among coral fish, plankton and the percent living coral coverage. The results indicated that at the sites of 1 and 3 the percent coverage of living coral reefs were in mild category in both depth, while in site 2 in 10 depth the coral reefs was in severe with percent living coverage as low as 23.33%. The higher number of fish found was in site 1 in 10 m depth with 211 individual fish found under UVC. The highest diversity index of plankton found in site 2 and 3 at 5 m depth with 3.09. The correlation between plankton diversity and the living coral was in negative with r= 0.438, similar with the correlation between coral fish with living coral with r = 0.377. Yet positive correlation was found for coral fish and plankton diversity with r =0.882.

Keywords: coral reefs, fish, plankton, Umang-umang island.

15. Study Of Inhibitory Of Leather Extract And Heart Of Muli Banana (*Musa Acuminata*) As Natural Antimicroba In Reducing *Echerichia Coli* On Chicken Meat (*Gallus Domesticus*)

SUCI NATA KUSUMA

Abstract. Chicken meat is one of food that plays an important role as source of animal protein in the fulfillment of the nutritional needs of the community. However, chicken meat is easily contaminated by bacteria for example *Echerechia coli*. The aims of this study were to (1) determine the inhibition of leather extract

and the heart of banana muli as a natural antimicrobial in reducing contamination of *Echerichia coli*, (2) determine the best concentration of leather extract and heart of muli banana as a natural antimicrobial in decreasing contamination of *Echerichia coli*, (3) know the effect of leather extract and heart of muli banana as a natural antimicrobial in decreasing contamination of *Echerichia coli* in chicken meat. The study was conducted in two separate stages, in the first stage banana leather extract was used and banana heart extract was used in the second stage with five concentration levels of extract 20%, 40%, 60%, 80%, and 100%. The data were analyzed with Randomized Block Design and analyzed further with Least Significant Different test as a comparison between treatments at 5% rate level.

The result showed that leather extract and heart of muli banana had inhibitory power as a natural antimicrobial in decreasing contamination of *Echerichia coli* bacteria. Banana muli leather extract was able to inhibit the growth of *E.coli* bacteria was 6.45 mm of inhibitory zone significantly $\alpha_{0.05}$ and was categorized as medium antibacterial activity, and muli banana heart extract was able to inhibit the growth of *E.coli* bacteria was 5.63 mm of inhibitory zone significantly $\alpha_{0.05}$ and was categorized as medium antibacterial activity. The best concentration of leather extract and heart of banana muli as natural antimicrobial in decreasing contamination of *Echerichia coli* was 100% at 5% rate level. Leather extract and heart of banana muli as a natural antimicrobial gave effect on the decrease the contamination of *Echerichia coli* bacteria in chicken meat, decrease total of banana leather extract was $1.5x10^8$ colony/gram and banana heart extract was $1.2x10^8$ colony/gram

Keywords: *Antimicroba, Inhibitory, Echerichia coli, Leather Extract and Heart Muli Banana,Chicken meat*

Mathematics/Computer Science

1. The Locating-Chromatic Number Of Subdivision Firecracker Graphs

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Abstract. The locating-chromatic number of a graph was introduced by Chartrandet al. in 2002, with derived two graph concept, coloring vertices and partition dimension of a graph. Let $G = (V, E)$ be a connected graph and c be a

proper k-coloring of G with color $1,2,\ldots,k$. Let $\Pi = \{C_1, C_2, \ldots, C_k\}$ be a partition of V(G) which is induced by coloring c. The color code $c_\Pi(v)$ of v is the ordered k-tuple $(d(v,C_1), d(v,C_2),\ldots,d(v,C_k))$ where $d(v,C_i) = \min\{d(v,x)|x \in C_i\}$ for any i. If all distinct vertices of G have distinct color codes, then c is called k-locating coloring of G. The locating-chromatic number, denoted by $\chi_L(G)$, is the smallest k such that G has a locating k-coloring . In this paper, we discuss about locating-chromatic number of a subdivision firecracker graphs.

Keywords: graph, color code, locating-chromatic number.

2. Design of Flood Early Warning System with Wifi Network Based on Smartphone

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Abstract. In tackling the flood around Palembang it has been done by means of water channel rehabilitation in accordance with the flow, river dredging in small river, retention ponds creation, demolition of illegal buildings on the banks of the river, the extension services provided to the public about the cleanliness of the river especially to the people who live around the river. In fact, it persists flood in the city of Palembang in particular residential area that is lower than the surface of the Musi River with high tide from 0.7 to 2.2 m and high rainfall 101.48 mm / hrs. For that, important something is solved for flood to look for other solution to reduce losses due to flooding, namely by means of early warning of flooding in the community by conveying flood condition information. In this paper, it has had an objective namely design of wireless fidelity (WIFI) network for early warning of flood and a method of flood data conveying based on smartphone. Result which was displayed in smartphone was a graphic of flood data in real time. Its conclusion was that flood data has been displayed in smartphone in real time.

Keywords: flood early warning, smartphone, Wifi.

3. Recognition Of Offline Lampung Handwritten Characters And Its Performance Using Support Vector Machine

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Abstract. Lampung script is a script of Lampung area in Indonesia. It is a non-cursive character which is completely impossible to be written as a cursive character. The script consists of 20 characters and 7 unique diacritics. A diacritic can be put on top, bottom, or right of the character. With respect to this position, the number of diacritics can be augmented into 12 types. This paper only concern about the recognition of Lampung handwritten characters. Several features are extracted from data samples for the purpose classification. The classifier for recognition is Support Vector Machine (SVM). The best rate of the recognition of offline Lampung handwriting is 97.38%. Analysis of the confusion indicate that the most of misclassification is caused by a tiny stroke of the character.

Keywords: Lampung Script, Lampung Characters, Handwritten Character Recognition, Offline, Support Vector Machine (SVM), Pattern Recogniton

4. String Matching Algorithm on Chatbot Engine for BMKG Information Using Telegram Messenger

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Abstract.The rise of messaging apps and platforms with a decent API and some social media like telegram, created a good momentum for making some useful chat bots. Chatbots are "online human-computer dialog systems with natural language". Bots can serve specific needs from dating suggestion, self diagnosis of medical condition until weather information. The Meteorology, Climatology and Geophysics Agency (BMKG) manages data relating to weather, climate, and earthquake information in realtime. Currently the notification of the information is still done one way by using website and applications. To extend two-way communication with BMKG system, we can develop chatbot engine in social media to the existing information. This research implements chatbot engine on messenger telegram.
The information that a chatbot user can access is weather information, maritime weather, climate, earthquake information and weather alerts. Chatbot engine will serve the information searching according to the category, where in the process, the string matching algorithm will work to match the requested information. The next process is text mining in BMKG XML file. Stages that are done is parsing, trimming, matching, saving and compiling. After that chatbot engine will serve the information to the user. Performed testing will use using precision and recall to evaluate the suitability of information needed, and obtain performance of the searching and the results. The use of such methods accelerates the search for weather-related

data and information. The challenge of this text mining on chatbot engine is the amount of data or data volumes that are numerous and changing over time. This study shows that by using string matching on the telegram chatbot engine, it can improve the information seeker communication with BMKG and speed up the process of accessing of the requested information.

Keywords: chatbot engine, string matching, telegram, BMKG information

5. A Comparative Analysis Of Fourth Order Runge-Kutta And Homotopy Analysis Methods To Solve Three Basic Epidemic Models

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Abstract. All epidemic models include a system of non-linear differential equation. Mostly the analytical solution of epidemic models are difficult to obtain. There are many different methods to solve non-linear differential equation, one of the method is homotopy analysis method. The homotopy analysis method is an analytic approximation method using series solution for highly nonlinear equations. The advantage of this method is a guarantee the convergence of approximation power series solution by choosing the appropriate auxiliary parameter. In this paper, we consider three epidemic models in a closed population without demographics. We find the solutions of the proposed models by homotopy analysis method and then compare the numerical results with fourth order Runge-Kutta method. The homotopy analysis method gives a good result for the solutions of the epidemic models with a few iterations and the solutions obtained from this method are good as compared to fourth order Runge-Kutta numerical method.

Keywords: power series, epidemic models, fourth order Runge-Kutta, homotopy analysis method

6. Financial Feasibility Study Of New Product In Koperasi Sae Pujon

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Abstract. This KOPERASI SAE PUJON is a corporate that produced animal feed. Currently, KOPERASI SAE PUJON is developing new concentrate feed to solve the problem faced by the breeders of the current product. This new product is a combination of concentrate and dried forage that make breeders becoming more practical. This research is aimed to assess the financial aspect of this new product as well as the sensitivity analysis. Based on the analysis, the calculation using NPV method is IDR 9.201.527.868,00, greater than zero. Therefore the investment in this product is accepted. The calculation of BEP is 454.999 kg or equal to IDR 1.228.496.400,00. The calculation of PBP is 1,1 years, less than projected period (10 years), so the investment in this product is accepted. Sensitivity analysis shows if income decrease to 9,3%, operating cost increase to 8,1%, and income decrease to 4,4% followed by increasing of operating cost 4,4% at the same time the value of NPV become negative. The change of NPV into negative indicates that investment could turn into rejected decision if these variables turn beyond these boundaries.

Keywords: Break Even Point, financial analysis, new product, Payback Period, sensitivity analysis.

7. The Simulation Of Intensity Of Type 2 Right Censoring In Estimation Of Parameters Weibull Distribution Using R

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Abstract. Survival analysis is aimed to suspect the probability of survival, recurrence, death, and other events until a certain time period. There is the censor which consist of several types such as the left censored data, the right censored data, the censored interval data, and the censored random data in survival analysis. There are 3 types censoring from censored type data such as censoring data type 1, censoring data type 2 and progressive censoring. Due to some varieties of existing distribution, the research is conducted by using Weibull distribution survival function or live timing data is assumed to follow Weibull Distribution. The purpose of this research is to estimate the parameter of the Weibull distribution of censoring data type 2 and to do a simulation with the different censored intensities. The method used in the research is the maximum likelihood and the software used in the research is R 4.2.

Keywords: Survival Analysis, right censored data, Censoring data type 2, Weibull Distribution,Maksimum Likelihood Estimation, Simulation research

8. Implementation Of The Artificial Neural Network Algorithm For Prediction Of Credit Feasibility In Cooperation Bina Bersama Lampung Utara

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Abstrak. KSP BINA BERSAMA is a financial institution which is engaged in savings and loans. This study aimed to determine melakukakan granting credit worthiness of its customers. Financial institutions have a policy lending respectively. In granting credit policies set the standard for accepting or rejecting credit risk. Ratings are eligible to receive a credit to qualify Five C, the character Customer (Character), the capacity to pay off the credit (Capacity) the ability of capital owned by the customer (Capital), guarantees that customers have to bear the credit risk (Collateral) and the financial condition of the customer (Condition). In this study, the authors analyzed the predictions of the credit worthiness of the KSP BINA BERSAMA. The author conducted analysis using 10 patterns for determining credit worthiness ie salary, job, family card, ID card, collateral, United Nations, Business License / SITU, large and long installment loans as well as the value - average. Analyses were performed by applying the algorithm Backpropagation with 9 as the input variables and the X10 value - average as the output value. in this study I use training and testing with a pattern of 9-3-1 with three different learning rate is 0,1,0,8 and 0.5 with MSE 0.000001. From the results of the training and testing with existing customer data obtained accuracy achieve the desired target of about 88% with the average test time of 0.4 seconds

Keywords : Backpropagation,learning rate,fiveC, Charakter, capacity, capital, collateral, Condition, MSE

9. Modeling And Forecasting Data Industry

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Abstract. The aims of this study were to find the best model for some data Industry from index LQ45. Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model is used for modeling data industry. In time series data, sometimes we faced a problem that the variance is not a constant over time or we called heteroscedasticity. One of a model that can be used to deal with

this condition of heteroscedasticity is GARCH model. The GARCH model can be used to forecast time series data. Based on the results of calculation of he fitted model, the best model is AR(1)-GARCH(1,1) model. Based on the best model, the forecasting for the next 30 periods is predicted.

Keywords: heteroscedasticity, autoregressive, GARCH, forecasting

10. Statistical Test Using NIST Randomness Testing on PRNG Based on Digital Image Processing

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Abstract. Random Number Generator (RNG) is one of the building block or important part in cryptography. RNG is divided in two two characteristics, namely Trully Random Number Generator (TRNG) and Pseudo Random Number Generator (PRNG). In this paper, we do statistical test using NIST randomness testing on Pseudo Random Number Generator. PRNG build using trivium algorithm and an initial value or seed that generated from digital image processing. NIST randomness testing is test that contained of fifteen test and used to perform randomness of key sequence that produced by PRNG. The testing use 100 samples and each sample contained of 1.000.000 bit. Result of this research show that key sequences that produced using PRNG based on digital image processing is passed from all testing with α = 0,01, $\rho -$ valueγ = 0,0001, and proportion from each test in interval value of 0,99 + $3\sqrt{\frac{0{,}01(0{,}99)}{100}}$

Keywords : PRNG, Digital Image Processing, NIST Randomness Testing, Trivium.

11. Using Husk Ash As An Alternative Material To Improve The Quality Of Roof Made Of Clay

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Abstract. One of industry in Malang Jawa Timur produces clay tile with a mixture of of clay and sandy soil with conventional production processes. From the estimated approximately 10,000 tiles produced each month. there are some problem faced about defective products. Cause of the problem is the lack of knowledge about the importance of strong bending from products and standard which become criteria in quality of products. Indonesian National Standard on the strength of bending clay tile is SNI 03-6861.1 -2002 was become of standards. In addition, there is a wastes of husk ash that is still not utilized in around of location. Therefore, to improve and utilize of husk ash for subtitute material we use taguchi method. Based on the results of the analysis before the experiment, strong tile flexure is below the standard. There are four Factors that are considered for using in experiment, namely the composition of the raw materials, the number of grinding, the duration of drying, and the position of the tile burning. The Orthogonal Array design used is L_9 (3^4). Based on the results of Taguchi experiments conducted by the addition of rice husk ash on the composition of the tile dough, the optimal setting level is found, namely the composition of raw materials (75% clay: 20% sandy soil: 5% rice husk ash), the amount of tillage 2 times, Drying time for 7 days, and burning position below.

Keywords: Husk Ash, Quality, Bending, Standard, Taguchi Methods

12. Role and Innovation of Science (Maritime /Marine Informatics) in Strengthening Natural Resources

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Abstract. ASEAN Economic Community (AEC) and Trans Pacific Partnership (TPP) can be a serious threat (formerly). Now with USA withdrawing from TPP, our focus is AEC. How we anticipate the challenges and opportunities of good for Indonesia. Global market, product innovation, and quality skill of foreign workers are said to be a threat to Indonesia. Strengthening the potential of natural resources should be enhanced to address those challenges. Researchers focus on the potential of our natural resources namely maritime, marine reinforced by informatics into maritime / marine informatics.

Scientific innovation becomes a key answer to turn threats into opportunities. Variations of invention in the fields of biology, chemistry, computer science, informatics, mathematics, and physics can be woven and used to improve the quality of new products (maritime / marine), encourage production and distribution to increase (utilization) of these natural resources. Many inventions often need to be socialized and synergized to add value to our resources.

In an effort to dessiminate eliminate and improve the quality of the invention, the researcher presents exploration of maritime / marine informatics development and invention to strengthen the role of maritime / marine sector of Indonesia which has

the second longest coastline in the world. This information should be supported by the role of the Office of Communications and Informatics of the Regional Government which has the coastline.

Keywords: Maritime / marine informatics, communication and information services, coastline, local government.

13. The Influence Of Marketing Environment And Marketing Mix Towards Customers Satisfaction To Enhance The Local Sme's Competitive Advantage

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Abstract. Fruit Chip is one of the most well known SME's product in Batu Malang. This is due to the high number of fruit production produced in this city. In selling their products, local SMEs have to face the highly competition from other producers as well who also produced similar products. The increasing number of tourists who came into Batu City also encourage the local SME to capture this opportunity by producing food souvenirs such as fruit chip. Therefore, every local SMEs should make continuous improvements in all areas as well as improving the quality of their products especially to maintain and attract the consumers. One of the key areas that need to be developed is marketing by conducting marketing research. This marketing research is conducted by observing the marketing environment and marketing mix-7P's variable towards the customers satisfaction using Structural Equation Modelling (SEM). Based on the analysis using SEM, it can be seen that there is significant influence between marketing environment to marketing mix, and there is also significant influence between marketing mix variable to customer satisfaction variable. Where the variables that have the biggest influence on marketing mix is related to Employee, Promotions, Processes, and places.

Keywords: Customer Satisfaction, Marketing Environment, Marketing Mix, Small Medium Enterprises, Structural Equation Modelling

14. Project Resources Scheduling In Post-Harvest Machinery Industry Using Pert Method

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Abstract. PT. Semeru Jaya is a manufacturing company in metal casting and fabrication that produce high quality post-harvest machinery, for example: milling machine and mixer machine. These machines have several types in terms of size, usability, and how it works. The production process consists of casting process, cleaning process, machining process, assembly process and also finishing process. So far, the company has made project scheduling based on experience from the previous years. But in reality, the project completion time does not match the due date set by the company. Most of the product finished less than the due date that the company has been set before. This will affect towards the product inventory within the company. Higher inventory leads to the greater risk. Therefore, it is necessary to make a better plan and schedule. The method used in this research is PERT method, which considers three time characteristics on two projects that are done at about the same time. Resource leveling will be done considering there is some workforce needed at the same time. From the scheduling obtained by PERT method, the completion time is 19 days for Milling Machine project and is 28 days for Mixer machine project. This schedule is closer to the actual time than to the schedule set by the company.

Keywords: Milling machine, Multi project, PERT method, Project Management, Resouce leveling

15. Performance Appraisal Analysis For Spinning Operator With Combination Of Objective And Subjective Measures

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Abstract. Every textile industry must have a good method to analyze the performance of the operators. Based on observation, human resources department must design the best criteria to assess 42 operator performances by using A/B/C/D/E grade performance. In this research, it can be identified the appropriate objective and subjective criteria of operator. This criteria would be measure the criteria priority using Analytic Hierarchy Process (AHP). First step of this research is identifies operators performance criteria, objective and subjective measures. Objective measure divided into 4 sub criteria, subjective method divided into 10 sub criteria. Second, AHP was conducted to obtain the weight of each sub criteria. The value of each sub criteria of each operator was multiplied by weight of each sub criteria to obtain the final result. The final result of performance appraisal will be used to analyze grade of operator incentives. Based on this research, there are 14 sub criteria of operator performance appraisal based on objective and subjective measures. Using AHP, the biggest weight of objective criteria was attendance with 0.448. Biggest weight of subjective criteria was achievement orientation with 0.226. The result of performance appraisal was a range from 3.288 to 4.612

Keywords: Performance Appraisal, Objective and Subjective Measures, Analytical Hierarchy Process.

16. Multiple Imputation Methods for Missing Covariate Values in Recurrent Event Data

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Abstract. Multiple imputation is a method used to estimate missing observations. This method impute the missing observation several times then the possibility to obtain precise estimations are greater than just doing a one-time imputation. In this study the method will be applied to the recurrent event data to estimate the missing observations in the covariates. We will consider several multiple imputation methods that involve event indicator, event time, logarithm of event time, and cumulative baseline hazard. The recurrent event will be modeled using Cox's proportional hazard model. Monte Carlo simulation will be conducted to compare multiple imputation method with another imputation method based on relative bias values and Mean Square Error (MSE).

Keywords: Multiple imputation, recurrent event, Cox regression, Monte Carlo simulation.

17. K-Nearest Neighbor (K-Nn) Classification For Recognition Of The Batik Lampung Motifs

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Abstract. *Batik* is a famous name of a traditional fabric from Java. It has been admitted as one of the traditional cultural heritage of Indonesia by UNESCO since October 2nd, 2009. Over the time, Batik is copied and modified by many regions in Indonesia resulting some new unique motifs (patterns). Batik Lampung is an example of them. This paper deals with the k-Nearest Neighbor classification of the motif of Batik Lampung. The known motifs of Batik Lampung consist of *Jung Agung, Siger Kembang Cengkih, Siger Ratu Agung,* and *Sembagi.* The original image samples are stored in RGB. They are firstly resized into 50x50 pixels and

then converted into grayscale image. To recognize them, the Gray Level Co-Occurrence Matrix (GLCM) feature is extracted and k-Nearest Neighbor (k-NN) with values of k = 3, 5, 7, 9, 11 and orientation angle of 0^0, 45^0, 90^0 and 135^0 is applied to classify the motifs. The best accuracy is achieved at the rate 97.96% for k = 7 and angle 135^0.

Keywords: *Batik Lampung*, Classification, Gray Level Co-Occurence Matrix (GLCM), k-Nearest Neighbor (k-NN), Pattern Recognition, Lampung

18. Determination Of Standard Time In Packaging Processing Using Stopwatch Time Study To Find Output Standard Of Shrimp Feed Bag

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Abstract. Time is one of the factors to know a worker's performance in utilizing the available resources. Operator in his work requires efficient time to improve work productivity. One of factory in produce a shrimp feed in Surabaya has a large production level. In the production process, the packaging department in this company still uses human to production process and the company define the standard of production without using standard time. This is show that company need a logical analysis for determine this. An analysis is needed to determine the standard time of the packaging process. Objects observed are 4 operators of the packaging with the activities carried out in the form of filling bag of shrimp feed with each data taken 40 replication. Work measurement is done by direct method using Stopwatch Time Study (STS) with snap-back method. From the results obtained the standard time value of 4 line packaging is not much different / almost the same. Sequentially the standard time workers line 1 to line 4 is 7.325 seconds, 7.240 seconds, 7.225 seconds, and 7.065 seconds. Allowance used for workers is 8%. For comparison of company output with output calculation that is output produced by company is higher than output calculation, with the difference of sequence from worker line 1 to line 4 that is 1 unit / minute, 1 unit / minute, 0 unit / minute, and 1 unit / minute.

Keywords: Productivity, Standard time, Stopwatch time study, Output Standard

19. NCI : Propose Design of Key Establishment Protocol to Reducing Key Storage in Server

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Abstract. In this paper, we design a new key establishment protocol called NCI. The protocol works using a trusted third party and based on symmetric certificate. We use block cipher algorithm, hash function and MAC to guarantee the aspect of confidentiality and integrity of the data. This protocol also use time stamp and nounce to prevent man in the middle attack, replay attack, typing attack, certificate manipulation attack, modification attack, and reflection attack. Moreover, symmetric certificate is used to reduce the burden of third party in key storing. Designed of key establishment protocol is implemented with a simple simulation program using java program. In this protocol also conducted an analysis of man in the middle attack, replay attack, reflection attack, typing attack, certificate manipulation attack, modification attack, and reflection attack to test the strength of the protocol. The result of analysis show that NCI key establishment protocol fulfil security and authenticity of the key.

Keywords: Key Establishment, NCI Protocol, Symmetric Certificate, Attack

20. Mean-Var Portfolio Optimizations Based On Multiple Index Models With Non Constant Volatility And The Long Memory Effects

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Abstract. Establishing an optimum portfolio is a strategy of an investor to face risky investments. This paper analyzes the formulation of Mean-VaR portfolio optimization under multiple index models with non-constant volatility and long memory effects. In this research, it is assumed that the stock returns react to the changes in general market indices and the other indices as well. Where the general market index and other index have non-constant mean and volatility, and there is also the long memory effect. The non-constant mean is estimated using ARFIMA models, whereas non-constant volatility is estimated using GARCH models. Furthermore, the analyzed mean and variance of stocks are estimated using multiple index models. These mean and variance estimators are used to calculate the Value-at-Risk (VaR) as a measure of risk. The process of portfolio optimization is done based on the Mean-VaR model, using the Lagrangian multiplier approach and Kuhn-Tucker's theorem. The result of optimization analysis shows that the weight vector composition at minimum risk is $\mathbf{W}^{'}$ =

(0.1191, 0.2393, 0.0855, 0.2626, 0.2936), with a portfolio mean is 0.0244 and Value-at-Risk is 0.0457. Therefore, for investors who need the information of a portfolio with minimum risk, their investment capital allocation must follow the composition of the weighted vector produced.

Keywords: asset return, model indeks models, ARFIMA models, Lagrangian Multiplier, Kuhn-Tucker.

21. Bayesian Method for Big Data

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Abstract. The Bayesian methods have been developed of large data sets that are too big to be analyzed. R package BayesSummaryStatLM for Bayesian linear regression model with Markov chain Monte Carlo implementation that overcomes these limitations. Summary statistics of data as input use Bayesian models and be calculated from subset of big data and combined over subsets. R package ff for reading in big data sets while simultaneously calculating summary statistics. In these paper, we describe our Bayesian linear regression model including several choices of prior distribution for unknown model parameters, and illustrate of our R package.

Keywords: Big Data, Bayesian Method, Bayesian linear regression, Markov chain Monte Carlo.

22. The Modified Prim's Algorithm To Solve The Multi Periods Installation Problem

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Abstract. Given a graph G(V,E), where V is the set of vertices and E is the set of edges connecting vertices in V, and for every edge e_{ij} there is an associated weight $c_{ij} \geq 0$, The Multi Period Degree Constrained Minimum Spanning Tree

(MPDCMST) is a problem of finding a minimum cost whist also maintaining the degree restriction on every vertex, and satisfying vertices installation on every period.. The later constraint occurs usually because of the fund limitation for installing (connecting) the network. In this research we propose three algorithms to solve the MPDCMST Problem, and implement those algorithms using 300 generated random table problems. Moreover, we compare our algorithms using those that already in the literature and show that the proposed algorithms perform better.

Keywords: multi periods, degree constrained, Prims' algorithms, comparative analysis

23. The Hybrid Of Modified Prim's And Modified Penalty Algorithms To Solve The Multiperiods Degree Constrained Minimum Spanning Tree Problem

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Abstract. The Degree Constrained Minimum Spanning Tree (DCMST) is a problem for finding a minimum spanning tree (MST) for a given graph G(V,E) with nonnegative weight edges, while also maintaning the degree restriction on every vertex. This problem arises in many application in designing network. However, due to some constraints such as fund limitation, weather, etc, the installation process of the network must be done in some periods. Therefore, the Multiperiod Degree Constrained Minimum Spanning Tree (MPDCMST) problem is the DCMST problem with an added constraint, which is period. In this paper we propose two algorithms (WAR1 and WAR2) to solve the MPDCMST Problem, and implement those algorithms using 300 problems that already in the literature. Moreover, we compare our algorithms with those already in the literature and show that one of the proposed algorithms (WAR1) is the best among the others.

Keywords: multi periods, degree constrained, hybrid, Prims' algorithms, modified penalty

24. Solving The Multi Periods Degree Constrained Minimum Spanning Tree Using Modified Prim's Algorithm And Gnu Octave

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Abstract. The Minimum Spanning Tree (MST) is a wellknown problem and used as the backbone problem in many network design problem. Given a graph G(V,E), where V is the set of vertices and E is the set of edges connecting vertices in V, and for every edge e_{ij} there is an associated weight $c_{ij} \geq 0$, The Multi Period Degree Constrained Minimum Spanning Tree (MPDCMST) is a problem of finding an MST while also considering the degree constrained on every vertex, and satisfying vertices installation on every period. We developed two algorithms for solving this problem (MPDCMST_early and MPDSMST_later) and used GNU OCTAVE for coding and visualization. We implement those algorithms using 300 generated random table problems. Moreover, we compare our algorithms using those that already in the literature and show that our proposed algorithms are competitive.

Keywords: multi periods, degree constrained, Prims' algorithms, gnu octave

Physics

1. Developing Ultrafine(Micro-/Nano) Bubble Generator and Their Application

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Abstract. Recently, the development of ultrafine bubble including of microbubble and nanobubble technologies is increasingly in demand, this is because of their wide applications in many fields. This paper reportof our research related to developing of ultrafine generator using swirl flow method. Swirl flow method is one method that is quite efficient in mixing gases and liquids and relatively require less energy. We has been developing of swirl type microbubble generator. Bubble size analyzer was measured using particle image velocimetry. Online monitoring ofdissolve oxygen and water quality also developed to monitoring characteristics of water quality due to micro-/nanobubble exsisting in water.The application of micro / nano bubble generator for fishery and processing industrial wastewater will reported too.

Keywords: Ultrafine bubble, microbubble, nanobubble, oxygen, ozone.

2. Design Of Phonocardiography Which Equipped Heart Sound Feature Extraction Using Wavelet Transform

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Abstract. Auscultation is a techniques of listening of heart sounds by stethoscope. Abnormality in the heart sound can be sign of heart problem. Nonetheless heart sounds and murmurs are very small in amplitude and frequency so make it difficult to hear. Especially for a doctor with different experience and sensitifity of ear which could lead to false diagnosis. Therefore, it was require the appropriate techniques to analysis of heart sound signals using phonocardiography. In this study, we have designed a phonocardiography to record, analyze, and classify the heart sounds of normal, aortic regurgitation, aortic stenosis, mitral regurgitation, mitral stenosis, and patent ductus arteriosus.The study stages are recording the human heart sound, pra-processing, feature extraction, classifying, and post-processing all using Matlab 7.8.0. We used daubechies wavelet function (dB 10) for feature extraction and filtering signal. In feature extraction the heart sounds is decomposed until 3 level using wavelet packet. The classifier of the heart sound signals is backpropagation Artificial Neural Network (ANN) with structures of 8 neurons input, 8 hidden neurons and 6 neurons output. Based on the study we obtained accuracy percentage in recognized all types of the heart sounds is 75% .

Keywords: heart sound, phonocardiography, wavelet transform.

3. Measurement of Impact Force on Runner's Foot During Stance Phase

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Abstract. Running is one of daily sports that mainly using lower extremities as the thrust. There is a stance phase in running, a time when one foot is touching the ground. The impact forces during this phase can be measured using force plate. The other thing, running shoes become one of the most interesting trends in running. There have been many research studies to improve the efficiency of running and to decrease injuries using proper shoes.

The aim of this research is to analyze the effect of two types of running shoes on runner's foot during stance phase, using two force plates equipped with specified track board. The main method that will be discussed in this paper is system design of gait analysis with specific setting, in order to acquire ground reaction force data. Then we use that experimental data to calculate the impulse during stance phase

using Trapezoidal rule. The benefit of this study is to provide information and new ideas about running and its prevention over an injury.

Keywords: force, force plate, impulse, running, stance phase

4. A Facile Microwave-Assisted Synthesis of Carbon Dot and Their Application as Sensitizers in Nanocrystalline TiO_2 Solar Cells

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Abstract. The main aim of this research is to synthesize of the carbon-dots (C-dots) using facile microwave-assisted method and utilize them as sensitizers in the DSSCs. Sensitizers play an important role in dye-sensitized solar cell (DSSCs) to harvest photons and convert them to electrons assisted by semiconducting photoanode. Nowaday, ruthenium complex is the most common used as sensitizer due to its broad light absorption. However, the ruthenium material is very expensive due to its rare materials and complex synthesis process. The C-dots are synthesized by mixing 48 g of urea, 24 g of citric acid and 180 mL of aquades acid. The C-dots are synthesized using a microwave at 450 W for 15, 30, and 45 min.

The C-dots emit green light induced by exposure to ultraviolet (UV) light. The absorbance peaks are increasing from 408, 414 and 420 nm repectively corresponding to 15, 30, and 45 min of C-dots heated by microwave radiation. On the other hand, the C-dots have broad absorbance range, especially at visible light range. The second lower peak should be caused by π to π^* transition at aromatic sp. Figure 3 show low transmittance at 3460, 1661 and 1455 cm^{-1} repectively corresponding to group functions of amine N-H vibration, alkene C=C vibration, C-O and N-O. The peaks from 1230 to 1161 cm^{-1} show different vibration modes of carboxyl, ester, ether and alcohol moeties. The research shows that the wavelength of the C-dots decreases and the band gaps of c-dots increase as the heating time in microwave get longer. The increases of band gap informs that the C-dots size get smaller.

The DSSC devices are characterized under solar simulator AM 1.5G illumination at 100 mW/cm2 light intensity. The results 0.067% of the power conversion efficiency (PCE) and 0.34 of the fill factor (FF) are reached as the highest performance reached in this study. Additionally UV-vis spectra shows broad light absorption throughout the visible light with the band gap of about 2.68 eV. The results show that the c-dots synthesized using facile method have emerged as alternative photosensitizer due to its broad light absorption comparable to ruthenium-based dye

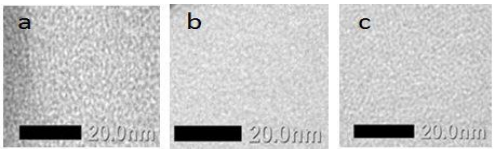

Figure 1. Transmission Electron Microscopy (TEM) of C-dots with synthesis time (a) 15 min (b) 30 min (c) 45 min

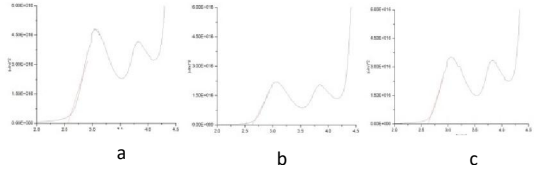

Figure 2. Band gap of C-dots with synthesis time (a) 15 min (b) 30 min (c) 45 min.

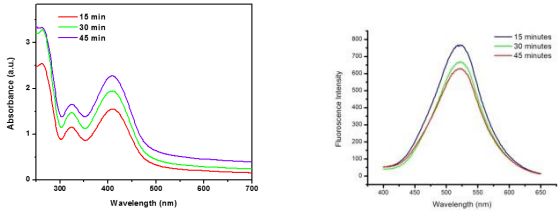

Figure 3. (a) Absorbance and peaks corresponding to band gap of carbon dots at the different synthesis time (b) Photoluminescence properties of carbon dots at the difference of synthesis time with excitation wavelength 365 nm.

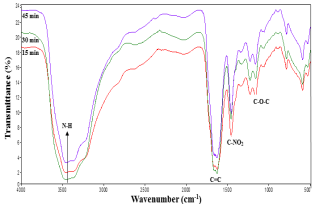

Figure 4. Fourier Tansform Infrared Spectroscopy (FTIR) spectra of the C-dots at the different synthesis time.

Keywords: Carbon Dots, DSSCs, Microwave, Sensitizer

5. Resolution Increasing Of Earthquake Early Warning System Through Calibration And Characterization Fluxgate Magnet Sensor, Soil Temperature Sensor, Receiver And Transmitter Fm

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Abstract: In studies Design of Earthquake Early Warning System for Real Time Using Geomagnetism and Total Electron Content with Fuzzy Logic in Lampung through competitive grants scheme has been successfully established system (Setiawan, 2014). However need improvements on sensor system in calibration and characterization for fluxgate magnetometer sensor, soil temperature sensor, stability of the FM transmitter and the receiver. This calibration is done by the system adjust sensor measuring devices existing standards on TPM laboratory to obtain a measurement accuracy.

Keywords: calibration, earthquake early warning

6. The Effect of Ozone *Dielectric Burrier Discharge (DBD)* Towards Reduction of Microorganism in Eggs

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Abstract. Food materials for example eggs have a fairly high nutritional content, especially protein. However, eggs can be easily damaged. They will experience quality decrease within 14 days stored at room temperature. Moreover, they will rot fast because it is easily contaminated with microorganisms. There are many ways to prevent rottenness in eggs, such as conventional techniques of salting, fumigation, or by immersion in an extract, but all of those ways do not produce satisfactory results. The purpose of this study is to know the effect of ozone gas exposure using *Dielectric Burrier Discharge (DBD)* method towards the reduction of microorganisms in eggs. Ozone, as a powerful oxidizer, is expected to be used as a desinfectant for algae, fungi, and bacteria. This study uses four samples,

without ozonation (A), 10 minutes of ozonation (B), 20 minutes of ozonation (C) and 30 minutes of ozonation (D). Each of samples was observed during 7 day. The result of *Total Plate Count (TPC)* of *Salmonella Sp.* on the shell of the samples A, B, C, and D respectively TBUD, TBUD, 2.2 x 10^5cfu/ml, 1.6 x 10^5cfu/ml, whereas in successive contents TBUD, TBUD, 2.1 x 10^5cfu/ml, 1.5 x 10^5cfu/ml. The result of *TPC* test of whole bacterial colonies on sample shells A, B, C, D were 2.9 x 10^5cfu / ml, 1.6 x 10^5cfu/ml, 0.9 x 105cfu/ml, 0.73 x 10^5cfu/ml, whereas in successive contents TBUD, 2.4 x 10^5cfu/ml, 1.7 x 105cfu/ml, 0.7 x 10^5cfu/ml. From the result above, it can be concluded that the most effective time on adding the ozonation is on sample D, which is exposed for 30 minutes. This also corresponds to other test results such as pore density test, hock test, and texture test. This research is expected to introduce ozone technology as a solution in extending the storage time and reducing the possibility of microbial contamination in eggs.

Keywords: Dielectric Burrier Discharge (DBD), Eggs, Microorganism, Ozone

7. IDENTIFICATION OF SCIENCE PROCESS SKILLS ON SCIENCE SUBJECTS IN JUNIOR SCHOOLS

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Abstract. Scientific process skills include essential skills that must be obtained in the implementation of science lessons. The purpose of this study is to identify the science-based process skills that can be trained in science subjects in junior high. The research method used is quantitative research. Data were obtained from the ploting of basic competencies and science process skills. The results obtained are that there are 80% of science process skills potentially trained in science subjects in junior high school. The implications of this research can be acted upon to develop learning tools that maximize the implementation of science process skills in science subjects in junior high.

Keywords: Identification, science process skills, science

8. Resolution Analysis of Simple Turbidity Meter Using LED-LDR and Its Data Recording System

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Abstract. It has been designed and realized an instrument for water detecting as turbidity using LED - LDR. We have used microcontroller of Arduino UNO R3 for signal digital processing. Outputs of water quality measurements are displayed on the I2C LCD monitor and recorded on the SD Card. At the calibration stage, the system has been tested using normal water and the addition of each drop of condensed milk, the same response as compared to the standard turbidity meter. The test results show that the more droplets of milk gives the greater response, starting from 0.9 mV up to 498 mV, whereas the standard tool shows values ranging from 0 NTU to 130.6 NTU. The instrument that we have been realized shows a good linearity and has a resolution of 2.45 mV / NTU.

Keywords: water quality, data acquisition, sensors, environment, optocoupler.

9. Thin Film Silver Nanorods Prepared by Dip Coating Process for Optoelectronic Applications

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Abstract. In this paper, we report our investigation of the performance of thin layer based on silver nanorods using dip-coating method. The synthesis was conducted by polyol method at an oil bath temperature of 140 °C. In the synthesis silver nanorods, materials were used silver nitrate ($AgNO_3$) as main raw material, ethylene glycol (EG) as a solvent, and a small amount of sodium chloride (NaCl) as a mediated-agent. Polyvinyl alcohol (PVA) used as a capping agent and stabilizer in this process. Diameter and length of silver nanorods were 800 nm and 15 μm, respectively. Furthermore, the silver nanorods suspension was deposition onto a glass substrate with a variation of dipping cycles. The result showed the thickness of the thin layer is linear with a number of dipping cycles. Electrical and optical properties of thin layer show that sheet resistance under of 30 Ω.sq-1 and transmittance above of 80%. The silver nanorods this film can be used as a conductive and transparent electrode for various applications.

Keywords: silver nanorods, transparent electrode, optical properties, conductivity, dip-coating

ABSTRACT POSTER

1. Vegetative Growth of F1 Tomato Plant (Lycopersicum esculentum Mill.) As a Result of 0,2 mT Magnetic Field Induction and Infected by *Fusarium oxysporum* f.sp. *Lycopersici*

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Abstract. The main problem in tomato cultivation is infection of pathogenic microbes causing disease, such as *Fusarium oxysporum*, fungus causing fusarium wilt that can cause death in plants. The results of previous research indicate that treatment with a 0.2 mT magnetic field in tomato seeds can cope with fusarium wilt disease attacks. The magnetic field is known to increase the vigor of sprouts and the growth of tomato plants. The purpose of this study was to determine whether the effect of 0.2 mT magnetic field on tomato seed infected by *Fusarium oxysporum* can be maintained in the F1 tomato seeds produced. The study was arranged factorially using Completely Randomized Design (CRD) with two factors and 4 replications. The first factor is the type of F1 tomato seeds consist of: M_0F_0, M_0F_{60}, M_7F_0, M_7F_{60}, $M_{11}F_0$, $M_{11}F_{60}$, $M_{15}F_0$, $M_{15}F_{60}$. The second factor is infection of *Fusarium oxysporum* f.sp. *Lycopersici* (*Fol*). The measured vegetative growth parameters were plant length, plant dry weight, and root/shoot ratio. The data obtained were analyzed using anova followed by Fisher test at α = 5%. The results showed that the significant differences in plant height and dry weight of plants as a result of seed treatment. Different roots/ratio responses were obtained from treatment of *Fol* infection.

Keywords: *Lycopersicum esculentum* Mill, *Fusarium oxysporum* f.sp. *Lycopersici*, plant height, plant dry weight, root-shoot comparison.

2. Influence of The Strength Nfluence Of The Strength And Duration Of Magnetic Field On Cell of *Bacillus* sp. Cell To The Activities Of Protease Enzyme

Balqis Ananda Putri, Sumardi, Rochmah Agustrina, C.N. Ekowati

Abstract. Microorganisms are the most widely used organisms to produce enzymes compared to plants and animals because of their faster growth and can grow on inexpensive substrates, their production more easily enhanced through control of growth conditions and genetic engineering. This descriptive study aims to determine the effect of strength and duration of magnetic field exposure on protease activity of Bacillus sp. The data obtained are presented in the form of drawings and bar charts. The results showed that the highest proteolytic index value (5.12) was obtained from the magnetic field strength treatment of 0.2 mT for 30 min (K2L3) and the lowest was obtained from the 0.2 mT magnetic field treatment for 10 min (K2L1). The highest of colonies of *Bacillus* sp. was obtained from the magnetic field strength treatment of 0.2 mT for 10 min (K2L1) and the lowest was obtained from the 0.1 mT magnetic field treatment for 10 min (K1L1). The highest perotease activity (0.30 U / ml) was obtained from a magnetic field strength of 0.1 mT for 30 min (K1L3) and the lowest protease activity was obtained at 0.2 mT exposure for 10 min (K2L1) and 0.3 mT for 20 minutes (K3L2). The growth of *Bacillus*sp. Is obtained from a magnetic field strength of 0.1 mT for 10 min (K1L1) with a log of cell number of 7.61.

Keywords : *Bacillus* sp., magnetic filed, protease enzyme.

3. Biodiversity Of Banana (*Moses* spp.) Germplasm Based On The Number Of Cromosomes And Types Of Genom In Bandar Lampung City

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Abstract Banana is a popular fruit because of its high nutritional content. Lampung Province is the highest banana production center in Indonesia. The purpose of this research is to know biodiversity of banana germplasm (Musa sp.) in Bandar Lampung City based on chromosome number and genome type. This research was conducted at Botanical Laboratory of Biology Department, Faculty of Mathematics and Natural Sciences, Universitas Lampung, from March to May 2017. The research was conducted in three steps: collection of banana plants taken randomly from 12 District in Bandar Lampung City, morphological characterization for genome determination of banana plants based on 15

characters of Simmonds and Shepherd 1955, as well as the determination of the chromosome number using the squash method. The results showed that there are 27 types of bananas in the Bandar Lampung City. Based on the determination of Sainsoi and Chamchalow 1987, there were 26 types of bananas belonging to the genus of Moses acuminata, Moses balbisiana, Moses paradisiaca, and 1 type of the genus Rhodhoclamys namely Musa ornata. The diversity of the existing bananas in Bandar Lampung City is moderate. The bananas have varied genomic types such as AA consisting of 5 accessions, AAA consists of 4 accessions, AAB consists of 5 accessions, ABB consists of 3 accessions, ABBB there is only 1 accession, and BBB consists of 3 accessions. There are 5 other accessions that the genome has not yet been determined because they have passed their generative phase. The five accessions of bananas have a number of 22 (diploid), 33 (triploid) and 44 (tetraploid) chromosomes.

Keywords: banana plant, chromosome number, genome type, and squash method

4. Stomata Index, Clorophyll And Carbohydrate Content of F1 Tomato Plant (*Lycopersicum Esculentum* Mill.) As a Result of 0,2 mT Magnetic Field Induction and Infected bya *Fusarium Oxysporum* f.sp. *Lycopersici*

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Abstract. Tomato (*Lycopersicum esculentum* Mill.) is one of the horticultural commodities which have high economic value for its utilization in the community. However, tomato cultivation faces a lot of constrained, including *Fusarium oxysporum* attact causes fusarium wilt disease. From previous research it is known that 0.2 mT magnetic field exposure on *Fusarium oxysporum* (*Fox*) infected tomato seeds produces tomato plants that can survive to grow so that the result is similar to plant growth from uninfected *Fusarium* sp. (control). The purpose of this study was to investigate the resistance of F1 plants infected with *Fusarium oxysporum* f.sp. *licopersici* (*Fol*). The study was arranged factorially using a Completely Randomized Design (CRD) consisting of 2 factors an 4 replications. The first factor is the F1 tomato seeds (B) derived from plants whose seed is exposed to a magnetic field of 0.2 mT and infected by Fusarium sp. consists of: M_0F_0, M_0F_{60}, M_7F_0, M_7F_{60}, $M_{11}F_0$, $M_{11}F_{60}$, $M_{15}F_0$, $M_{15}F_{60}$. The second factor is infection of *Fusarium oxysporum* f.sp. *Licopersici* (F). The parameters tested were stomata index as well as both chlorophyll and carbohydrates content. The data obtained were analyzed using anova followed by the Fisher test at $\alpha = 5\%$. The results showed that tomato plants originating from seeds exposed to magnetic fields can produce F1 seeds which also produce F1 tomato plants that can survive the infection of *Fusarium oxysporum* f.sp. *Licopersici* (*Fol*) which is indicated by stomata index, chlorophyll and

carbohydrate content which is not significantly different than the three parameters in the control plants.

Keywords: Tomato, *Fusarium oxysporum* f.sp. *Licopersici*, stomata index, chlorophyll and carbohydrate content.

5. Physiology And Anatomy Of Tomato Plant (*Lycopersicum esculentum* Mill.) F1 Indicated Magnite Medicine Products *Fusarium oxysporum* f.sp. *lycopersici*

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Abstract. Tomato fruit is known for its high nutritious content that is widely cultivated. Nevertheless tomato cultivation encountered many obstacles, one of which is a fungus attack, Fusarium sp., causes fusarium wilt disease. Previous research proves that exposure to magnetic fields in tomato seeds can increase the vigor of sprouts and the growth of tomato plants. The purpose of this study was to test the growth of tomato F1 induced by the magnetic field infected by Fusarium oxysporum f.sp. Lycopersici (Fol). The parameters measured were: diameter of the parenchyma cell, lignin thickness of xylem, peroxidase activity, content of vitamin C. The study was arranged factorially using Completely Randomized Design (CRD) with two factors and 4 replications. The first factor was F1 tomato seeds (B) obtained from tomato plants whose seeds were induced by 0.2 mT and infected with *Fusarium oxysporum.* The second factor is infection of F1 seed by Fol (F). The data obtained were analyzed variance followed by Fisher test at α = 5%. The results showed that the treatment of seed (B), Fol infection (F), and the interaction of seed treatment and Fol infection (BxF) caused significant differences in the vitamin C content. The diameter of parenchyma cells only showed significant differences in response to treatment B. Activity Peroxidase enzyme showed only significant difference in response to BxF treatment, whereas lignin thickness of xylem cells showed no significant different response at all treatments.

Keywords: Diameter of parenchyma cell, lignin thickness. Vitamin C content, *Lycopersicum esculentum* Mill, peroxydase enzyme, and *Fusarium oxysporum* f.sp. *lycopersici.*

6. Antioxidant Effects Of Leaf Extract *Passiflora Foetida* And Taurine To Response Hepar Histopathology Of Mice Induced By Paraquat

Retno Khusniati Rofiqoh

Abstract. Paraquat is a toxic compound wich induce the molecules of ROS (*Reactive Oxygen Species)* through a series of cellular processes. ROS formed by paraquat can reduce the activity of antioxidants in the body, causing damage to vital organs such as the liver. To reduce the damage of ROS's activity, needed source of antioxidants such as Taurine which able to capture free radicals and stop the production of ROS molecules from paraquat exposure. In addition to taurine, *Passiflora foetida* leaves are also a source of antioxidants. *Passiflora foetida* leaves contain polifenol and flavonoids which act as antioxidants.

This study aims to determine the effect of *Passiflora foetida* leaves dan Taurine on the liver to repair histopathological of mice which suffe from ROS damage. The research used completely randomized design (CRD). Mice were divided into four treatment groups, such as control groups (K0), a group of paraquat (K1) at a dose of 20 mg/kgBW/ six times intraperitonaly for 21 days, group of Paraquat+ *Passiflora foetida* (K2) at a dose of 20 mg/kg BW/ six times intraperitonaly for 21 days + *Passiflora foetida* at dose 500mg/kg BW/days orally for 21 days, and group of Paraquat+ *Passiflora foetida*+Taurine (K3) at a dose of 20 mg/kg BW/ six times intraperitonaly for 21 days + *Passiflora foetida* at dose 500mg/kg BW/days orally for 21 days + at dose 15,6mg/BW/days orally for 21 days.

Data were analyzed with one ways ANOVA ($p<0.05$) followed by the *Least Significant Differences* (LSD), the result showed the provision combined of *Passiflora foetida* and taurine can reduce liver cells of male mice that were treated by herbicide paraquat.

Keywords : liver histopatology, paraquat, *Passiflora foetida,* ROS, Taurine

7. The Influence Of 0,2 Mt Magnetic Field Exposure On Media Containing Metal (Al, Pb, Cd And Cu) On The Activity Of *Bacillus* Sp. In Producing Protease Enzyme

Shofia Rodiah

Abstract. *Bacillus* sp. is including one of the potential microbial species in producing protease enzymes because they does not produce toxins, easy to grow, required low cost substrate and can survive at high temperature. The protease enzyme is extracellularly produced by microorganisms and has an important role in cell metabolism, as well as the regulatory process within the cell. The environmental factors such as metal ions and magnetic fields can act as activators and inhibitors in *Bacillus* sp. in producing protease enzymes. The purpose of this study is to determine the effect of 0.2 mT magnetic field exposure on media containing Al, Pb, Cd and Cu Metal to the value of proteolytic index of *Bacillus* sp. and the protease activity of *Bacillus* sp.

This study consists of several stages of 10 treatments with two combination factors, namely exposure to magnetic fields (P) and metal ions (L). The treatments are P_0L_0, P_1L_0, P_0L_{Al}, P_1L_{Al}, P_0L_{Pb}, P_1L_{Pb}, P_0L_{Cd}, P_1L_{Cd}, P_0L_{Cu} and P_1L_{Cu}. The first stage is the proteolytic test in the modified Mendels solid media. The next stage is the production of protease enzymes in the modified Mendels liquid media. The results showed that exposure to 0.2 mT magnetic field for 10 minutes in solid media on Cu metal ion yielded the highest average value of Proteolytic Index of *Bacillus* sp. i.e. 4.33 and in the liquid medium of the Al metal ion yielded the highest average value of protease activity of *Bacillus* sp. i.e. 0.14 (U /ml), while exposure of 0.2 mT magnetic field for 10 minutes on Cd metal ion inhibits the growth of *Bacillus* sp.

Keywords: *Bacillus* sp., Protease, Magnetic field, Metal ion

8. Production of F1 Tomato Plant (*Lycopersicum esculentum* Mill.) As a Result of 0,2 mT Magnetic Field Induction and Infected by *Fusarium oxysporum* f.sp. *Lycopersici*

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Abstract. Tomato (*Lycopersicum esculentum* Mill.) is one of multipurpose vegetables that have high economic value. However, many tomato cultivation is constrained by *Fusarium oxysporum,* a fungus causing fusarium wilt that can cause plant death. The exposure of magnetic field to tomato seed is known to inhibit the attack power of fusarium wilt disease so that the plant can survive and its production is relatively high compared to the control plants. The purpose of this study was to assess the productivity of F1 tomato plants from tomato seeds induced 0.2 mT magnetic field and infected with Fusarium oxysporum. The study was arranged factorially using Completely Randomized Design (CRD) with two factors and 4 replications. The first factor is the type of F1 tomato seeds consist of: M_0F_0, M_0F_{60}, M_7F_0, M_7F_{60}, $M_{11}F_0$, $M_{11}F_{60}$, $M_{15}F_0$, $M_{15}F_{60}$. The second factor is infection of *Fusarium oxysporum* f.sp. *Lycopersici* (*Fol*). Productivity data obtained were analyzed using anova and continued by Fisher test at α = 5%. The results showed that the productivity of FI tomato plants was similar to that of the parental plant, which was shown by the similarity in the rate of fruit formation, the number of fruits, the size and weight of the fruit, and the size of the seeds both from large and from small fruits. The number of F1 tomato seeds from both large and small fruits has decreased as a result of treatment of *Fol* infection, whereas in the parental plants, the treatment of *Fussarium oxysporum* infection did not cause significant differences in the number of seeds of both large and small fruits.

Keywords: *Lycopersicum esculentum* Mill., *Fusarium oxysporum* f.sp. *Lycopersici*, magnetic field, and tomato production

9. Characterization Of Enzyme Protease From *Bacillus* Sp. On Media Containing Nacl Exposed To Magnet Field 0.2 Mt

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Abstract. The purpose of this study was to determine the character of protease enzymes from Bacillus sp. On a media containing NaCl as inductor exposed to a magnetic field of 0.2 mT. Characteristic test were performed on culture medium where NaCl was not exposed to magnetic field (as a control) and on medium given NaCl 0.1% exposed to magnetic field of 0.2 mT for 10 minutes (as a treatment). Characterization of protease enzyme was carried out in the pH range 4-12, the temperature range 25°C-70°C with temperature increase of 5 °C for each test temperature test,using the EDTA as inhibitor, whereas $MnSO_4$,$CaCl_2$,$CuSO_4$, $MgSO_4$,and $FeCl_3$ are used as activators, each with a concentration of 1 mM and 5 mM. Kinetics of enzyme reaction are determination based on protease activity test at optimum pH and temperature using casein as substrate with concentration: 0, 0.50, 1, 1.50, 2 and to 2.50%. The data obtained were analyzed descriptively. The results obtained show that the optimum pH and temperature for protease enzyme on the control medium is pH 8 at the incubation temperature of 30°C, it can be inhibited by EDTA, $FeCl_3$ (5 mM) and $MnSO_4$ (5 mM), whereas $MgCl_2$ (5 and 1 mM) and $CuSO_4$ (1 mM) acting as an activator. K_m value = 2.48 mM and V_{max} = 0.19 U/ml. In the treatment medium, the pH and the optimum temperature for the protease enzyme are at pH 6 and incubation temperature of 45°C, can be inhibited by EDTA, $FeCl_3$, $MnSO_4$ and $CaCl_2$, while $MgCl_2$ and $CuSO_4$ (1 mM) act as activators. K_m values= 51.43 mM and V_{max} = 2.34 U/ml.

Keywords: *: Bacillus* sp., Protease, Enzyme characterization, Magnetic field.

10. Characterization Of Protease From *Bacillus* Sp. On Medium Containing $Fecl_3$ Exposed To Magnetic Field 0.2 Mt.

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Abstract. This purpose of this research is to determine the character of the protease enzymes from *Bacillus* sp. on media content of $FeCl_3$ exposed to 0.2 mT magnetic field. The data obtained were analyzed descriptively. The result showed that protease enzyme without Fe resulted in the highest
activity at pH 8, temperature 30°C with addition of activator Mn^{2+}, and V_{max} of 0.28 U / ml, and K_m of 4.60 U / ml. The protease enzyme on media without magnetic field exposure and containing Fe

yielded the highest activity at pH 8, temperature 30°C with addition of activator Mn^{2+}, and V_{max} of 0.33 U / ml, and K_m of 5.64 U / ml. The protease enzyme on media with magnetic field exposure and use Fe as inductors has the highest activity at pH 9, temperature of 55° C with addition of activator Mn^{2+}, and V_{max} of 0.35 U / ml, and K_m 10.04 U / ml.

Keywords: Bacillus sp, Protease Enzyme, magnetic field 0,2mT, Fe ion

11. Evaluation of food grade solvents for oil extraction of papaya seed

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Abstract. This study evaluated the impact of different food- and non-food grade extraction solvents on yield and character of the oil extracts of papaya seed. Papaya is known for its nutritutional values largely consumed in tropical country like Indonesia. The seeds are often discarded after eating the fruits and only used in plant breeding. Papaya seeds have huge potential because it contains oils and

high protein and can be used as edible oil. Oil produced from papaya seeds containing saturated fatty acids (palmitic) as lower as (15.13%) than saturated fatty acids contained in crude palm oil (40-46%). Previous research used hexane as solvent, even though it has the toxic character. Other solution recommended for extraction in food grade level is heptane. The main purpose of this research is to find the effect of using a different solvent for the oil usage as edible oil. Dried and ground papaya seed (50 g) was extracted by Soxhlet extraction using 300 ml, 400 ml and 500 ml solvent for 4 hours. To separate the oil from solution, it separated using distillation by heated it in its boiled point. The oil product then measured for the yield and analysed for its characteristic such as peroxide number, fatty acid number and water content. The better result was achieved using hexane as a solvent which gives the oil yield by 31,97%, the density of 0.8364 gr/ml, peroxide value 6.6 ,fatty acid number 0,23 and 11% water content.
Keywords: extraction, solvent, heptane, hexane, papaya

12. Analysis Of Heavy Metal Content In The Coral Reef And Foraminifera Benthic Lampung Bay Coastal Regions With Icp-Oes

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Abstract. Coral reefs and benthic foraminifera are efficient pollution bioindicators for predicting heavy metal pollution due to their great tolerance to high ecological pressures, so that these biota are used as test animals in monitoring the accumulation rate of heavy metals of marine waters. The purpose of this research is to know the heavy metal content and to know the level of heavy metal pollution like Silver (Ag), Cadmium (Cd), Cobalt (Co), Cromium (Cr), Copper (Cu), Iron (Fe), Manganese Mn), Nickel (Ni), Lead (Pb) and Zinc (Zn) in the Coastal Waters of Lampung Bay using the ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry) method. The design of this study was field observation and samples were analyzed in FMIPA Unila chemical laboratory. The resulting data were analyzed descriptively. The results of the research obtained on coral reef samples taken from the three locations refer to the Heavy Metal Standard in Sediment only of Ag metal which passed the standard of Metals according to the Regulation of the Governor of DIY. 7 of 2010, with an average (0.42 mg / kg), (0.19 mg / kg), (0.23 mg / kg). If referring to the standard of metal in Sea water for heavy metal biota that passes the standard quality standards are Ag, Cd, Cr, Cu, Fe, Mn, Ni, Pb and Zn. In the sample of heavy metal Foraminifera exceeding the quality standard in the sediment is Metal Ag On the sample location of Sari Ringgung Beach and Tegal island with a value of 0.250 mg / kg and 0.161 mg /

kg. If referring to the standard of metal in Sea water for heavy metal biota that passes the standard quality standards are Ag, Cd, Cr, Cu, Ni, Pb and Zn.

Keywords: Coral Reef, Foraminifera Benthic, Heavy Metal, ICP-OES, Sari Ringgung Beach, Tegal Island, Tarahan

13. The Effects of Potential and Time of Electrolysis on Ethanol Electrochemical Synthesis from Carbon Dioxide Using Brass as Cathode

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Abstract. The effect of potential and time of electrolysis were investigated to determine the optimum conditions of the electrochemical synthesis process to produce ethanol from carbon dioxide. The electrochemical synthesis process is carried out using a $NaHCO_3$ electrolyte solution in an electrochemical reactor equipped with a cathode and anode. As cathode is used brass, while as anode is used carbon. The result of the electrochemical synthesis process was analyzed by gas chromatography to determine the content of the compounds produced qualitatively and quantitatively. The optimum electrochemical synthesis conditions to produce ethanol from carbon dioxide are potential and time of electrolysis are 3 volts and 90 minutes with ethanol concentration yielded 4.42%.

14. Environmental Waste: An Alternative Media To Improve Creativity

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Abstract. Environmental waste/waste is a byproduct of Natural Resource Management which often escape human attention. Waste also requires

management solutions in order not to be a new problem in the future, one of them is to be an alternative media to increase creativity. This research is a Classroom Action Research and the research subject is students group B in RA Fathul Ulum Poncokresno. The purpose of this research is to describe the improvement of student creativity through the utilization of environmental waste. The object of this research is the implementation of learning by utilizing environmental waste to improve student creativity. The media used is dried leaves, beads, snack pack, used cardboard, leaves, banana stem, wood pulp and dye. Data collection techniques used student activity observation sheets, field notes, and interviews. Data analysis technique in this research is to analyze all available data both qualitative data and quantitative data. The results of the research show that the achievement of students' creativity indicator has increase with values on pre-action of 46.67% (low category), Cycle 1 of 66.67% (medium category) and in Cycle 2 of 80.00% (high category). This indicates show that the learning activities by utilizing environmental waste can improve the creativity of group B students in RA Fathul Ulum Poncokresno.

Keyword: Environmental Waste, Alternative Media, Creativity

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