Faculty of Sciences and Mathematics
Diponegoro University

9th ISNPINSA

International Seminar on New Paradigma and Innovation on Natural Science and Its Application

CONTRIBUTION OF SCIENCE TOWARD INDUSTRY 4.0 ERA

Date and Venue :
October 22, 2019
Gets Hotel Semarang - Jl. MT. Haryono No.312 - 316, Sarirejo, Kec. Semarang Timur, Kota Semarang, Jawa Tengah 50124

THE 9TH INTERNATIONAL SEMINAR ON NEW PARADIGM AND INNOVATION ON NATURAL SCIENCES AND ITS APPLICATION

"Contribution of Science Toward Industry 4.0 Era"

Semarang, October 22, 2019

Hotel GETS
Jl. MT. Haryono, Semarang, Central Java, Indonesia

Content

Preface

This conference program (booklet) is designed to make the 9th ISNPINSA participants easier to find the specific topic of papers presented in this seminar in particular that is performed in parallel session. We let you know that all accepted papers represented in 10 fields, which are Mathematics and Applied Mathematics (MAT), Physics and Applied Physics (PHY), Biology and Applied Biology (BIO), Chemistry and Applied Chemistry (CHE), Statistics and Applied Statistics (STA), Informatics (INF), Biomedical Science and Its Application (MED), Biochemistry and Molecular Biology (MBI), Applied Ecology, Environmental Science and Sustainability (ECO), Earth Science and Natural Resources Management for environmental Sustainability (EAR).

We are deeply thank you very much to the honorable keynote speakers as well as invited speakers for sharing the very interesting topic of their widely experiences research and its application for the sustainable development of human welfare and environmental conservation in Indonesia. We are also very grateful to all participants coming from various institutions of various countries consist of researchers, lecturers, postgraduate and undergraduate students from various universities. High appreciation is addressed to whom who have supported and encouraged this conference being success. However, we do apologize for any mistakes generated during managing the conference since preparation up to finish.

Semarang, Indonesia,
October 2019
The 9th ISNPINSA COMMITTEE

A. Welcome Speech from Rector of Diponegoro University

Honourable Keynote Speaker :

1. Prof. Emmanuel Cornillot, Universite de' Monpellier, France
2. Prof. Dr. Baba Musta, Universiti Malaysia Sabah, Malaysia
3. Prof. Dr. Ir. Rokhmin Dahuri, MS, President of Indonesian Aquaculture Society; Proffesor in Marine Resource and Environmental Studies
4. Assoc. Prof. Sapto P. Putro, M.Si., Ph.D, Center of Marine Ecology and Biomonitoring for Sustainable Aquaculture (Ce-MEBSA) Diponegoro University, Indonesia

Distinguished Delegates:

Colleagues, Researchers, Scientists and our Beloved Students

First of all, I hereby express my great pleasure to welcome you at the official opening of the 9th ISNPINSA. On behalf of Diponegoro University, I am greatly honored and pleased to welcome you all participants from all over the world to this annual seminar, the 9th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application (9th ISNPINSA), which be held in Gets Hotel, Semarang, Indonesia.

In order to facilitate brain storming and state of the art information in field of sciences and mathematics; to increase innovation of technology that can be applied in industries; to contribute in formulating strategy to increase the role of science for community; and to stimulate collaboration between industries, researchers and government to increase community welfare, the issue addressed by the 9th ISNPINSA this year is *Contribution of Science Toward Industry 4.0 Era*. The science contributes significantly and directly to sustainable development, community and human welfare. The science for sustainable development goals requires a broad understanding which covers the whole range of disciplines from natural sciences and engineering to social sciences and the humanities. Sciences should continue to play an increasing role in providing for an improvement in the efficiency of resource utilization and in finding new development practices, resources, and alternatives.

There is a need for the sciences constantly to reassess and promote less intensive trends in resource utilization, including less intensive utilization of energy in industry, maritime, agriculture, and transportation. For instance, exponential growth of science and technology in our country Indonesia has played a significant role in all round development and growth of economy in our country. Thus, the sciences are increasingly being understood as an essential component, and science for sustainable development is an emerging area, because it addresses the socio economic development of every human being.

This annual ISNPINSA has performed a valuable function in that it has enabled experts on the many different fields to give us their views. The presentations and deliberations have brought great opportunity to gain insightful knowledge about the projects being conducted in the region. Through the interaction, we expect to be able to share the lessons learned and experience gained with the international community, including both governmental and non-governmental actors and stimulate an active research environment that is relevant to our communities in the near future.

In closing, by the Grace of God Almighty (Allah SWT) and consent of all of the 8th ISNPINSA participants, now therefore on behalf of Diponegoro University, I am as a Rector, hereby declare the 8th ISNPINSA, open. I encourage delegates to participate actively in the interesting discussions in this one day seminar. I wish everyone a successful and fruitful seminar.

Thank you very much for your kind attention.

Yours Sincerely,
Prof. Dr. Yos Johan Utama, S.H., M.Hum,
Rector of Diponegoro University

B. Welcome speech from Dean of Faculty of Sciences and Mathematics (FSM), Diponegoro University

Excellencies:
Rector of Diponegoro University
Prof. Dr. Yos Johan Utama, **S.H., M.Hum**

Honourable Keynote Speaker:

1. Prof. Emmanuel Cornillot, Universite de' Monpellier, France
2. Prof. Dr. Baba Musta, Universiti Malaysia Sabah, Malaysia
3. Prof. Dr. Ir. Rokhmin Dahuri, MS, President of Indonesian Aquaculture Society; Proffesor in Marine Resource and Environmental Studies
4. Assoc. Prof. Sapto P. Putro, M.Si., Ph.D, Center of Marine Ecology and Biomonitoring for Sustainable Aquaculture (Ce-MEBSA) Diponegoro University, Indonesia

All participants

It gives me great pleasure to speak to welcome you most cordially at the official opening of the 9th ISNPINSA. On behalf of Faculty of Science and Mathematics, Diponegoro University, I am delighted to welcome all of the participants the International seminar on new paradigm and innovation on natural sciences and its application (ISNPINSA).

ISNPINSA seminar has successfully conducted since 2011 and therefore becoming annual event since then. The aim of INSPINSA seminar is to give opportunity for researchers, policy makers, scientists, scholars and students to meet, learn from one another, and share their work with each other. In 2019, the theme of 9th ISNPINSA is "***Contribution of Science Toward Industry 4.0 Era*** **"**.

The purpose of the 9th ISNPINSA are to be a space to disseminate updated knowledge regarding the science and its application in the frame of sustainability, to facilitate brain storming and state of the art information in field of sciences and mathematics; to increase innovation of technology that can be applied in industries; to contribute in formulating strategy to increase the role of science for community; and to stimulate collaboration between industries, researchers and government to increase community welfare.

In addition, the seminar will also lead to future research collaborations and strengthening of common network with over hundreds participants both from local and overseas. The presentations and deliberations will bring up great opportunity to gain insightful knowledge about the projects being conducted in the region. Through the interaction, we expect to stimulate an active research environment that is relevant to our communities.

My very sincere gratitude to keynote speakers as well invited ones and participants for their great contributions, to all advisory boards, reviewers, colleagues and staffs for putting tremendous efforts and their contribution to the organisation of this seminar. I hope this seminar will prove to be an inspiring and truly transformative experience for you. Enjoy your stay in Semarang, Central Java, Indonesia.

We look forward to work with you and getting to know you in the years ahead.

Thank you
Yours Sincerely,
Prof. Dr. Widowati, M.Si
Dean, Faculty of Science and Mathematics, Diponegoro University

C. Welcome Speech from Chairman of the 8th ISNPINSA

Assalamualaikum warahmatullah wabarakatuh

I respect all of the attendees who have attended here, especially to the Rector of Diponegoro University, the Dean of Faculty of Sciences and Mathematics, the distinguished keynote speakers, the invited speakers, guest ladies and gentlemen.

It is my pleasure to welcome you all to the 9th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application (9th ISNPINSA). This seminar is annual seminars organized by Faculty of Sciences and Mathematics (FSM) Diponegoro University and has been successfully conducted since 2011. The aims of ISNPINSA are to facilitate brain storming and state of the art information in field of sciences and mathematics; to increase innovation of science and technology that can be applied in industries; to contribute in formulating strategy to increase the role of science for community; and to stimulate collaboration between industries, researchers and government to increase community welfare. The theme of 9th ISNPINSA in 2018 is "***Contribution of Science Toward Industry 4.0 Era***".

The number of participants of the seminar are 185 including keynote speakers, invited speakers, oral presenters, poster presenters, and non presenters coming from various institutions of various countries consist of researchers, lecturers, postgraduate and undergraduate students from various universities. There are 167 papers will be presented in this seminar, consist of 4 keynote speakers, 153 oral presentations, and 10 poster presentations. The scope of the field of participants comes from various fields including Mathematics and Applied Mathematics (MAT), Physics and Applied Physics (PHY), Biology and Applied Biology (BIO), Chemistry and Applied Chemistry (CHE), Statistics and Applied Statistics (STA), Informatics (INF), Biomedical Science and Its Application (MED), Biochemistry and Molecular Biology (MBI), Applied Ecology, Environmental Science and Sustainability (ECO), Earth Science and Natural Resources Management for environmental Sustainability (EAR) that contribute to industry 4.0 era.

We, as the organizers, thank profusely to the team and all who help this event activities take place, especially to the Rector of Diponegoro University (Prof. Dr. Yos Johan Utama, SH, M.Hum), the Dean of Faculty of Sciences and Mathematics (Prof. Dr. Widowati, SSi, M.Si), the keynote speakers and the invited speakers.

We on behalf the Committee to be professional, but the limitation makes us just giving like this. Thank you very much and wishing you all the best.

Wassalamu'alaikum wr.wb.

Semarang, October 22, 2019

Dr. Suryono, S.Si., M.Si.
Chair of Organizing Committee

D. Conference Organizers

Organizing Committee:

Prof. Dr. Widowati, M.Si (Steering Committee)
Farikhin, S.Si., M.Si., Ph.D. (Steering Committee)
Dr. Kusworo Adi, S.Si., MT. (Steering Committee)
Drs. Sapto P. Putro, M.Si., Ph.D (Steering Committee)
Dr. Suryono, M.Si. (Chairman)
Nor Basid Adiwibawa Prasetya, S.Si., M.Sc., Ph.D. (Secretary)
Dinar Mutiara K. Nugraheni, S.T., M.InfoTech.(Comp). (Secretary)
Nurdin Bahtiar, S.Si., M.Kom. (member)
Dr. Eng. Ali Khumaeni, ME. (member)
Dr. Di Asih I Maruddani, S.Si., M.Si. (member)
Dra. Sri Harumaningsih, .S.Si., M.IP. (member)
Lilik Maryuni, S.E., M.Si (member)
Novita Sulistyana, S.E., M.Si. (member)
Susilo Wanto, SH (member)
Herman Aprianto, S.Kom. (member)
Iys Syabilla Rusda, S.IP. (member)
Choiriyah, SE (member)
Nur Azizah, SE (member)
Alik Maulidiyah, S.Si. M.Sc. (member)
Rahmawan Bagus Trianto, S.Kom. (member)
Deby Yuniarto (member)
Siswoyo (member)

Scientific Committee:

Prof. Emmanuel Cornillot, Universite de' Monpellier, France
Prof. Dr. Baba Musta, Universiti Malaysia Sabah, Malaysia
Prof. Dr. Ir. Rokhmin Dahuri, MS, President of Indonesian Aquaculture Society; Proffesor in Marine Resource and Environmental Studies

E. General Schedule

Conference Programme of the 9th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application (9th ISNPINSA)

Tuesday, October 22, 2019

Time	Activity	Person in Charge
07.30-08.00	Confirmation of the presence of the conference participants, and Registration	Dinar Mutiara K. Nugraheni, S.T., M.InfoTech.(Comp).
OPENING CEREMONY		
08.00-08.15	The national anthem of Indonesia	
08.15-08.25	Welcome speech from Chairman of the 9th ISNPINSA: **Dr. Suryono, M.Si.**	MC
08.25-08.40	Welcome speech from Dean of the Faculty of Sciences and Mathematic Diponegoro University: **Prof. Dr. Widowati, M.Si**	MC
08.40-09.00	Welcome speech from Rector of Diponegoro University and officially open the event: **Prof. Dr. H. Yos Johan Utama, SH., M.Hum**	MC
09.00-09.10	**Photo Session For Documentation**	
KEYNOTE SPEAKERS TALKS FIRST SESSION		
09.10-09.50	**Prof. Emmanuel Cornillot** (Universite de' Monpellier, France) **Moderator**: Dr. rer. nat. Anto Budiharjo, SSi, MBiotech	**Committee**
09.50-10.00	**Coffee break**	
KEYNOTE SPEAKERS TALKS SECOND SESSION		
10.00-10.40	**Prof. Dr. Baba Musta** (Universiti Malaysia Sabah, Malaysia) **Moderator**: Pandji Triadyaksa, S.Si., M.Sc.	**Committee**
KEYNOTE SPEAKERS TALKS THIRD SESSION		
10.40-11.20	**Prof. Dr. Ir. Rokhmin Dahuri, MS** (President of Indonesian Aquaculture Society; Proffesor in Marine Resource and Environmental Studies)	**Committee** **Moderator:** Rully Rahadian, SSi, MSi, PhD
11.20-12.00	**Assoc. Prof. Sapto P. Putro, M.Si., Ph.D** (Center of Marine Ecology and Biomonitoring for Sustainable Aquaculture (Ce-MEBSA) Diponegoro University, Indonesia)	
12.00-13.00	**LUNCH BREAK & POSTER SESSION**	MC
13.00-17.00	**PARALLEL SESSION (the schedule in detail will be followed)**	**Committee**
17.00-17.15	**CLOSSING CEREMONY**	MC

F. Paper Code and Type of Presentation for Paralel Session

Field : Mathematics and Applied Mathematics (MAT)
Class : Executive Lounge A & Executive Lounge B

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	SY.Yuliani	Shahrin Sahib, Mohd Faizal Bin Abdollah, Yunus Supriadi Wijaya	Hoax News Validation Using Similarity Algorithms	ISN19-MAT-001
2	T Yulianto	M. Irham Nurwidyanto , DP Sasongko, Sugeng Widada	3D modeling of sub surface Jiwo Fault around Gantiwarno sub-district, Klaten district, Central Java using magnetic Method	ISN19-MAT-002
3	Catur Edi Widodo	Kusworo Adi	Face Geometry as a Biometric Based Identification System	ISN19-MAT-003
4	kharisma	Kusworo Adi, and R Rizal Isnanto	Rice Crop Management Expert System with Forward Chaining Method and Certainty Factor	ISN19-MAT-004
5	Annisa Maula Zakiya	Widowati, Farikhin	Pictures on Second Homotopy Module of Group from Kronecker Product on Representation Quaternion Group	ISN19-MAT-005
6	Aidil Adrianda	Redemtus Heru Tjahjana, Widowati	The First Fundamental Group of Kronecker Quaternion Group	ISN19-MAT-006
7	Ayu Setia Ningrum	Tatik Widiharih, Mustafid	Village Classification Index Prediction Using Geographically Weighted_Panel_Regression	ISN19-MAT-007
8	Tatik Widiharih	Tarno, Rukun Santoso	Efficiency Nonminimally Supported Design for Three Parameters Weighted Exponential Model	ISN19-MAT-008
9	YD. Sumanto	Redemtus Heru Tjahjana, Sutimin	Gamma semigroup generated of a semigroup	ISN19-MAT-009
10	R. Heru Tjahjana	Widowati, Sutimin	The analitic solution of uncoupled multi-agent model and its benefit through optimal	ISN19-MAT-010

			control system with attractor and repellant	
11	Suryoto	Farikhin, Sutimin,	Algebraic structure on the neutrosophic triplet group	ISN19-MAT-011
12	Solikhin	Widowati, Farikhin	Weakly Compact Linear Operators on Space Of Dunford Integral Function	ISN19-MAT-012
13	Akmal Junaidi	Farikhin, Tarno,	WAC4 Algorithm to solve the Multiperiod Degree Constrained Minimum Spanning Tree Problem	ISN19-MAT-013
14	Amanto	Farikhin, Tarno	Counting The Number of Vertex Labelled Connected Graphs of Order Five with Minimum Five Edges and Maximum Ten Parallel Edges	ISN19-MAT-014
15	Adi Wibowo	Dinar Mutiara Kusumo N, Budi Warsito	Comparison of Performance of K-Nearest Neighbor Algorithm Using Smote And K-Nearest Neighbor Algorithm Without Smote in Diagnosis of Diabetes Disease in Balanced Data	ISN19-MAT-015
16	Khoirin Nisa	Budi Warsito, Rukun Santoso	Analysis of Variance for Strip Plot Design with Missing Values: Bias correction of the Mean Squares	ISN19-MAT-016
17	Gatot Yuliyanto	Udi Harmoko, Rahmat Gernowo,	3D modeling of buried site Ngempon Temple, Bergas, Semarang Regency using HVSR method	ISN19-MAT-017
18	Ramadiani	Di Asih I Maruddani, Budi Warsito, M.Si.	Forecasting the number of airplane passengers uses the double and the triple exponential smoothing method	ISN19-MAT-018
19	Eka Triyana	Widowati, S P Putro	Globally Stability Analysis of Mathematical Model in IMTA System by using Energy-Casimir Method	ISN19-MAT-022

Field : Physics and Applied Physics (PHY)
Class : Cendana 1, Cendana 2, & Cendana 3

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	Ali Khumaeni		Pulse CO_2 Layer Induced Plasma Spectroscopy for Analysis of Trace Elements on Semiconductor Material Surface	Invited speaker
2	Aini Khuriati	P Purwanto , H S Huboyo, S Sumariyah, S Suryono, A B Putro	Numerical Calculation Based on Mass and Energy Balance of Waste Incineration in the Fixed Bed Reactor	ISN19-PHY-001
3	Gunadi I	Jatmiko E S	A Microcontroller-Based Pollutant Gas Monitoring System for Landfill (TPA)	ISN19-PHY-002
4	Catur Edi Widodo	Rahmat Gernowo	Medical Image Processing Using Python And OpenCV	ISN19-PHY-003
5	Catur Edi Widodo	Kusworo Adi, Isnain Gunadi	The Use of Raspberry Pi as a Portable Medical Image Processing	ISN19-PHY-004
6	Eddy Hermawan	Teguh Harjana, Ainur Ridho, Tyo Maulana	Interaction between Madden-Julian Oscillation and Monsoon Related to Big Floods over South Sulawesi in January 2019	ISN19-PHY-005
7	DI Rina	MN Irham	Merapi Observed Gravity Anomaly Changes In 2019	ISN19-PHY-006
8	Aidah Rahmawati	Ketut Sofjan Firdausi, Heri Sugito, Muchammad Azzam, Very Richardina, Maulana Binu Susanto	The contribution of fatty acids composition of soybean oil on natural and electro-optics polarization	ISN19-PHY-007
9	Catur Edi Widodo	Kusworo Adi	Face Geometry as a Biometric Based Identification System	ISN19-PHY-008
10	Aris Puji Widodo	Kusworo Adi, Sri Achadi Nugraheni, and Wahyu Indri	Measurement of Information Quality on Mozita Application Uses Weighted Average Model	ISN19-PHY-009

11	Muhammad Farhan		Identification of Subsurface Fluid Flow using 2D Geoelectric Method in Kelurahan Marunda, North Jakarta	ISN19-PHY-010
12	Gresy Griyanitasari	Dona Rahmawati, Sugihartono, and Yuny Erwanto	Cleaner Sheep Leather Tanning Process using Uncaria gambir: The Influence of Rebating on Leather Properties	ISN19-PHY-011
13	Eddy Hermawan	Teguh Harjana, Ainur Ridho, Tyo Maulana	Interaction between Madden-Julian Oscillation and Monsoon Related to Big Floods over South Sulawesi in January 2019	ISN19-PHY-012
14	Reynaldi Putra Hertiansa	R P Hertiansa and M S Rosid	Horizontal Gradient Analysis of Gravity Data for Subsurface Fluid Flow Identification (Case Study: Cilincing, North Jakarta)	ISN19-PHY-013
15	Mohd. Ripa'i	Purwanto AP	Relationship between environmental knowledge understanding towards conservation attitudes of Earth Hour Semarang volunteers	ISN19-PHY-014
16	Sumariyah	Ainie Khuriati, Sulistiyani Hayu Pratiwi, and Enny Fachriyah	Ion Wind Drying With Input Power Variation Of The Potato Slices	ISN19-PHY-015
17	Sulistiyani Hayu Pratiwi	Sumariyah *, Ainie Khuriati , Enny Fachriyah, Sulistiyani Hayu Pratiwi	Electrohydrodynamic Drying of Plant Seeds with the Shape Variation	ISN19-PHY-016
18	Senthia Ina Puspitasari	S. Ina, G Yulyanto, M Irham N	Calculating Ground Shear Strain (GSS) of Microtremor Data Based Graphical User Interface Python Programming	ISN19-PHY-017
19	Agus Hartanto	Farikhin Farikhin, and Suryono Suryono	Real-time Vehicles Velocity Monitoring and Crossroads Evaluation Using Rule-Based RESTful Maps API Service	ISN19-PHY-018

20	Muhammad Ajib Ubaidillah	Gatot Yuliyanto	Delineation of the New Site of Ngempon Temple in Ngempon Village, Bergas District, Semarang Regency using the Microtremor Method.	ISN19-PHY-019
21	Julia Dian Prastanti		Analysis of Effect Rotation in 1D And 2D Magnetotelluric Data Models to Identification of Geothermal System in the	ISN19-PHY-020
22	Zaenal Arifin	Evi Setiawati, Apri A Putri, Eko Hidayanto, Heriyani , Ari D Reskianto and Rusmant	Measurement of Eye Lens Doses Estimation in Interventional Radiology	ISN19-PHY-021
23	pribadyo		Study of low head turbine propellers for the use of micro hydropower plants (MHP) in Aceh, Indonesia	ISN19-PHY-022
24	Evi Setiawati	Saptahady Juliawan, Fajar Arianto	Burnup computation for HTR-10 using MCNPX as the function of radius and fuel enrichment	ISN19-PHY-023
25	Hendri Widiyandari	Oki Ade Putra, Agus Purwanto, and Agus Subagio	Synthesis PVDF/SiO2 nanofiber composite membrane by double jet sprayers electrospinning method on rotating cylinder collector as separator Li-ion battery	ISN19-PHY-024
26	Achmad Rafli	Warsono, Khorin Nisa, and Mustofa Usman	Study of Daily Rainfall Distribution for Flood Disaster Mitigation in Bandar Lampung	ISN19-PHY-025
27	Wibowo Harry Sugiharto	Muhammad Imam Ghozali , Heru Susanto, Mochamad Arief Budihardjo, Suryono Suryono	Database Replication Method for Real-Time Measurement pH Parameter of Fishery Using Wireless Sensor System	ISN19-PHY-026
28	Heri Sugito	A Khumaeni, KS Firdausi, M Azam	Development of electrooptic devices by strengthening electromagnetic fields using colloidal silver solutions	ISN19-PHY-027

29	Heri Sugito	A Khumaeni, QM Binu	Detection of Cu, Cr, Cd, Fe, Mn in polluted soils of paper mill waste by using Nd:YAG Laser Induced Breakdown Spectroscopy	ISN19-PHY-028
30	Ali Khumaeni	Dewi Anggraini, Beny Sulistyo Hartadi, Ali Khumaeni	Authentication of Gold Jewelry Based on Elemental Composition Using Laser Induced Breakdown Spectroscopy	ISN19-PHY-029
31	Ali Khumaeni	Syifa Avicenna, Iis Nurhasanah , and Ali Khumaeni	Synthesis of gadolinium nanoparticles in spinach-extracted liquid using pulse laser ablation method	ISN19-PHY-030
32	Ali Khumaeni	Angger Bagaskara, Qidir Maulana Binu S., Heri Sugito, Ali Khumaeni	Effects of repetition rate on identification of elements in gemstone using the LIBS method	ISN19-PHY-031
33	Giner Maslebu	Eli Sabet Diyah Kusrini, Andreas Setiawan	Analysis of Signal to Noise Ratio from 1.5 Tesla MRI Head Coil Phantom Image on Daily Quality Assurance	ISN19-PHY-032
34	Jatmiko Endro Suseno	Asep Yoyo Wardaya and Ali Khumaeni	Fabrication and Properties of High Efficiency Dye-Sensitized Solar Cells (DSSCs)With Photon Absorption Optimization	ISN19-PHY-033
35	Safira Arta Paramita	Iis Nurhasanah, Ali Khumaeni and Zaenal Arifin	Characterization of Radiosensitization Effect of Pulsed Laser Ablated-Gadolinium	ISN19-PHY-034
36	Sri Utami Handayani		Low Temperature Process for Green Tea Drying using Zeolite Adsorption Integrated Fluidized Bed Dryer	ISN19-PHY-035
37	Sri Utami Handayani	IS Atmanto, FT Putri, S Fujiwara	Energy and Exergy Analysis Economic of Continuous Vibrating Fluidized Bed Drying on Celery Drying	ISN19-PHY-036
38	Zaenal Arifin	Siti A. Pandaningrum, Tina Meilinda, K. Kartutik, Zaenal	Quality Control in Diagnostic Ultrasound Siemens Acuson	ISN19-PHY-037

		Arifin	1000	

Field : Biology and Applied Biology (BIO)
Class : Executive Meeting A & Executive Meeting B

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	Lilih Khotim Perwati	Rina Sri Kasiamdari, Santosa and Budi Setiadi Daryono	New record of Bazzania species (Marchantiophyta, Lepidoziaceae) from Java, Indonesia	Invited speaker
2	Y. Ulung Anggraito	Nugrahaningsih WH , Fajar Mustafa, Khoirul Mukhtar, Nur Wijawati, Yosa Rostriana, Noor Aini Habibah	Secondary Metabolites In Elaeocarpus Grandiflorus Cell Culture In WPM Medium With Various Concentrations Of PGR	ISN19-BIO-001
3	Henike Fransina Waroy	Sri Utami, Jumari	The Food Plant Ethnobotany Of Ampari Tribe Community In Papua, Indonesia	ISN19-BIO-002
4	Muhammad Zainuri	Hadi Endrawati, Sri Winarni, Fahmi Arifan, Agus Setyawan, Herfiana Priti Hapsari	Analysis Total Plate Count (TPC) and Organoleptic Test on Seaweed Chips	ISN19-BIO-003
5	R. Susanti	Ari Yuniastuti, Fidia Fibriana	Metagenome Analysis of Gut Microbial in Both the Caged and Non-Caged Ducks	ISN19-BIO-004
6	Mochammad Ajie Susetyo	Mochammad Ajie Susetyo	Molecular Identification and Carotenoid Antioxidant Test of Chaetoceros sp. Potential Isolated from Gondol, Bali	ISN19-BIO-005
7	Yasintha Rennidya Hapsari		Antibacterial activity of emulsion and nanoemulsion of red betel leaf essential oil (Piper crocatum Ruiz & Pav)	ISN19-BIO-006
8	Anis Awaliyah		Antibacterial activity of basil oil (Ocimum basilicum L) and basil oil nanoemulsion	ISN19-BIO-007
9	Ridwan Abdullah	Farras Daffa Imtiyaz, Wijanarka, Nurhayati	The potency of B-G31 isolate associating with Valanga nigricornis as a probiotic candidate to digest cellulose	ISN19-BIO-008

10	Fahmi Arifan	Satriyo Adhy, Lana Milatul Khusna, Ira Roza Milinda, Astrid Laksmita Djati	Formulation of Jasmine Aromatheraphy with Variaton of Jasmine (Jasminum sambac Air.) Esscence and Menthol	ISN19-BIO-009
11	Yuriza Eshananda	F Ningsih, Y Sakai, A Yokota, S Yabe, W Sjamsuridzal,	Isolation and identification of rare actinomycete-like bacteria from soil based on 16S ribosomal RNA gene sequences	ISN19-BIO-010
12	Sarjito	Erma Prihastanti, Agung Janika Sitasiwi	The Potential of Mixed Epibiotic (Binahong Leaves, Anredera cordifolia, and Garlic, Allium sativum, Extracts) as a Feed Additive to Combat Aeromonas hydrophila Infection on Catfish (Clarias gariepinus)	ISN19-BIO-011
13	Budiarto Heru Sayogo	Mufti Petala Patria, Noverita Dian Takarina	The Density of Microplastic in Sea Cucumber (Holothuria Sp.) and Sediment at Tidung Besar and Bira Besar Island, Jakarta	ISN19-BIO-012
14	Sri Winarni	Fahmi Arifan**,** Agus Setyawan, Asri Nurdiana, Windari	Analysis Total Plate Count (TPC) and Organoleptic Test on Seaweed Chips	ISN19-BIO-013
15	Muhamad seto sudirman. Sst. Msi.med		The Test of Antiinflammatory Activity of Infuse Bryophyllum Pinnatum Leaf (Kalanchoe pinnata) oN Edema In Thigh Leg Swiss Webster Male Mice	ISN19-BIO-014
16	Siti Nur Jannah	Susiana Purwantisari, Dwi Handayani, Indah Hartati, Mohamad Endy Yulianto	Production of Coco-Vinegar in A Bubble Biofermentor	ISN19-BIO-015
17	Suli Arum Sari		Antibacterial Activity Tests of Isolat Endophytic Bacteria from Tea Plant (Camellia sinensis) againts Staphylococcus aureus and Staphylococcus epidermidis	ISN19-BIO-016
18	Sunarno	Dea Ananda Salsabila	Identification Test of Anthrax Disease Agent In Cow's Blood Smear on Surakarta	ISN19-BIO-017

19	Mohammad Faqih Munanda		The Control System for the Nutrition Concentration of Hydroponic Using Web Server	ISN19-BIO-018
20	Kristamtini	Christina Astri Wirasti, dan Sugeng Widodo	Leaf Anatomy Response of Several Varieties of Rice (Oryza sativa L.) to the Application of Silica Fertilizers	ISN19-BIO-020
21	nurul jadid mubarakati	R Rismawati, I A Nurdin, M N Pradiptha, A Maulidiyah, N J Mubarakati	Preparation and Characterization of Lignin Nanoparticles from Rice Straw after Biosynthesis Using Lactobacillus bulgaricus	ISN19-BIO-021
22	N S Permatasari	M Zainuri, H P Kusumaningrum, I Mishbach, E D Hastuti	Bioethanol Production Using the SSF Method (Simultaneous Saccharification and Fermentation) of Microalgae Anabaena SP	ISN19-BIO-022
23	A.T Lunggani	E.Kusdiyantini, F.D Imtiyaz	Morphotypes and Molecular Characterisation of Pink Pigmented Bacterial Symbiont of *Turbinaria* sp	ISN19-BIO-025
24	D W Puspita	N L Safitri, and A Y Susilowati, E S Rahayu, U N Danayanti, I M Budiati	Flour Based Analogue formulation corn with addition chlorella sp. For obesity sufferers	ISN19-BIO-026

Field : Chemistry and Applied Chemistry (CHE)
Class : Djati A & Djati B

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	M. Cholid Djunaidi		Gold Imprinted Adsorption Based on Eugenol	Invited speaker
2	Mochammad Facta	Hermawan, Ngurah Ayu Ketut Umiati, Muhammad Amjad	Finding Parameters Relationship for Disinfectant Gas Production	ISN19-CHE-001
3	Meifi Anjani Adelin	Gunawan, Muhammad Nur, Abdul Haris, Didik Setiyo Widodo, Linda Suyati	Ozonation of Methylene Blue and its Fate Study Using LC-MS	ISN19-CHE-002
4	Pardoyo	Yayuk Astuti, Gading Herinnayah, Suhartana, Pratama J. Wibawa	The Influence of High Energy Milling to the Adsorption of Cd(Ii) and Zn(Ii) Ions on Activated Zeolite	ISN19-CHE-003
5	Parsaoran Siahaan	N E Darmastuti, S Aisyafalah, N A Sasongko, D Hudiyanti, M Asy'ari and V D Prasasty	Probing the interaction between EC1-EC2 domain of E-cadherin with conformational structure of cyclic ADTC7 (Ac-CDTPDC-NH2) peptide using molecular docking approach	ISN19-CHE-004
6	Badrus Zaman	Budi Prasetyo Samadikun, M Arief budihardjo, Nurandani Hardyanti, Aghniessa Fathiya Rachma, Saffana Iliyuna Hasna	Potential of Phytotechnology in Wastewater Treatments to Produce Alternative Electrical Energy	ISN19-CHE-005
7	Arwinda Nugraheni	Fahmi Arifan, Mardiyanti Dwi Pratama, Nanda Al Faizah	Jelly Candy Formulation Purwaceng Gelatin with Concentration Variation and Carrageenan	ISN19-CHE-006
8	Nurwarrohman Andre Sasongko		Understanding The Interaction of Polysulfone With Urea And Creatinine At The Molecular Level and Its application for Hemodialysis Membrane	ISN19-CHE-007
9	Qurrotun Ayuni Khoirun Nisa	Mohamad Endy Yulianto, Rizka Amalia, Vita Paramita, and Qurrotun A'yuni Khoirun Nisa	Preliminary Study of Auto Catalytic Palm Oil Hydrolysis into Fatty Acid Through Hydrothermalysis Process	ISN19-CHE-009

10	Suhartana	P. Purwanto., Adi Darmawan.	Electrolysis Results Comparison Of Metformin Using Aluminium, Zinc and Iron (As Anode) As Well as Used Carbon (As Cathode)	ISN19-CHE-010
11	Siti Lutfiatul Farikha	Muhammad Cholid Djunaidi	Amino Acid Substitutions in The N-terminal Region of A Vegetative Insecticidal Protein (Vip3Aa) from Bacillus thuringiensis	ISN19-CHE-011
12	Sriatun Sriatun	Sriatun, Adi Darmawan, Widayat, Rima Kurniasari, Ratna Kurniawati , Sriyanti	Synthesis of Silica-Rich Zeolite Using Quarternary Ammonium-Based Templates	ISN19-CHE-013
13	Sriatun Sriatun	Sriatun, Adi Darmawan, Widayat, Rima Kurniasari, Ratna Kurniawati , Sriyanti	Hydrocracking of Coconut Oil on The NiO/Silica-Rich Zeolite Synthesized Using A Quarternary Ammonium Surfactant	ISN19-CHE-014
14	Mochammad Facta	Mochammad Facta, Hermawan, Ngurah Ayu Ketut Umiati and Muhammad Amjad	Finding Parameters Relationship for Disinfectant Gas Production	ISN19-CHE-015
15	Linda Suyati		Removal of Pb2+ Metal Ion using Electrolysis system of Fe(s)/NaCl(aq), Pb(NO3)2(aq)//H2O(aq)/C(s)	ISN19-CHE-016
16	I M Budiati	N L Safitri, H Ulya, M P Irham, M W Andriyan, U N Damayanti	Utilization of Oil Palm Bunch into Liquid Smoke with Pyrolysis Method as an Innovation for Milkfish Preservation	ISN19-CHE-017
17	Nor Basid Adiwibawa Prasetya	Ngadiwiyana, Ismiyarto, Purbowatiningrum Ria Sarjono	The effects of percent weight of divinylbenzene as crosslinking agent on the properties of eugenol–divinylbenzene copolymer	ISN19-CHE-018
18	Nor Basid Adiwibawa Prasetya	Ismiyarto, Laras Ragil Pamungkas, Purbowatiningrum Ria Sarjono, Ngadiwiyana	Synthesis and characterization of aminated eugenol-divinylbenzene copolymer and its sorption ability toward heavy metal ions	ISN19-CHE-019

Field : Statistics and Applied Statistics (STA)
Class : Mahoni A

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	Tarno		Adaptive Neuro Fuzzy Interference System (ANFIS) Approach for Modelling Garlic Price Data in Semarang	Invited speaker
2	Jaka Windarta	Singgih Saptadi, Lauhil Machfudz, David Renaldo, and Muhammad Andhaz Saintekha	Economic Analysis of Planning for Utilization of Tabang Hydro Power Plant	ISN19-STA-001
3	T Winarno	N Qadaryati, R.A. Ginting	Silicified Coal Characteristic and Distribution at PT Mitrabara Adiperdana Tbk, North Kalimantan for Efficient Mine Planning	ISN19-STA-002
4	Erna Fransisca Angela Sihotang	Sugito, Mustafid, Dwi Ispriyanti, Alan Prahutama, Arief Rachman, Erna Sihotang	Analysis of Queue and Performance of Automatic Toll Booths with Normal Distribution (Case Study: Automatic Booths Toll Gate Muktiharjo)	ISN19-STA-003
5	Faiz Hanif Kurniawan	Bayu Surarso and Jatmiko E Suseno	Supplier selection in rank order using fuzzy ahp and fuzzy molp with sensitivity analysis	ISN19-STA-004
6	Mustafid	Dwi Ispriyanti, Sugito, and Arief Rachman Hakim	Multivariate capability indices in inventory control	ISN19-STA-005
7	Wilson Marbun	Suparti, Di Asih I Maruddani, and Wilson Marbun	Modeling of Composite Stock Price Index (CSPI) using Semiparametric Regression Truncated Spline Based on Gui R	ISN19-STA-006
8	Rindiana Hanif Larasati	Siti Khabibah, and Abdul Aziz	An optimization model economic order quantity with financial constraints and market tolerance in ud plastikq	ISN19-STA-007

9	Affifiana Prisyanti	Oky Dwi Nurhayati, and Aris Puji Widodo	Evaluation university ranking system using quacquarelli symonds and integrated performance measurement system approach	ISN19-STA-008
10	Qidir Maulana Binu Soesanto	Much Azam, Very Richardina, and Mirza Satriawan	Alternative Scale Invariant Higgs Mass Generation Using Hidden Sector SU(Nc)xU(1)	ISN19-STA-009
11	Diah Safitri	Subanar, Herni Utami, Winita Sulandari	Forecasting of Jabodetabek Train Passengers using Singular Spectrum Analysis and Holt Winters Methods	ISN19-STA-010

Field : Informatics (INF)
Class : Eboni A & Eboni B

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	Dinar Mutiara Kusumo Nugraheni		Identifying IT Governance condition (case study: KPRI-UNDIP)	Invited Speaker
2	Guruh Aryotejo	Budi Warsito, Dinar Mutiara Kusumo N.	Network boot system for low-cost laboratory computer	ISN19-INF-001
3	Bayu Arasyi	Sukmawati Nur Endah, Retno Kusumaningrum, Satriyo Adhy	Enhanced Blocking Blok Area Method for Segmentation of Continuous Speech	ISN19-INF-002
4	Rina Dwi Hastuti	I Waspada, P W Wirawan, and N Bahtiar	Designing Computer Assisted Problem Based Learning (CAPBL) Environment for Performance Analysis Of Isolation Forest Algorithm	ISN19-INF-003
5	Mukhammad Fakhir Rizal	Adi Wibowo, Dinar Mutiara Kusumo N	Usability Testing Mozita Application Based on Use Questionnaire Model	ISN19-INF-004
6	Edy Suharto	Suhartono, A P Widodo and E A Sarwoko	The use of mobilenet v1 for identifying various types of freshwater fish	ISN19-INF-005
7	Eko Adi Sarwoko	Mustafid, Tarno	The Best Architecture Selection With Deep Neural Network (DNN) Method For Breast Cancer Classification Using MicroRNA Data	ISN19-INF-006
8	Ramadiani Ramadiani	Adi Kurniawan, Muhammad Labib Jundillah , Azainil Azainil and Achmad Nizar Hidayanto	Evaluation of student academic performance using e-learning with the association rules method and the importance of performance analysis	ISN19-INF-007
9	Muhammad Imam Ghozali		QoS of Network Infrastructure in wireless sensor system for real-time measurement pH Parameter of Fishery	ISN19-INF-008

10	Abdul Rezha Efrat Najaf	Rahmat Gernowo and Farikhin	Consumer purchase patterns based on market basket analysis using Apriori algorithms	ISN19-INF-009
11	Heru Supriyono	Anton S, Umi Fadlilah, Kun Harismah	Portable Machine with Android Application Display for Measuring CO and HC of Vehicle Exhaust Gas	ISN19-INF-010
12	M. Fahreza Maulana,	Satriyo Adhy, Nurdin Bahtiar, Indra Waspada	Development of smart parking system based on internet of things using object oriented analysis and design method	ISN19-INF-011
13	Michael Satrio Prayogo Setiawan	Sanjaya, and B. Harnadi	Designing advertisement board game and examining factors correlated with board gaming behaviors	ISN19-INF-013
14	Maria Marina Herawati	Sri Kasmiyati , Betty Elok Kristiani	The Effect of Shading on Density And Size Of Glandular Trichomes In Artemisia Cina Tetraploid, The Source Of Anti Cancer Artemisinin	ISN19-INF-014
15	R Kusumaningrum	S N Endah, Y Prasetyo	Classification of Rice Growth Stage Based on Convolutional Neural Networks	ISN19-INF-015
16	Raffiky Pinandia	Suryono	Aplication of Smartphone Based Information Technology on Pregnancy Treatment : Systematic literature review	ISN19-INF-016
17	Dwi Hesti Dyah Citrawati	Dwi Hesti Diah Citrawati, Melyana Nurul Widyawati, Suryono	Analytic Hierarchy Process (Ahp) In Health Services	ISN19-INF-017
18	Dina Anggraini	Suryono	The Contribution of Information Technology (IT) in Overcoming Neonatal Jaundice: Systematic Literature Review	ISN19-INF-018
19	Kiki Yusika	Suryono	A Systematic Literature	ISN19-INF-

			Review: Peranan Sistem Informasi Terhadap Keberhasilan Program Keluarga Berencana (KB)	019
20	Asa Ustatum Nada	Dinar M.K, Nugraheni	The Analysis Correlation Aspects of Usability in Sipetang (Case Study : Central Java Prosecutor)	ISN19-INF-020
21	E. Erawati	D M K Nugraheni	Evaluating the Management of the Official Pekalongan Government Website Using COBIT 5	ISN19-INF-021

Field : Biomedical Science and Its Application (MED)
Class : Mahoni B

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	Emi Puji Nur Wijayanti	Martini Martini, Retno Hestiningsih, M Arie Wuryanto, Sri Yuliawati, Atik Mawarni	Case Study of Malaria Patients: Distribution of Cases and Maps of *Anopheles sp.* Breeding Place in Kaligesing Sub-District, Purworejo District	ISN19-MED-001
2	Jati Utama	Rini Indrati, Dwi Rochmayanti, Suryono Suryono	Improvement of Image Quality With Fussion In Radiography Of High And Low Intensity Lateral Head	ISN19-MED-002
3	Sudarno	Tatik Widiharih, Moch. Abdul Mukid	Probability of Caused Factors Stroke Disease Use Link and Reliability Functions	ISN19-MED-003
4	Siti Daryati	Eddo Ribuana Nanang Sulaksono , Rini Indrati Agung Nugroho Setiawan	Differentiation of SNR and Anatomic Image Information in Post Contras MRI Brain Metastase Case With T1W Spin Echo and T1W SPIR In Radiology Installation MRCC Siloam Hospital Semanggi	ISN19-MED-004
5	Sri Isdadiyanto	Agung Janika Sitasiwi, Siti Muflichatun Mardiati	The lipid profile of rats (Rattus norvegicus L.) induced by high fat ration after exposed to ethanolic neem (Azadiracta indica) leaf extract	ISN19-MED-005
6	Renni Yuniati	Prasetyowati Subchan , Wibi Riawan , Matthew Brian Khrisna , Maryam Restiwijaya , Niken Safitri Dyan , and Muhammad Nur	Topical Ozonated Virgin Coconut Oil Improves Diabetic Ulcer Wound Healing in Diabetic Mice Model	ISN19-MED-006
7	Anindita Henindya Permatasari	Sutimin, Siti Khabibah, Dita Anies Munawwaroh, R. Heri Soelistyo U , Anindita Henindya P	Dynamical analysis model of HIV-1 infection in CD4+ T cells with antibody response	ISN19-MED-007

8	Oliver Hiskia Purba	Eko Adi Sarwoko, Suhartono, and Adi Wibowo	Data Normalization in Classification of Liver Cancer with MicroRNA Data Using the Deep Neural Network (DNN) Method	ISN19-MED-008
9	Dita Anies Munawwaroh		Analysis Stability of HIV/AIDS Epidemic Model of Different Infection Stage in Closed Community	ISN19-MED-009
10	Sunarno	Adhitya Yoga Pradana Riyadi	Diagnosis Method of Leptospirosis Disease With Test Microscopic Agglutination Test (Mat)	ISN19-MED-010
11	muhamad seto sudirman		The Role of the Supervisory Drinking Relations Tuberculosis Drug and Patient Compliance Level in Health Center Pangkalpinang Gerunggang Year 2017	ISN19-MED-011
12	Siti Chunaeni	Arum Lusiana, Listyaning Eko Martanti	Effectiveness of Psidium Guajava to Increase Hemoglobin and Hematocrit Levels of Third Trimeseter in Pregnancy	ISN19-MED-012

Field : Biochemistry and Molecular Biology (MBI)
Class : Djati A

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	Cicilia Novi Primiani	Rafaella Chandraseta Megananda, Yayan Nur Azhizhah, Pujiati	Oil content analysis on yam bean fermented by Aspergillus niger	ISN19-MBI-001
2	Satriyo Adhy	M. Fahreza Maulana, Nurdin Bahtiar, Indra Waspada	Test formulation of jasmine (Jasminum sambac) essential oil as a mixture handbody lotion as an case study in Kaliprau, Pemalang	ISN19-MBI-002
3	Adde Lolita Octavia Putri	Endang Kusdiyantini dan Sri Pujiyanto	The Growth and Potential of Gamma-Aminobutyric Acid (GABA) by Lactic Acid Bacteria Isolated from Fish Fermented Food from Maluku, Indonesia	ISN19-MBI-003

Field : Applied Ecology, Environmental Science and Sustainability (ECO)
Class : Mahoni B

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	Jaka Windarta	Singgih Saptadi, Lauhil Machfudz, David Renaldo, and Ibrahim Herman	Planing for the Utilization of Hydro Power in the Belayan River, East Kalimantan	ISN19-ECO-001
2	Edy Suhartono	Jafron W. Hidayat, Rully Rahadian,	Implementation of Cleaner Production, Green Product And Ecoefficiency in Bluejin SMis (Case Study in Indonesia)	ISN19-ECO-002
3	Agus Margiantono	Sujito, Mulya Virgonita	Study of Railway Noise Level Against the Level of Disruption of Communities Living in the Area Around the Railway in the City of Semarang	ISN19-ECO-003
4	Rafita Farantika	Sapto Purnomo Putro, Mochamad Hadi, Imam Triaso	Study on water quality physical-chemical parameters aquaculture areas in Menjangan Besar Island, Kepulauan Karimunjawa, Jepara, Indonesia	ISN19-ECO-004
5	Titi Udjiani SRRM	Titi Udjiani SRRM , Suryoto, and Harjito	Generalized of Properties Symmetric element on Rings with involution	ISN19-ECO-005
6	Sugito	Alan Prahuama, Dwi Ispriyanti, and Mustafid	Non-Poisson queue with normal logistic distribution (case study in Semarang automatic toll gate)	ISN19-ECO-006
7	Agus Sholeh Hidayah		Interpretation of Fault Area Jabungan (City of Semarang) Based on Magnetic Data	ISN19-ECO-007
8	Sarto Purnomo Putro	Sapto Purnomo Putro , Fuad Muhammad , Hamid Safrijal	Assessment of Environmental Status of Coastal Mangrove Area Using Macrobenthic Assemblages: A Study Case at Tapak Mangrove Area, Semarang, Central Java	ISN19-ECO-008
9	Sri Winarni	Sri Winarni, Hardhono Susanto, Apoina Kartini, Ari Suwondo, Choirun Nissa, Dharminto	A Description of The Characteristics of Shallot Farmers Using Pesticides	ISN19-ECO-009

10	Indri Lestari	I Lestari, Murningsih, S Utami	The Diversity of Fern in Petungkriyono Mixed Forest Pekalongan, Central Java	ISN19-ECO-010
11	Muhammad Cholid Djunaidi	Muhammad Cholid Djunaidi	Desalination of Sea Water With Supported Liquid Membrane	ISN19-ECO-011
12	Jafron W Hidyat	Jafron W Hidayat, Mochamad Hadi, Rini Budihastuti, Zulhaq D Siqhny dan Gatot Yulianto	The Waters Quality of the Galeh and Parat Rivers Based Plankton to Support Minapadi Cultivation as a Conservation Effort for Rawapening Lake, Semarang Regency, Indonesia	ISN19-ECO-013

Field : Earth Science and Natural Resources Management for environmental Sustainability (EAR)

Class : Mahoni B

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	Rahmat Gernowo		Combination of Flood Models With Weather Research and Forecast Based On Extreme Rainfall for Hazard Mitigations	ISN19-EAR-001
2	Turrini Yudiarti	Sugiharto Sugiharto. Isroli Isroli, and V.D. Yunianto	Nutritive and antioxidative properties of some selected agro-industrialby-products fermented with the fungus Chrysonillia crassa as alternative feedstuffs for poultry	ISN19-EAR-002
3	Agus Setyawan	Rahmat Gernowo, Jatmiko Endro Suseno, Wijayaningrum, Yoga Aribowo, Najib	Subsurface mapping of Diponegoro University campus Tembalang based on resistivity data	ISN19-EAR-003

G. Paralel Session Schedule in Detail

TIME	ROOM						
	E. LOUNGE A	E. LOUNGE B	E. MEETING A	E. MEETING B	MAHONI A	MAHONI B	MAHONI C
13.00-13.20	ISN19-MAT-010	ISN19-MAT-016	Lilih K. Perwati (Invited Speaker)	ISN19-BIO-012	Tarno (Invited Speaker)	ISN19-MED-005	ISN19-ECO-001
13.20-13.40	ISN19-MAT-001	ISN19-MAT-004	ISN19-BIO-001	ISN19-BIO-013	ISN19-STA-001	ISN19-MED-001	ISN19-ECO-002
13.40-14.00	ISN19-MAT-002	ISN19-MAT-013	ISN19-BIO-002	ISN19-BIO-014	ISN19-STA-002	ISN19-MED-002	ISN19-ECO-003
14.00-14.20	ISN19-MAT-005	ISN19-MAT-014	ISN19-BIO-003	ISN19-BIO-015	ISN19-STA-003	ISN19-MED-003	ISN19-ECO-004
14.20-14.40	ISN19-MAT-006	ISN19-MAT-015	ISN19-BIO-004	ISN19-BIO-016	ISN19-STA-004	ISN19-MED-004	ISN19-ECO-005
14.40-15.00	ISN19-MAT-007	ISN19-MAT-017	ISN19-BIO-005	ISN19-BIO-017	ISN19-STA-005	ISN19-MED-006	ISN19-ECO-006
15.00-15.20	ISN19-MAT-008	ISN19-MAT-018	ISN19-BIO-006	ISN19-BIO-018	ISN19-STA-006	ISN19-MED-007	ISN19-ECO-007
15.20-15.40	ISN19-MAT-009	ISN19-MAT-022	ISN19-BIO-007	ISN19-BIO-020	ISN19-STA-007	ISN19-MED-008	ISN19-ECO-008
15.40-16.00	ISN19-MAT-011	ISN19-EAR-001	ISN19-BIO-008	ISN19-BIO-021	ISN19-STA-008	ISN19-MED-009	ISN19-ECO-009
16.00-16.20	ISN19-MAT-012	ISN19- EAR-003	ISN19-BIO-009	ISN19-BIO-022	ISN19-STA-009	ISN19-MED-010	ISN19-ECO-010
16.20-16.40	ISN19-PHY-018	ISN19-PHY-014	ISN19-BIO-010	ISN19-BIO-025	ISN19-STA-010	ISN19-MED-011	ISN19-ECO-011
16.40-17.00		ISN19-PHY-009	ISN19-BIO-011	ISN19-BIO-026		ISN19-MED-012	ISN19-ECO-013
17.00-17.30	**Closing ceremony and photo session**						

TIME	ROOM						
	DJATI A	**DJATI B**	**EBONI A**	**EBONI B**	**CENDANA I**	**CENDANA II**	**CENDANA III**
13.00-13.20	M. Cholid Dj. (Invited Speaker)	ISN19-CHE-003	Dinar M. K. N. (Invited Speaker)	ISN19-INF-005	Ali Khumaini (Invited Speaker)	ISN19-PHY-003	ISN19-PHY-027
13.20-13.40	ISN19-CHE-001	ISN19-CHE-015	ISN19-INF-001	ISN19-INF-010	ISN19-PHY-001	ISN19-PHY-004	ISN19-PHY-020
13.40-14.00	ISN19-CHE-002	ISN19-CHE-016	ISN19-INF-002	ISN19-INF-011	ISN19-PHY-002	ISN19-PHY-005	ISN19-PHY-021
14.00-14.20	ISN19-CHE-004	ISN19-CHE-017	ISN19-INF-003	ISN19-INF-013	ISN19-PHY-006	ISN19-PHY-008	ISN19-PHY-022
14.20-14.40	ISN19-CHE-005	ISN19-CHE-018	ISN19-INF-004	ISN19-INF-014	ISN19-PHY-007	ISN19-PHY-012	ISN19-PHY-023
14.40-15.00	ISN19-CHE-006	ISN19-CHE-019	ISN19-INF-006	ISN19-INF-015	ISN19-PHY-010	ISN19-PHY-013	ISN19-PHY-024
15.00-15.20	ISN19-CHE-007	ISN19-MBI-001	ISN19-INF-007	ISN19-INF-016	ISN19-PHY-011	ISN19-PHY-015	ISN19-PHY-025
15.20-15.40	ISN19-CHE-009	ISN19-MBI-002	ISN19-INF-008	ISN19-INF-017	ISN19-PHY-029	ISN19-PHY-016	ISN19-PHY-026
15.40-16.00	ISN19-CHE-010	ISN19-MBI-003	ISN19-INF-009	ISN19-INF-018	ISN19-PHY-030	ISN19-PHY-017	ISN19-PHY-028
16.00-16.20	ISN19-CHE-011	ISN19-EAR-002	ISN19-INF-020	ISN19-INF-019	ISN19-PHY-031	ISN19-MAT-003	ISN19-PHY-032
16.20-16.40	ISN19-CHE-013		ISN19-INF-021		ISN19-PHY-033	ISN19-PHY-019	ISN19-PHY-034
16.40-17.00	ISN19-CHE-014				ISN19-PHY-036	ISN19-PHY-037	ISN19-PHY-035
17.00-17.30	**Closing ceremony and photo session**						

H. Paper Code and Type of Poster

NO	AUTHOR NAME	CO-AUTHOR NAME	TITLE	CODE
1	Widowati		Stability Analysis of Mathematical Model in the Spread of Cholera with Vaccination and Disinfection	ISN19-MAT-019-POSTER-01
2	Widowati	Sutimin, Redemtus Heru Tjahjana	Globally Stability Analysis of Mathematical Model on IMTA System by using Energy-Casimir Method	ISN19-MAT-020-POSTER-02
3	Widowati	Redemtus Heru Tjahjana, Sutimin	Construction of Lyapunov Function using Gradient method to Stability Analysis of the Nitrogen-Phosphate-Phytoplankton-Sediment interaction model	ISN19-MAT-021-POSTER-03
4	Hermin Pancasakti Kusumaningrum	Muhammad Zinuri, Hadi Endrawati, Endang Dwi Purbajanti	Characterization of Citronella Grass Essential Oil of Cymbopogon Winterianus from Batang Region, Indonesia	ISN19-BIO-023-POSTER-04
5	Isworo Rukmi	Susiana Purwanti Sari	Production of Alkali Protease from *Aspergillus Flavus* DUCC K225 on Rice Bran Containing	ISN19-BIO-024-POSTER-05
6	Endah Dwi Hastuti	E D Hastuti‡, M Izzati and S Darmanti	The Impact of Mangrove Plantation in Ponds on The Secondary Metabolite Content	ISN19-ECO-012-POSTER-06
7	Enyda Agustina	E, T R Saraswati, S Tana	Histologic Response	ISN19-BIO-019-POSTER-07
8	Ngadiwiyana	Nor Basid Adiwibawa Prasetya, Ismiyarto, Purbowatiningrum Ria Sarjono, Dwi Ari Fitri Haryati, Gunawan, Tutuk Djoko Kusworo, Heru Susanto	Copoly (Eugenol : Allyeugenol) Sulfation as A Basic Material for Fuel Cell Electrolyte Polyer Membranes And Determination of Its Swelling Degree And Water Uptake	ISN19-CHE-POSTER-08

9	Nur Fadilla Choirunnisa	Yunita Triwijayanti, Nies Suci Mulyani, Mukhammad Asy'ari, Ismiyarto, Ngadiwiyana, Nor Basid Adiwibawa Prasetya, Purbowatiningrum Ria Sarjono	Phenotypic and Genotypic Characterization and Antioxidant Activity Of F1-B Endophytic Bacteria from Papaya Leaves (Carica Papaya)	ISN19-CHE-POSTER-09
10	Ismiyarto	Novianita Rizki, Ngadiwiyana, Purbowatiningrum RS	Synthesis of Derivatives Azomethine Compounds Bonded to Alkoxylated Benzene and Their Antibacterial Activity Tests	ISN19-CHE-POSTER-10

I. EXTENDED ABSTRACT

ISN19-MAT-003

Face Geometry as a Biometric Based Identification System

Catur Edi Widodo [1]) and Kusworo Adi [2])

Department of Physics, Faculty of Science and Mathematics, Diponegoro University

e-mail: [1]) catur.ediwidodo@gmail.com [2]) kusworoadi@gmail.com

Keywords: Face Biometrics, Face Detection, Distance between Face Features, Euclidean Distance.

ABSTRACT. In this paper we present a method for identifying a person with a biometric based on face gometry. This person identification system design has been done using face biometrics by implementing feature extraction of distances between face features. Face biometrics were chosen because they have unique characteristics and do not change in each person. In this method, a system analysis that separates the face image into face components, including the eyes, nose and mouth on the face image is taken from the front view position. Each component of the feature that has been detected is measured its distance to form the face semantics. The steps taken in image processing begin with determining the region of interest (ROI). Furthermore, the results of cropping ROI feature extraction is done to get the eye, nose and mouth. After that, a centroid is determined for each feature so that the distance between features can be calculated using the equation of the distance between the two coordinates, so we get 8 distances as matching parameters. The matching process is done using euclidean distance, which is calculating the smallest distance between the test image and the database. Based on research results, this system can be used to identify someone using face biometrics with fixed poses and expressions. The accuracy of this system is 100 percent.

ISN19-MAT-004

Rice Crop Management Expert System with Forward Chaining Method and Certainty Factor

Kharisma[1], Kusworo Adi[2], and R Rizal Isnanto[3]

[1] Master of Information System, School of postgraduate studies, Diponegoro University, Semarang, Indonesia. E-mail: kharisma.yuda19@gmail.com

[2] Department of Physics, Faculty of Science and Mathematics, Diponegoro University, Semarang, Indonesia. E-mail: kusworoadi@undip.ac.id

[3] Department of Computer Engineering, Faculty of Engineering, Diponegoro University, Semarang, Indonesia. E-mail: rizal_isnanto@yahoo.com

Abstract

Rice plants are one of the focuses on food sustainability so that an increase in rice production needs to be done. Farmers need information and knowledge to improve rice crop production by practicing good planting methods that begin with the selection of superior varieties of seeds, fertilizing and handling plant pests properly. The problem that arises is that assistance from agricultural specialists is not always available when farmers need it, making it difficult for farmers to consult experts according to their needs at any time. Therefore, in this study an expert system was proposed which was able to help farmers to obtain information according to their needs.

This research builds an expert system for management of rice plants including the selection of rice seed varieties, fertilization instructions and handling pest of rice plants. The method used in this expert system is forward chaining and certainty factor. Knowledge base data was obtained from experts in agricultural extension, experts on plant pest organisms and literatures from the agricultural service. From this study an expert system was produced that was able to provide information on the selection of seed varieties, fertilization and pest of rice plants according to the conditions and needs of the users.

Keywords: *Expert System, Rice Plants, Forward Chaining, Certainty Factor*

ISN19-MAT-005

Pictures on Second Homotopy Module of Group from Kronecker Product on Representation Quaternion Group

Annisa Maula Zakiya, Yanita Yanita* and I Made Arnawa

[1]Department of Mathematics Faculty of Mathematics and Natural Science , Andalas University

Kampus Unand Limau Manis, Padang 25163, Indonesia

*Corresponding Author : yanita@sci.unand.ac.id

Abstract

This paper discusses about pictures (sperical pictures) on second homotopy module of group from Kronecker product on the representation quternion group. It's presented pictures with one and all of generator in presentation of its group. It's shown that the generator built all the pictures. It's use relations in presentation of its group to make the picture become a spherical picture. It was concluded that all pictures were built by spherical picture which became a generator.

Keywords : picture, spherical picture, generator, relation

ISN19-MAT-006

The First Fundamental Group of Kronecker Quaternion Group

Aidil Adrianda and Yanita Yanita*
Department of Mathematics, Faculty of Mathematics and Natural Sciences, Andalas University, Kampus Unand Limau Manis Padang

Email: adriandaaidil@gmail.com , yanita3010@gmail.com/yanita@sci.unand.ac.id
Corresponding Author: yanita3010@gmail.com/yanita@sci.unand.ac.id

Abstract:
This article discusses the first fundamental group from the identity graph of the group derived from the Kronecker product of the group quaternion representation. This group is called the Kronecker quaternion group. The first, it's shown that the identity graph of the Kronecker quaternion group. Then, it's computed how many directed graphs and spanning tree can be made from the identity graphs. And finally, we compute how many first fundamental group from this spanning tree.

Keyword: identity graph, directed graph, first fundamental group

ISN19-MAT-007

Village Classification Index Prediction Using Geographically Weighted Panel Regression

Ayu Setia Ningrum[1], Agus Rusgiyono[2], and Alan Prahutama[3]

[1] Alumna of Department of Statistics, Faculty of Science and Mathematics, Diponegoro University, [2,3] Lecturers of Department of Statistics, Faculty of Science and Mathematics, Diponegoro University

Semarang, Indonesia

E-mail: setiaayu13@gmail.com

Abstract

Village classification index is a certain status of the achievements of village development activities. In measuring the achievement of village classification index, it needs to be made in several time periods and must concern to the spatial effects because the geographical conditions of each village are diverse. It is necessary to study the variables that affect the village classification index in several time periods. Statistical methods that used in overcome the spatial effects of panel data type is Geographically Weighted Panel Regression (GWPR), which is a combination of Geographically Weighted Regression (GWR) models and panel data regression. This study focused on the establishment of GWPR model with fixed effects using fixed bisquare kernel on the village classification index in Batang Regency, 2015-2018. The results of this study indicate that the fixed effect model GWPR differ significantly on panel data regression model, and the model generated for each location will be different from one another. In addition, all independent variables namely the community economy, security and order, and community participation in development have a significant effect on the village classification index for all villages with R2 value of 0,3952.

Keywords: *Village Classification Index, Geographically Weighted Panel Regression, Fixed Effect Model, Fixed Bisquare Kernel*

ISN19-MAT-008

Efficiency Nonminimally Supported Design for Three Parameters Weighted Exponential Model

T Widiharih[1], M A Mukid[1], Mustafid[1]

[1]Department of Statistics, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof. Soedharto, SH, Tembalang, Semarang 50275, Indonesia

E-mail: widiharih@gmail.com

Abstract

The weighted exponential distribution function has a specific curve shape, the curve from zero reaches the maximum point then down, and at a certain time it is relatively constant closed to zero. This function can be used to describe the growth curve model. Minimally supported design is a design with the number of supported design equal to the number of parameters in the model. Locally D-optimal design for weighted exponential model is minimally supported design with uniform weight. The standardized variance of D-optimal design is less than or equal the number of parameters, and maximized the standardized variance at the supported designs.

We construct an alternative design by adding one supported design. Nonminimally supported design is obtain from supported design of D-optimal design plus one supported design in three ways, by adding one of them, by adding the average of them or by adding one supported design around them. We compare nonminimally supported designs in terms efficiency, standardized variance, and propose design that are efficient and practically convenient for practitioners.

Keywords : *Eefficiency, Nonminimally supported Design, D-optimal, Weighted Exponential Model*

Γ – semigroup generated of a semigroup

YD Sumanto[1], A Aziz[2], Solikhin[3], S Hariyanto[4]
[1,2,3,4] Department of Mathematics, FSM, Diponegoro University, Jl. Prof. H. Soedarto, S.H., Semarang, Indonesia

Abstract.

In Γ – semigroup *S*, element of Γ maybe a binary operation in *S*. Every element of any semigroup *S* can be define a binary operation in *S*. A collection of binary operations defined

of element of S generates Γ– semigroup *S*.

Keywords: Γ – semigroup, semigroup, regularity

ISN19-MAT-010

The Analitic Solution of Uncoupled Multi-agent Model and its Benefit Through Optimal Control System with Attractor and Repellant

RH Tjahjana
Department of Mathematics, Faculty of Science and Mathematics, Diponegoro University, Semarang, Indonesia
Email:heru.math.undip@gmail.com

Abstract

This paper gives the analytic solution of Uncoupled Multi-agent Model. This solution describes the optimal path of each agent. In this exposition, optimal control approach is used to model uncoupled multi-agent swarm with attractor and repellant. The special functional cost contain repellent cost functional is used to guarantee each agent never collides one to the others. The attractor term in the special functional cost make each agent never mover far away to the others. This paper also gives the benefit if the agents move in the multi-agent system.

Keywords : *multi agent, optimal control*

ISN19-MAT-011

Algebraic structure on the neutrosophic triplet set

Suryoto[1], Harjito[2], and Titi Udjiani[3]

[1]Department of Mathematics, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof. Soedarto, SH, Tembalang, Semarang 50275, Indonesia

E-mail: suryotomath@gmail.com

Abstract

The notion of the neutrosophic triplet was introduced by Smarandache and Ali. This notion is based on the fundamental law of neutrosophy that for an idea X, we have neutral of X denoted as neut(X) and anti of X denoted as anti(X).

In this paper, we study a neutrosophic triplet set which is a collection of all triple of three elements that satisfy certain properties with some binary operation. We also give some interesting properties related with them.

Further, in this paper we investigate that from the neutrosophic triplet group can construct a classical group under multiplicative operation for $\mathbb{Z}_n$, for some specific n. These neutrosophic triplet groups are built using only modulo integer 2p, with p is an odd prime or Caleley table.

Keywords : *clasical group, neutrosophic triplet, neutrosophic triplet group*

ISN19-MAT-012

WEAKLY COMPACT LINEAR OPERATORS ON SPACE OF DUNFORD INTEGRAL FUNCTION

Solikhin[1], S Hariyanto[1], YD Sumanto[1] and A Aziz[1]

[1]Department of Mathematics, Faculty of Sciences and Mathematics Diponegoro University

Jl. Prof. Soedarto, S.H. Semarang, 50275, Indonesia

E-mail: solikhin@live.undip.ac.id

Abstract

This study discussed the integral of Dunford and compact linear operator on space of Dunford integral function. For each f which is Dunford integral on $[a,b]$ is defined as operator D_L by $D_L\left(x^*\right)=x^*f$, for each $x^*\in X^*$. This study resulted that operator D_L is both continuous linear operator and weakly compact operators. Then, it was defined the adjoint of the operator D_L^* by $D_L^*(h)\left(x^*\right)=\int_a^b hD_L\left(x^*\right)$ for each $h\in(L_1)^*$. Adjoint operator D_L^* is continuous and weakly compact linear operators.

Keywords : *Dunford integral, continuous linear operator, weakly compact linear operator*

WAC4 Algorithm to solve the Multiperiod Degree Constrained Minimum Spanning Tree Problem

Wamiliana[1], Akmal Junaidi[1], Amanto[1], Mustofa Usman[1], and Warsono[1]

Abstract. The Multiperiod Degree Constrained Minimum Spanning Tree (MPDCMST) is a problem of finding the smallest weight spanning tree while also maintaining the degree restriction in every vertex and satisfying the vertex installation requirement in every period. This problem arises in networks installation problem where the degree restriction represents the reliability of each vertex and the vertex installation requirement represents the priority vertices that must be installed in the network on the certain period. The installation is divided into some periods because of some conditions occur such as harsh weather, fund limitation, etc. In this paper we propose WAC4 Algorithm to solve he MPDCMST problem. The performance of the algorithm will be compared to WAC1 algorithm that already in the literature.

Counting The Number of Vertex Labelled Connected Graphs of Order Five with Minimum Five Edges and Maximum Ten Parallel Edges

Amanto[1], Notiragayu[1], Fadila Cahya Puri[1], Yudi Antoni[1], and Wamiliana[1]

[1] Dept. of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Lampung

If given a graph G(V,E) with n vertices and m edges many graphs can be constructed. The graphs constructed maybe connected graphs (there exists at least one path connecting every pair of vertices in the graph) or disconnected; either simple (contains loop or parallel edges) or not simple. In this paper we will discuss the formula for counting the number of connected vertex labelled graph of order five (n=5) without loops, with minimum five edges and may contain maximum ten parallel edges. ***Keywords****: connected vertex labelled graph, order five, parallel edges.*

Abstract. All This study aims to model the Ngempon Temple that is still buried under the surface using the microtremor method with HVSR data processing. The measurement geometry consists of 39 points forming a rectangular grid with a measurement spacing of 2 m. The duration of data collection was 10 minutes for each point and the sampling frequency was 150 Hz. The results obtained from this study indicate the location of the temple site and subsurface 3D models of the temple site which are characterized by a frequency range of 1.28-1.32 Hz and an amplification of 1.275.

Forecasting the number of airplane passengers uses the double and the triple exponential smoothing method

Ramadiani Ramadiani[1] , Rigan Syahrani[1] Indah Fitri Astuti[1] and Azainil Azainil[2]

[1]Faculty of Computer Science and Information Technology Mulawarman University, Samarinda, East Kalimantan, Indonesia [2]

[4]Faculty of Teacher Training and Education Mulawarman University, Samarinda, East Kalimantan, Indonesia

***** Corresponding Author: ilkom.ramadiani@gmail.com

Abstract.

Forecasting is needed to increase capacity and infrastructure, and also to improve the quality and quantity of the airport, especially at Aji PangeranTumenggung Pranoto Samarinda's airport. Forecasting method is very diverse. It is difficult to forecasting the number of passengers in each period. This is very important to compare the accuracy of the forecasting number of passengers and how to find out the best method to produce the forecasting value. This research uses the mean square error to measure the accuracy of double exponential smoothing and the triple exponential smoothing. The results of this research found the accuracy level between double exponential smoothing and triple exponential smoothing that produced the best forecasting value. MSE error calculation uses alpha constant values 0.1, 0.3, 0.5, 0.7 and 0.9. The best result is the double exponential smoothing method of alpha value 0.9 with an error value of 20522138,748.

ISN19-MAT-019

STABILITY ANALYSIS OF MATHEMATICAL MODEL IN THE SPREAD OF CHOLERA WITH VACCINATION AND DISINFECTION

Anisa Fitriyani[1], Widowati[2], Farikhin[3]

[1,2,3]*Department of Mathematics, Diponegoro University, Semarang, Indonesia*
Email : [1]anisaafitriyanii@gmail.com, [2] widowati @lecture.undip.ac.id,
[3]farikhin.math.undip@gmail.com

Abstract.
Cholera is a disease as kind of acute diarrhea caused by bacteria *V. Cholerae*. The spread of cholera can be modeled in the form of non linear differential equation systems with 4 variables $SIRB$. Basic reproductive numbers (R_0) is used to find the local stability at the equilibrium point. Disease-free equilibrium point is locally asymptotically stable if $R_0 < 1$, while endemic equilibrium point is locally asymptotically stable if $R_0 > 1$. From the results of numerical simulations obtained $R_0 = 0.87$ indicated that the disease-free equilibrium point is locally asymptotically stable. In endemic condition ($R_0 > 1$) show that increasing the rate of vaccination and disinfection can reduce the population of susceptible, infected and pupolation of *V. Cholerae*.

Keywords: Cholera, Disinfection, Basic Reproduction Numbers, Local Stability, Vaccination.

Construction of Lyapunov Function using Gradient method to Stability Analysis of the Nitrogen-Phosphate-Phytoplankton-Sediment interaction model

Widowati[1,*], S P Putro [2] , and E Triyana [3]

[1,3]Department of Mathematics, Faculty of Science and Mathematics, Diponegoro University, Jl. Prof Soedarto SH, Semarang 50275, Central Java, Indonesia
[2]Department of Biology, Faculty of Science and Mathematics, Diponegoro University, Jl. Prof Soedarto SH, Semarang 50275, Central Java, Indonesia.
[1],* corresponding author, Email : wiwied.mathundip@gmail.com, widowati@lecturer.undip.ac.id

Abstract.
The significant growth in catch fisheries and aquaculture production has enhanced the world's capacity to consume diverse and nutritious food; however, this fast growing industry has resulted in the environmental disturbance, especially caused by fish farming. The nutrient was generated from fish excretion and unfed pellet in the form of dissolved organic matter, especially as nitrogen and phosphate particulates. Therefore, applying mathematical models is crucial to understand and minimise impact on the water ecosystem, thus maximise productivity. This paper aims of research to analyze the global and stability of the equilibrium point the dynamical system that water and sediment in aquaculture Integrated Multi-Trophic Aquaculture (IMTA) system. Analysis stability global has been proved by constructing the Lyapunov function. The gradient method is used to construct the Lyapunov function in the most general form. The method is based on the assumption of a variable gradient function by determining V and ∇V. In the Lyapunov method construction, if the function $V(x)$ would be definite positive, whereas derivative $V(x)$ would be definite negative. Models of nitrogen, phosphate, phytoplankton, and sediment system exhibited globally asymptottically stable. This implies that the fish farming using the IMTA system on Karimunjawa island was still considerably under normal condition

Keywords: gradient method, Lyapunov function, IMTA, stability

Construction of Lyapunov Function using Gradient method to Stability Analysis of the Nitrogen-Phosphate-Phytoplankton-Sediment interaction model

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[1,3]Department of Mathematics, Faculty of Science and Mathematics, Diponegoro University, Jl. Prof Soedarto SH, Semarang 50275, Central Java, Indonesia
[2]Department of Biology, Faculty of Science and Mathematics, Diponegoro University, Jl. Prof Soedarto SH, Semarang 50275, Central Java, Indonesia.
[1],* corresponding author, Email : wiwied.mathundip@gmail.com, widowati@lecturer.undip.ac.id

Abstract.
The significant growth in catch fisheries and aquaculture production has enhanced the world's capacity to consume diverse and nutritious food; however, this fast growing industry has resulted in the environmental disturbance, especially caused by fish farming. The nutrient was generated from fish excretion and unfed pellet in the form of dissolved organic matter, especially as nitrogen and phosphate particulates. Therefore, applying mathematical models is crucial to understand and minimise impact on the water ecosystem, thus maximise productivity. This paper aims of research to analyze the global and stability of the equilibrium point the dynamical system that water and sediment in aquaculture Integrated Multi-Trophic Aquaculture (IMTA) system. Analysis stability global has been proved by constructing the Lyapunov function. The gradient method is used to construct the Lyapunov function in the most general form. The method is based on the assumption of a variable gradient function by determining V and ∇V. In the Lyapunov method construction, if the function $V(x)$ would be definite positive, whereas derivative $V(x)$ would be definite negative. Models of nitrogen, phosphate, phytoplankton, and sediment system exhibited globally asymptottically stable. This implies that the fish farming using the IMTA system on Karimunjawa island was still considerably under normal condition

Keywords: gradient method, Lyapunov function, IMTA, stability

Globally Stability Analysis of Mathematical Model on IMTA System by using Energy-Casimir Method

E Triyana [1], Widowati [2,*], S P Putro [3]

[1,2]Department of Mathematics, Faculty of Science and Mathematics, Diponegoro University, Jl. Prof Soedarto SH, Semarang 50275, Central Java, Indonesia
[3]Department of Biology, Faculty of Science and Mathematics, Diponegoro University, Jl. Prof Soedarto SH, Semarang 50275, Central Java, Indonesia.
.
[1]Email: triyanaeka03@gmail.com
[2],* corresponding author, Email : wiwied.mathundip@gmail.com, widowati@lecturer.undip.ac.id

Abstract.
Despite its benefits, fish farming has potentially impact on water environment, such as algae bloom, fish death, and eutropication. Integrated Multi-Trophic Aquaculture (IMTA) is designed to address environmental problems to reduce the excess of unfed pellets and fish faeces under the cage. Mathematical modeling was built to describe a phenomenon in chemical, physical, and biological processes during the operation of IMTA to form a mathematical formula. The phenomenon was explained by dynamic system, which is a method to describe, model, simulate and analyze dynamical systems. The model analyzed the interactions among nitrogen and phosphate concentrations and phytoplankton during the operation of IMTA. The model was a non-linear system of linear differential equations with three variables. Analysis of global stability is carried out at equilibrium points based on the Lyapunov stability theory using by Energy-Casimir method. Determine equilibrium point and Casimir functions of the dynamical systems, then assume that the Casimir functions are linearly independent. Find the value of the G matrix, then calculate the Lyapunov function with a positive definite value and test the validity of the Lyapunov function.

Keywords : Energy-Casimir Method, Stability, Lyapunov Function, IMTA, Nitrogen, Phosphate, Phytoplankton

ISN19-PHY-005

Interaction between Madden-Julian Oscillation and Monsoon Related to Big Floods over South Sulawesi in January 2019

Eddy Hermawan[1], Teguh Harjana[1], Ainur Ridho[2], Tyo Maulana[2]

[1]Center of Atmospheric Science and Technology, National Institute of Aeronautics and Space Republic of Indonesia (LAPAN)

[2]Physics Department, Faculty of Science and Mathematics, Diponegoro University

Abstract.

Study of interaction between MJO and Monsoon and their impact on the extreme rainfall over the Maritime Continent (MC) until now not yet fully understood due to the limitation of data observation. However, there many techniques to derive the extreme rainfall from the satellite data, especially for GSMap (*Global Satellite Mapping of Precipitation*) that already designed with good spatial-temporal resolution. In this study, we have investigated the interaction between MJO and Asian Monsoon when their interactive simultaneously. By taking the Makasar city as sample of big floods over South Sulawesi dated on January 22, 2019, we found an a good agreement between MJO, Monsoon, and their impact to the extreme rainfall in that time. We applied four techniques, namely; temporal, spatial, Hovmoller, and PSD (Power Spectral Density), respectively. Then, we found the MJO at phase 4 and 5 was responsible for the occurring of big rainfall over South Sulawesi. For this reason, we suspect the developing of MJO index model, especially for phase 4 and 5 when passing over South Sulawesi is very important for next investigation.

ISN19-PHY-007

The contribution of fatty acids composition of soybean oil on natural and electro-optics polarization

Aidah Rahmawati[1], Ketut Sofjan Firdausi[1], Heri Sugito[1], Muchammad Azzam[1], Very Richardina[1], and Qidir Maulana Binu Susanto[1]

[1]Department of Physics, Faculty of Science and Mathematics, Tembalang University

Jl. Setia budi, SH, Ngesrep, Semarang 50275, Indonesia

E-mail: aidahrahmawati@st.fisika.undip.ac.id; firdausi@fisika.undip.ac.id

Abstract

A study of light polarization as a new alternative test cooking oil quality today provides advantage in biophysics and other fields. In this research we determined the relation between polarization and fatty acids composition of soybean oil.

The sample was soybean oil with various different quality level. The light source was green pointer laser with λ = 532 nm, and the electro-optics polarization was produced through high DC voltage 0-9 kV across the sample. The fatty acids composition was obtained through GCMS measurement.

The results show that natural polarization and electro-optics polarization give different physical meaning in related to the oil fatty acid composition. The natural polarization informed that the increasing polarization was accompanied by increasing poly unsaturated acids (C19:2) and decreasing mono unsaturated acids (C19:1). The electro-optics polarization described that all fatty acids contributed to the increasing polarization due to increased dipoles from all acids.

Keywords: *Polarization, electro-optics, fatty acids*

ISN19-PHY-008

Face Geometry as a Biometric Based Identification System

Catur Edi Widodo [1]) and Kusworo Adi [2])
Department of Physics, Faculty of Science and Mathematics, Diponegoro University
e-mail: [1]) catur.ediwidodo@gmail.com [2]) kusworoadi@gmail.com

Keywords: Face Biometrics, Face Detection, Distance between Face Features, Euclidean Distance.

ABSTRACT. In this paper we present a method for identifying a person with a biometric based on face gometry. This person identification system design has been done using face biometrics by implementing feature extraction of distances between face features. Face biometrics were chosen because they have unique characteristics and do not change in each person. In this method, a system analysis that separates the face image into face components, including the eyes, nose and mouth on the face image is taken from the front view position. Each component of the feature that has been detected is measured its distance to form the face semantics. The steps taken in image processing begin with determining the region of interest (ROI). Furthermore, the results of cropping ROI feature extraction is done to get the eye, nose and mouth. After that, a centroid is determined for each feature so that the distance between features can be calculated using the equation of the distance between the two coordinates, so we get 8 distances as matching parameters. The matching process is done using euclidean distance, which is calculating the smallest distance between the test image and the database. Based on research results, this system can be used to identify someone using face biometrics with fixed poses and expressions. The accuracy of this system is 100 percent

ISN19-PHY-009

Measurement of Information Quality on Mozita Application Uses Weighted Average Model

Aris Puji Widodo[1], Kusworo Adi[2], Sri Achadi Nugraheni[3], and Wahyu Indri[4]

[1]Department of Informatics, Faculty of Science and Mathematics, Diponegoro University

[2]Department of Physics, Faculty of Science and Mathematics, Diponegoro University

[3,4]Department of Public Health, Diponegoro University

Jl. Prof Soedarto, SH, Tembalang, Semarang 50275, Indonesia

e-mail: arispw@gmail.com

Abstract.

Fulfillment of nutrition for children under five years of age is a factor that needs to be considered in maintaining children's health, because in infancy it is a period of development that is vulnerable to nutritional status. Based on data from the Ministry of Health of the Republic of Indonesia in 2015 shows that the number of malnutrition is still high, as many as 185 in each province, and it is estimated that there are still around 12 millions that have not been reported. The main problem with the high number of malnutrition status lies in the weakness of the recording and reporting process, so that the government cannot have information that can be used to conduct early detection of the incidence of malnutrition. The weak process of recording nutritional status is caused by the lack of available instruments that can be used for the recording and reporting process.

Based on the above problems, the Mozita application was used to process the recording and reporting of under-five nutritional status based on anthropometry tables. The Mozita application guarantees the accuracy, speed, and convenience in terms of knowing the early growth of toddlers. In this study focused on measuring the quality of information on the Mozita application, which includes aspects of accuracy, timeliness, suitability, completeness, and ease of uses. Measuring the quality of information is done by using questionnaires distributed to respondents (midwives), then for further analysis using the weighted average pre and post.

The results of descriptive data analysis showed that the overall weighted average value of information quality pre Mozita application development was 1.01 and post was 2.78. Comparison between pre and post values has increased by 1.77. An increase in value of 0.63 can be interpreted that there is a positive influence on the quality of Mozita application information on aspects of accuracy, timeliness, suitability, completeness, and ease of uses.

Keywords: *Measurement, Information, Quality, Nutrition, and Mozita*.

ISN19-PHY-010

Measurement of Information Quality on Mozita Application Uses Weighted Average Model

Aris Puji Widodo[1], Kusworo Adi[2], Sri Achadi Nugraheni[3], and Wahyu Indri[4]

[1]Department of Informatics, Faculty of Science and Mathematics, Diponegoro University

[2]Department of Physics, Faculty of Science and Mathematics, Diponegoro University

[3,4]Department of Public Health, Diponegoro University

Jl. Prof Soedarto, SH, Tembalang, Semarang 50275, Indonesia

e-mail: arispw@gmail.com

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Keywords: *Measurement, Information, Quality, Nutrition, and Mozita*.

ISN19-PHY-012

Interaction between Madden-Julian Oscillation and Monsoon Related to Big Floods over South Sulawesi in January 2019

Eddy Hermawan[1], Teguh Harjana[1], Ainur Ridho[2], Tyo Maulana[2]

[1]Center of Atmospheric Science and Technology, National Institute of Aeronautics and Space Republic of Indonesia (LAPAN)

[2]Physics Department, Faculty of Science and Mathematics, Diponegoro University

Abstract. Study of interaction between MJO and Monsoon and their impact on the extreme rainfall over the Maritime Continent (MC) until now not yet fully understood due to the limitation of data observation. However, there many techniques to derive the extreme rainfall from the satellite data, especially for GSMap (*Global Satellite Mapping of Precipitation*) that already designed with good spatial-temporal resolution. In this study, we have investigated the interaction between MJO and Asian Monsoon when their interactive simultaneously. By taking the Makasar city as sample of big floods over South Sulawesi dated on January 22, 2019, we found an a good agreement between MJO, Monsoon, and their impact to the extreme rainfall in that time. We applied four techniques, namely; temporal, spatial, Hovmoller, and PSD (Power Spectral Density), respectively. Then, we found the MJO at phase 4 and 5 was responsible for the occurring of big rainfall over South Sulawesi. For this reason, we suspect the developing of MJO index model, especially for phase 4 and 5 when passing over South Sulawesi is very important for next investigation.

ISN19-PHY-015

Ion Wind Drying With Input Power Variation Of The Potato Slices

Sumariyah [1*], Ainie Khuriati [2], Sulistiyani Hayu Pratiwi[3] , and Enny Fachriyah[4]

[1,2,3] Sulistiyani Hayu Pratiwi Physics Department, Mathematics and Sciences Faculty, Diponegoro University, Indonesia

[4] Chemistry Department, Mathematics and Sciences Faculty, Diponegoro University, Indonesia

Email : sumariyah.jaelani@gmail.com

Abstract. The ion wind drying method has been used to dehydrate potato slices with a variation of electric power and a constant drying time of 30 minutes. Ion wind drying is generated by an electrohydrodynamic flow reactor using 10 x 10 pairs of pin electrodes and multi-ring concentric electrodes connected by a DC high voltage. High electric field in space between electrode causes ionization of air at the atsmofer condition which is produce ion flow together with heat transfer, and radical ions which are used for drying. Power in the reactor during drying is influenced by the input voltage and the measured current obtained a minimum value of 10 Watt and a maximum value of 60 Watt. Ion wind drying in the sample slices found also the value of the level of drying, shrinkage, humidity, and energy consumption which increases with increasing power at the reactor.

Keywords: ion wind drying, electrohydrodynamics flow reactor,electric power, potato slices

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Electrohydrodynamic Drying of Plant Seeds with the Shape Variation

Sumariyah [1*], Ainie Khuriati [2], Enny Fachriyah[3], Sulistiyani Hayu Pratiwi[4]

[1,2,4] Physics Department, Mathematics and Sciences Faculty, Diponegoro University, Indonesia

[3] Chemistry Department, Mathematics and Sciences Faculty, Diponegoro University, Indonesia

Email : sumariyah.jaelani@gmail.com

Abstract.

Electrohydrodynamic (EHD) drying is a dryer that does not require moving parts and is environmentally friendly and it results more durable. The purpose of it study is to compare among the physical characteristics of the results of the EHD Drying of the crop seeds with variations in shape. This research used samples of Cucumber (Cucumis sativus) seeds, Long Bean (Vegna Unguiculata ssp) Seeds and Winged bean (Psophocarpus Tetragonolobus) Seeds. It is in variations in diameter of seeds form. EHD flow is yield corona discharge plasma. It is using 10 pairs x 10 pairs of electrodes wich have configuration pin-three concentris ring . It is generated with applied high voltage of 18 kV, the gap electrode 4 mm and drying time 0-35 minutes with a 5 minute time interval. According to the results obtained, the graph of drying rate and the energy efficiency of all seeds sample is the maximum at the beginning of drying is after a 30 minute drying time and then decays with additional drying time. The drying rate and energy efficiency of the cucumber seeds is the largest and the winged bean seeds are the smallest.

Keywords: Electrohydrodynamic drying, pin-three concentris ring electrodes, drying rate, energy efficiency.

Calculating Ground Shear Strain (GSS) of Microtremor Data Based Graphical User Interface Python Programming

S. Ina, G Yulyanto, M Irham N

Department of Physics, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof. Soedharto, SH., Tembalang Semarang 50275, Indonesia

E-mail : senthiaina@gmail.com, gatoty@fisika.undip.ac.id

Abstract.

A programming was made to calculate Ground Shear Strain (GSS) value of microtremor data using Python. Microtremor is a repetitive ground vibration that propagates in soils containing certain sources. Microtremor method can be used to determine the value of Ground Shear Strains (GSS). Ground Shear Strain can be used to characterize the impacts occur during earthquakes, such as liquefaction, soil cracking, land subsidence, landslides and ground vibration. Analyzing GSS value can be used to obtain information about soil response of an earthquake as a disaster reconstruction in the mitigation effort. In this research, the data processing conducted by following steps: (i) Processing data using geopsy software to get the values of predominant frequency (f_0) and amplification(A_0), (ii) Finding v_s30 value using USGS data, and (iii) Making python scripts for calculating microtremor data. The result of this research showed that calculating microtremor data can be done by using python software and has the same value as if using Microsoft excel.

ISN19-PHY-018

Real-time Vehicles Velocity Monitoring and Crossroads Evaluation Using Rule-Based RESTful Maps API Service

Agus Hartanto[1], Farikhin Farikhin[2], and Suryono Suryono[3]
[1]Department of Information System, Post Graduate School, Diponegoro University
Jl. Imam Bardjo SH No.5, Pleburan, Kec. Semarang Sel., Kota Semarang, Jawa Tengah 50241, Indonesia
[2]Department of Mathematics, Faculty of Science and Mathematics, Diponegoro University
Jl. Prof.H.Soedarto S.H, Tembalang, Kec. Tembalang, Kota Semarang, Jawa Tengah 50275, Indonesia
[3]Department of Physics, Faculty of Science and Mathematics, Diponegoro University
Jl. Prof.H.Soedarto S.H, Tembalang, Kec. Tembalang, Kota Semarang, Jawa Tengah 50275, Indonesia
E-mail: agushartx@gmail.com

Abstract.
Vehicle velocity monitoring system is an important part of the transportation system. This system is used to conduct monitoring and evaluations, so that the quality of the land transportation system can be improved. At present, there are many vehicle velocity monitoring systems. Unfortunately, most of these devices still have to be operated manually, some other devices may have been automated, but it still involves many devices that must be installed, so it is causing problems in installation, maintenance, and repair in the event of damage. In this research, we propose a rule-based cloud system, which monitors the average speed of vehicles passing on the roads that can be used to evaluate the traffic controller at crossroads using the Maps API-Service that accessed via RESTful webservice. Longitude and latitude coordinates of the road are inputted into the Maps API-Service than results in distance and travel time data. From this data which is then developed into other information using formula and rule-based method to measure the vehicle's velocity and traffic controller performance. The result of this research produces a cloud-based information system that can measure vehicle velocity and performance of crossroads traffic controller in real-time and automatically.

Keywords: *Roads and intersection evaluation, Rule-based RESTful webservice, vehicle velocity*

ISN19-PHY-019

Delineation Of The New Site Of Ngempon Temple In Ngempon Village, Bergas District, Semarang Regency Using The Microtremor Method

M Ajib Ubaidillah [1], Gatot Yuliyanto [1]
Affiliations
[1]Student Department of Physics Faculty of Science and Mathematic Diponegoro University Semarang Indonesia
[2]Lecturer Department of Physics Faculty of Science and Mathematic Diponegoro University Semarang Indonesia

E-mail: ajibubai.2015@fisika.fsm.undip.ac.id, gatoty@fisika.undip.ac.id

Abstract
Ngempon Temple was discovered below the ground level caused by collapsed land in 1952 in Ngempon Village, Bergas Sub-district, Semarang Regency. The HVSR method is used in the three-component microtremor to identify the bedrock response frequency. Additionally, this method can be used to determine the dominant resonance frequency ($f0$) and the peak value of HVSR (A) which show the dynamic characteristics of sediments. This study aims to determine the position and types of archaeological objects that are still hidden and make a modeling of the subsurface conditions. The method used in this study is a trapezoidal measurement geometry by measuring spaces within 2 meters. Data retrieval duration is 10 minutes for each point and the specified frequency sampling is 10 Hz. The H/V curve generated from data processing will result in the frequency value and amplification that will be analyzed and linked to the Ngempon Temple archaeological data. The results obtained from this study indicate the existence of the temple's fundamental rocks and rock debris model below the surface indicated by the contours of the HVSR spectrum profile. They are an amplification value of 1.3 and the response frequency with a sensitivity of up to 4 Hz from the surface, and an amplification value of 1.3 and the response frequency with a sensitivity of 5.8-10 Hz. The sensitivity to measurements is based on whether the response passes the excavation of BPCB Central Java. If it passes, then the response indicates an anomaly of the fundamental rocks. Vice versa, if the measurement does not pass the object of research, the response only shows the existence of temple rocks fragments. The amplification value and frequency of response shows a difference between the temple rock and the sediments above it.

Keywords: Ngempon Temple, microtremor, HVSR, frequency amplification.

ISN19-PHY-021

Measurement of Eye Lens Doses Estimation in Interventional Radiology

Zaenal Arifin[1], Evi Setiawati[1], Apri A Putri[1], Eko Hidayanto[1], Heriyani[2] , Ari D Reskianto[2] and Rusmanto[3]

[1]Department of Physics, Faculty of Science and Mathematics, Diponegoro University
Jl. Prof. H. Soedarto, S.H, Tembalang, Semarang, Indonesia
[2]Kraton Pekalongan Hospital
Jl. Veteran No.31, Dukuh, Pekalongan Utara, Kota Pekalongan, Jawa Tengah
[3]Nuclear Energy Regulatory Agency
Jl. Gadjah Mada No. 8, Jakarta Pusat, Indonesia
E-mail: zaenalarifin@fisika.fsm.undip.ac.id

Abstract

International Commission of Radiological Protection (ICRP) Publication number 118 at 2012 recommends decreasing the Dose Limit Value of eye lens for workers from 150 mSv to 20 mSv in 1 year, and to not exceed 50 mSv in a certain year. This study is aimed to evaluate the value of eye lens radiation dose based on the effect of angles on the monitor in interventional radiology by using a head phantom as a simulation of the workers' position with a height of 150 cm, 160 cm and installed thermoluminescent dosimeter (TLD) chips Hp (10) at 66 - 67 kV and 385 - 395 mA. The radiation lens dose value during 1 minute fluoroscopy irradiation results a mean of radiation dose value that ranges between 0,54 – 0,79 mSv and 0.52 - 0.70 mSv, during 4 minutes fluoroscopy irradiation ranges between 0,48 – 0,72 mSv and 0.55 - 0.75 mSv, and during 10 seconds cinefluorography ranges between 0.52 – 0,75 mSv and 0.48 - 0.66 mSv. The relationship between the linearity of fluoroscopy irradiation time and dose area product (DAP) obtained an equation of y = 0.0139x-0.0535 with a correlation coefficient R^2 = 0.9982. The relationship between the linearity of fluoroscopy irradiation time and Kinetic Energy Released per Mass unit (KERMA) obtained an equation of y = 0.0957x-0.0495 with a correlation coefficient R^2 = 0.9988.

Keywords : *Interventional Radiology, Eye lens, TLD, DAP, KERMA*

ISN19-PHY-022

Study of low head turbine propellers for the use of micro hydro power plants in Aceh, Indonesia

Low head hydropower has the potential to produce green energy with a minimum on the environment and is one of the best choices for decentralized power plants. Aceh is one of many regions in Indonesia with hilly topography and many river streams. Of the 66 rivers in Aceh that have potential energy sources that can be developed 98.5 percent are low head. Generally, the technique for overcoming altitude problems in low river flows is the use of low head turbines. An important aspect of head power generation techniques is the selection of turbines. The study aimed to study low head propeller turbines for the use of micro hydropower plants. By calculating the main dimensions and main components of the turbine, field experiments were carried out to determine turbine rotation and energy, as well as turbine efficiency at a flow rate of 0.06 m3 / sec and a 3.5-meter head. The calculation results obtained by a specific turbine speed of 1.53, runner diameter of 0.30 meters, hub diameter of 0.06 meters, shaft diameter 0.03, runner length 1.08, triangular speed of 30 degrees with the number of blades 4 pieces. From the results of field experiments, the maximum turbine rotation speed is 1828 rpm, the turbine power is 2,530 watts with a voltage between 220 to 240 volts while the maximum efficiency is 57 percent. It can be concluded that propeller-type turbines with the low head are suitable for micro power plants, especially in remote areas.

Keywords: Propeller turbine, low head, micro-hydropower plant

ISN19-PHY-023

Burnup computation for HTR-10 using MCNPX as the function of radius and fuel enrichment

Evi Setiawati[1], Saptahady Juliawan[1], Fajar Arianto[1]

[1]Department of Physics, Faculty of Science and Mathematics, Tembalang University

Jl Prof.H.Soedarto, S.H., Tembalang, Semarang 50275, Indonesia

E-mail: evi_setiawati_msi@yahoo.com, saptahady07@gmail.com, ariantofajar@gmail.com

Abstract

The HTR-10 is a gas-cooled high-temperature reactor with spherical fuel and moderator called pebble bed and operated on 10 MW thermal power. Until now, a lot of research and development on the HTR-10 in terms of neutronic computational modelling has been carried out, one of which is burnup analysis. Fuel depletion or burnup analysis is an analysis related to fuel control and reactor output power. This analysis is needed, because changes in fuel composition will affect the neutronic parameter values of a reactor. The 10 MW HTR fuel depletion study has been conducted by modelling the reactor using MCNPX (Monte Carlo N-Particle e-Xtended) to analyze the effect of radius and enrichment of reactor fuel to the k_{eff} value and the burnup rate. The study is conducted by modelling a 10 MW HTR with three sorts of fuel kernel radiuses using MCNPX. First, 250 μm radius, second, 275 μm radius, third, 300 μm radius and all radiuses are variated with 10-15% fuel enrichment. TRISO particles are dispersed using simple cubic (SC) lattice in the fuel zone. The fuel balls are allocated in the reactor core along with moderator balls using body-centered cubic. To perform all the calculations, MCNPX utilizes continuous energy data library ENDF/B-VI. From the calculation result using MCNPX can be concluded that the kernels with the radius of 275 μm and 300 μm at 14% and 13% fuel enrichment respectively were more able to maintain a critical condition within a year of operation than the kernels a 250 μm radius and the fuel with 250 μm radius has the highest burnup rate that is 52,07 GWd/MTU.

Keywords : *MCNPX, fuel burnup, HTR, kernel radius, fuel enrichment*

ISN19-PHY-025

Study of Daily Rainfall Distribution for Flood Disaster Mitigation in Bandar Lampung

Achmad Raflie Pahlevi[1,2], Warsono[1], Khorin Nisa[1], and Mustofa Usman[1]

[1]Faculty of Mathematics and Natural Sciences, University of Lampung

[2]Indonesia Agency for Meteorology Climatology and Geophysiscs (BMKG)

E-mail: achmad.raflie@bmkg.go.id

Abstract. Extreme rainfall is a hydro-meteorological event that most often causes disasters such as floods and landslides in Bandar Lampung. This makes the importance of using rainfall probability distribution to explain the potential of extreme rainfall events in Bandar Lampung. In this study, rainfall data were modelled using generalized Pareto distribution. The generalized Pareto distribution is known to be effective in explaining extreme event data and is suitable for data that involves time-dependent parameters to account for temporal changes in the frequency of distribution. The data used in this study are the intensities of daily rainfall from the Maritime Station of Meteorology, Climatology and Geophysics Agency (Indonesian: Badan Meteorologi, Klimatologi, dan Geofisika, abbreviated BMKG) in Panjang - Bandar Lampung in the period 1999-2018. The results showed that the generalized Pareto distribution was very suitable in describing the intensity of rainfall in Bandar Lampung and could be used for flood disaster mitigation.

Keyword: Extreme rainfall, generalized Pareto distribution, flood disaster mitigation

ISN19-PHY-026

Database Replication Method for Real-Time Measurement pH Parameter of Fishery Using Wireless Sensor System

Wibowo Harry Sugiharto [1], Muhammad Imam Ghozali [1], Heru Susanto [2], Mochamad Arief Budihardjo [3], Suryono Suryono [4]

[1] Department of Informatics Engineering, Faculty of Engineering, Universitas Muria Kudus, Kudus – Indonesia

[2] Department of Chemical Department of Chemical Engineering, Universitas Diponegoro, Semarang, Indonesia

[3] Department of Environmental Engineering, Faculty of Engineering, Diponegoro University, Semarang - Indonesia

[4] Physics Department of Science and Mathematics Faculty, Diponegoro University, Semarang – Indonesia

Abstract.

The problem of mass fish mortality in Indonesia is already common, Environmental conditions determine the survival of fish. Determination of water environmental conditions has water parameters including water (depth, brightness, water temperature, acidity (pH), dissolved oxygen (DO) and ORP (Oxidation Reduction Potential)). Acidity (pH) is one of the important things in determining the water quality of water. The pH generally increases due to polluted waters. Environmental conditions that are always changing will affect the life processes of organisms in it, especially fish need to be monitored in realtime, especially to avoid massive fish mortality. This paper purpose the real-time acquisition builds with combine the wireless sensor system and database replication concept. From the result of implementation database replication method for real-time measurement pH parameter of fishery agriculture using wireless sensor system, that's system can perform continuously to real-time acquisition data online

ISN19-PHY-027

Development of electrooptic devices by strengthening electromagnetic fields using colloidal silver solutions

H Sugito, A Khumaeni, KS Firdausi, M Azam
Department of Physics, Faculty of Science and Mathematics, Diponegoro University
Jl. Prof. Soedharto, SH., Tembalang Semarang 50275, Indonesia
E-mail : herinuha@gmail.com

Abstract.
The development of electrooptic devices by strengthening the electromagnetic fields using colloidal silver has been carried out. This tool works based on the electrooptics method. The samples used were aquabides and a solution of aquabides mixed with colloidal silver with various concentrations. The light source used is a green laser with a wavelength of 532 ± 10 nm. Measurements are made by observing changes in the natural polarization angle and the electrooptical polarization angle. The test results show that at a concentration of 0-0.25 there is a significant change in the polarization angle to the increase in the external electric field (0-9 kV). While at a concentration of 2.5-1 there is a tendency that there is no change in the polarization angle.

ISN19-PHY-029

Authentication of Gold Jewelry Based on Elemental Composition Using Laser Induced Breakdown Spectroscopy

Dewi Anggraini, Beny Sulistyo Hartadi, Ali Khumaeni*)

[1]Department of Physics, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof. Soedarto, SH, Tembalang, Semarang 50275, Indonesia

*) Corresponding author :khumaeni@fisika.undip.ac.id

Abstract.

One method in identifying gold jewelry is laser-induced plasma spectroscopy (LIBS). In LIBS technique, plasma is produced by the interaction of laser pulses with material. Plasma formed shows a monochromatic beam of light with a certain wavelength then analyzed using a spectrometer. In this present research, pulse Nd: YAG laser (1064nm) is used to generate plasma. Au spectrum analysis was performed to distinguish 99.9%, 75%, and imitation jewelery. The 99.9% gold jewelry spectrum has similarities to the 75% gold spectrum. However, Au elements in imitation jewelry are not detected. Spectrum data with different treatment according to the repetition rate also conducted to determine the characteristics of the generated plasma.

Synthesis of gadolinium nanoparticles in spinach-extracted liquid using pulse laser ablation method

Syifa Avicenna[1], Iis Nurhasanah [1] , and Ali Khumaeni[1*]

[1]Department of Physics, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof. Soedarto, SH, Tembalang, Semarang 50275, Indonesia

[*)]E-mail: khumaeni@fisika.undip.ac.id

Abstract.

Colloidal gadolinium nanoparticles (GdNPs) have been produced by using pulsed laser ablation (PLA) method. The synthesis in this study used a low-power neodymium yttrium aluminum garnet (Nd:YAG) laser (45 mJ). Pulse laser beam, which has specifications of 1064 nm, 7ns, 10 Hz, was focused on a high-purity metal gadolinium (Gd) surface, which was placed into spinach-extracted liquid, to produce GdNPs colloid. It is known that the spinach naturally contains iron (Fe), which is quite high concentration from $FeSO_4.7H_2O$. The magnetic characteristics of iron are ferromagnetism, likewise, gadolinium. As the contrast agent, especially in MRI, the magnetic characteristics of the material are needed in order to improve the image quality. Colloidal GdNPs were successfully produced at a total concentration of 71 ppm after laser bombardment. The TEM image of GdNPS shows that these nanoparticles had a spherical shape. The average diameter of GdNPs was 15 nm.

ISN19-PHY-031

Effects of repetition rate on identification of elements in gemstone using the LIBS method

Angger Bagaskara[1], Qidir Maulana Binu S.[1], Heri Sugito[1], Ali Khumaeni[1*)]

[1]Department of Physics, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof. Soedarto, SH, Tembalang, Semarang 50275, Indonesia

E-mail: *) khumaeni@fisika.undip.ac.id

Abstract.

In the material science, there are several methods for detecting elemental content in a material (sample) such as X-Ray Fluorescence (XRF), (X-Ray Diffraction) XRD, (Scanning Electron Microscope) SEM, (Transmission Electron Microscope) TEM), etc. Non-metallic samples such as gemstone can be detected by XRF and XRD methods. But in this method, the sample must get special treatment such as being crushed and converted into powder form. In this study LIBS was used to identify elements in gemstone. The laser-induced breakdown spectroscopy (LIBS) method is an alternative method for solving deficiencies in the previous study. The results show the some elements contained in the gemstone can clearly be detected. The elements are also confirmed by using standard technique of X-ray fluorescence and the result revealed that the elements are consistent as in the case of LIBS technique.

ISN19-PHY-032

Analysis of Signal to Noise Ratio from 1.5 Tesla MRI Head Coil Phantom Image on Daily Quality Assurance Nurul Cahaya[1],

Giner Maslebu, Eli Sabet Diyah Kusrini, Andreas Setiawan
Physics Departement, Faculty of Science and Mathematics, Universitas Kristen Satya Wacana
Jl. Diponegoro 52-60 Salatiga, 50711, Indonesia, Telp: (0298) 321212
E-mail: giner.maslebu@uksw.edu

Abstract
Signal to Noise Ratio (SNR) is one of the quality control test for most diagnostic imaging modality, including Magnetic Resonance Imaging (MRI). This study used MRI 1.5T GE Signa Creator type and head coil phantom with variations of Echo Time (TE), Repetition Time (TR), voxel volume and flip angle. 16 data images were obtained from acquisition process. These images were analysed using image processing software to calculate the SNR value. It results in four data distribution with the highest value of 36.98 and the lowest value of 32.64. The graphs of voxel volume versus SNR also formed four groups of data with overall value above SNR baseline value for daily operation.

Keywords: SNR, MRI, Quality Assurance

ISN19-PHY-033

Fabrication and Properties of High Efficiency Dye-Sensitized Solar Cells (DSSCs)With Photon Absorption Optimization

Jatmiko Endro Suseno, Asep Yoyo Wardaya and Ali Khumaeni
Physics Department, University of Diponegoro, Semarang, Indonesia

Abstract

Dye-sensitized solar cells (DSSCs) have attracted much attention because these unconventional solar cells exhibit high performance and have the potential for low-cost production. To achieve higher performances for solar cells based on organic dyes, comparable to those for solar cells based on color spectrum, light absorpsion of organic dyes is required.

In a DSSC, the electrodes are surrounded by a thin shell and a dye monolayer for 3 colors of dyes. Based on the optical properties, the large absorption of light can be given in a colorless dye with a wavelength of the most extensive. Combination colors from three band basic colors, such as red (R), green (G) and blue (B) can create the optimum light absorption. The Incident Photon-to-charge Carrier Efficiency (IPCE) will be high if absorption spectrum graph of dye color is large too, therefore the Dye-Sensitized Solar Cell (DSSC) will produce photon current (Iph) or high short-circuit current (Isc). To ensure a solid surface coverage, the dye must have a high absorption coefficient on TiO_2. Increased absorbance of TiO_2 electrodes can be maximized with reduced layer thickness so the possibility of recombination decreases with decreasing electrode thickness and thicker electrolytes with low vapor pressure can be applied. The longer the wavelength, the less absorption will cause a small portion of the sun's spectrum to disappear.

The experiment showed that combination of three band colors of dye is obtained largest light absorption. This black color proved to have the greatest light absorption. The experiment can be resulted for exhibit a high open-circuit voltage VOC of 320 mV, open-circuit current IOC of 0.045 mA, maximum voltage Vmax of 134 mV, maximum current Imax of 0.044 mA, maximum power Pmax of 5.89 □W, Fill Factor (FF) of 42 and a power conversion efficiency of 9.1%.

ISN19-PHY-034

Characterization of Radiosensitization Effect of Pulsed Laser Ablated-Gadolinium

Safira Arta Paramita, Iis Nurhasanah[*)], Ali Khumaeni and Zaenal Arifin

Department of Physics, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof. Soedarto, SH, Tembalang, Semarang 50275, Indonesia

[*)]E-mail: iisphysics@gmail.com

Abstract

Nanomedicine is a field of medical treatment research that has developed rapidly in recent years for the diagnosis and treatment of cancer. New strategies in nanomedicine is to improve cancer diagnosis and therapy at the cellular and molecular level. Materials that are often used for nanomedicine are metal based gadolinium. This research presents preliminary study of radiosensitization properties of gadolinium colloid. Gadolinium colloid was synthesized using a pulsed laser ablation method in pure water. The gadolinium colloid was characterized using a Scanning electron microscope and UV-Vis spectrophotometer. Radiosensitization properties of gadolinium colloid was examined based on decomposition x-ray irradiated methylene blue. Gadolinium colloid consists of spherical shape particle and has band gap energy of 5.76 eV. Gadolinium colloid possessed radiosensitization properties with dose enhancement factor in the range 1.51-1.54.

Keywords : *gadolinium, radiosensitization, colloid, pulsed laser*

New record of *Bazzania* species (Marchantiophyta, Lepidoziaceae) from Java, Indonesia

Lilih Khotimperwati[1], Rina Sri Kasiamdari[2], Santosa[2] and Budi Setiadi Daryono[2]

[1]Department of Biology, Faculty of Science and Mathematics, Tembalang University
Jl. Setia budi, SH, Ngesrep, Semarang 50275, Indonesia
E-mail: lieh_lilih@yahoo.com

[2] Departement of Tropical Biology, Faculty of Biology, Universitas Gadjah Mada. Jl. Teknika Selatan, Sekip Utara, Sleman, 55281, Yogyakarta, Indonesia. Tel./ Fax: +62-274-546860

E-mail: rkasiamdari@ugm.ac.id

Abstract

Bazzania has the largest species of the family Lepidoziaceae (Marchantiophyta). This genus is abundant in the moist montane forest. Therefore this study aimed to explore the diversity of Central Java, i.e. Mt. Lawu, Mt. Ungaran and Mt. Slamet.

Eleven species of *Bazzania* have been recorded in Central Java, which are *Bazzania calcarata*, *B. erosa*, *B. japonica*, *B. javanica*, *B. pectinata*, *B. praerupta*, *B. serpentina*, *B. tridens*, *B. fauriana*, *B. perfalcata* and *B. succulenta*. In this article, we report three new record species for Java, which are *B. fauriana*, *B. perfalcata* and *B. succulenta*. *B. perfalcata* and *B. succulenta* are the first records and *B. fauriana* is the second records of the genus *Bazzania* from Indonesia.

Ilustration and description based on macro - micromorphological characteristics, information about of its synonims and distribution of this species is given. Molecular data of the *trn*L-F were used to determine the phylogenetic position of the new record species with their allied species in Central Java. *B. fauriana*, *B. perfalcata* and *B. succulenta* are newly recorded species of *Bazzania* in Java, supported by their morphological descriptions and a phylogenetic analysis.

Keywords : *Bazzania, molecular, morphological, new record, Java*

ISN19-BIO-003

Analysis Total Plate Count (TPC) and Organoleptic Test on Seaweed Chips

Muhammad Zainuri[1], Hadi Endrawati[2], Sri Winarni[3], Fahmi Arifan[4], Agus Setyawan[5], Herfiana Priti Hapsari[5]

Corresponding author: wiwin.undip@gmail.com

[1]Department of Oceanography, Faculty of Fisheries and Marine Science, Diponegoro University, Semarang, Indonesia

[2]Department of Marine Sciences, Faculty of Fisheries and Marine Science, Diponegoro University, Semarang, Indonesia

[3]Department of Biostatistics and Population Study, Public Health, Diponegoro University, Semarang, Indonesia

[4]Programme Diploma of Chemical Engineering, Vocational School Faculty, Diponegoro University, Semarang, Indonesia

[5]Departement of Physics, Faculty of Science and Mathematics, Diponegoro University

ABSTRACT

Some seaweed in Indonesia has economic value, such as jelly-producing seaweed, namely Gracilaria, Gelidium, Gelidiopsis, and Hypnea, carrageenan-producing seaweed, namely Euchema spinosium, Euchema cottonii, Euchema striatum, algin-producing seaweed, that Sargassum, Macrocystis and Lessonia. This study aims to determine the microbial contamination on seaweed chips with total plate count (TPC) method and organoleptic test. The samples used were *Sargassum* chips and *Eucheuma cottonii* chips with variations in drying of seaweed raw materials. Seaweed chips samples were tested for microbial contamination. The number of microbial contamination on Sargassum chips was 2.6 x 10^2 CFU/ml and E. cottonii chips was 2.8 x 10^2 CFU/ml. Based on TPC analysis concluded that *Sargassum* chips and *E.cottonii* chips were both safe for consumption because the amount of microbial contamination does not exceed the maximum limit of the Indonesian National Standard, which is 10^5 CFU/ml. Based on organoleptic tests, *Sargassum* chips were preferable than *E. cottonii* chips.

Keywords: *TPC, organoleptic, seaweed chips*

ISN19-BIO-005

Molecular Identification and Carotenoid Antioxidant Test of *Chaetoceros* sp. Potential Isolated from Gondol, Bali

Mochammad Ajie Susetyo[1], Hermin Pancasakti Kusumaningrum[2], Siti Nur Jannah[3], and Ridwan Abdullah[4]

Department of Biology, Faculty of Science and Mathematics, Diponegoro University

Jl. Durian Dalam 1 No 19 B Srondol Wetan Banyumanik, Semarang 50264, Indonesia

E-mail: ajiesusetyo97@gmail.com

Abstract

Chaetoceros is one of the largest genera of microalgae that has more than 400 species and it is the primary producers in the marine ecosystem. *Chaetoceros* sp. has some of the pigment which is very important for their survival including chlorophyll and carotenoid pigments. The aims of this study are to understand the results of *Chaetoceros* sp. molecular identification using ITS fragments, to know its kinship and to test the ability of the antioxidant activity of carotenoids pigments. The results of ITS fragments identification of *Chaetoceros* sp. are used to develop the further research, namely to complete the morphological information with molecular information intended in the kinship of *Chaetoceros* sp. Antioxidant test results are used to determine the antioxidant activity in *Chaetoceros* sp. The methods were the microalgae isolation of *Chaetoceros* sp. using the Doyle and Doyle method, amplification of ITS4 and ITS5 fragments, sequencing analysis and antioxidant activity test. The results of DNA isolation showed the concentration and purity for about 2842.1 ng / µl and 1.97 respectively. PCR products from amplification of the ITS fragment produced 882 bp. Thus, phylogenetic analysis revealed that *Chaetoceros* sp. had a kinship close to *C. muelleri* KF 998567.1 and the antioxidant activity test showed IC_{50} values yielded 72,386 ppm.

Keywords : *Chaetoceros sp., ITS4 and ITS5 Fragments, Isolation, Sequencing, Phylogenetic, Activity Test of Antioxidants.*

ISN19-BIO-007

ANTIBACTERIAL ACTIVITY OF BASIL OIL (*Ocimum basilicum* L) AND BASIL OIL NANOEMULSION

Abstract

Basil oil contains bioactive compounds with antibacterial activity. One way to increase the antibacterial activity of basil oil is to use a nanoemulsion design. This study aims to obtain a nanoemulsion of basil oil with the best antibacterial activity against *Escherichia coli* and *Staphylococcus aureus* compared to basil oil. Process isolation of basil oils uses the method of steam distillation. The nanoemulsion process uses the ultrasound method. The essential oils and nanoemulsions produced were analyzed by GC-MS. The five components of basil oils with the largest percent area are sabinene (60,01%), myrcene (17,76%), trans-caryophyllene (4,08%), linalool (2,58%), and alpha-pellandrene (2,35%). Whereas in nanoemulsion are sabinene (44,68%), myrcene (17,86%), trans-caryophyllene (8,15%), terpineol-4 (6,65%), and 1.6-octadient-3-ol 3,7-dimethyl (4,89%). The basil oil has a droplet size of 54960 nm while the nanoemulsion of basil oil has a droplet size of 243.4 nm. The concentration of basil oil influences the antibacterial activity. The essential oil of basil, at a concentration of 10% to 25%, has a zone of low to medium protein inhibition at *E. coli* and is strongly directed towards *S. aureus*. The nanoemulsion of essential oils at a concentration of 5% to 25% has a moderate to strong inhibition zone in *E. coli* and a moderate to very strong group in *S. aureus*.

Keywords : basil oil, nanoemulsion, ultrasonication, antibacterial

ISN19-BIO-008

The potency of B-G31 isolate associating with *Valanga nigricornis* as a probiotic candidate to digest cellulose

Ridwan Abdullah[a]*, Farras Daffa Imtiyaz[a], Wijanarka[a], Nurhayati[a]
[a] Department of Biology, Faculty of Science and Mathematics, Diponegoro University,
Jl.Prof.H.Soedarto S.H Semarang, Indonesia
Corresponding author: ridwanabdulloh20@gmail.com

ABSTRACT

Cellulose is a polymer that is abundant in the environment, but they are unable to digest by the human digestive system. The aims of this study are to determine the anti-pathogenic ability and measure the cellulase activity of B-G31 isolate. Auto-aggregation and co-aggregation methods were used to analyse the anti-pathogenic role of B-G31 against biofilm formed by *Escherichia coli* and *Staphylococcus aureus*. To assess glucose concentration obtained from cellulose degradation, B-G31 supernatant was reacted in different CMC concentrations (0.5%, 1%, 1.5%, 2% and 2.5%) and was measured their absorbance (OD_{540}) using ELISA spectrophotometer. The study has revealed that the percentage of B-G31 auto-aggregation is 26% and they can explicitly inhibit colonisation of *E. coli* and *S. aureus* biofilm accounted for 20.21% and 21.20%, respectively, the bacteria also exhibited antagonistic activity towards two bacterial pathogens. Furthermore, enzyme activity was relatively high in the presence of 2% CMC with 0.913 U/mL to yield average glucose of 411.75 ppm and significantly different from that in control group ($p < 0.05$). However, the enzyme value in 0.5% CMC concentration was about 0.345 U/mL and not significantly different from control group ($p > 0.05$). Our results indicated that B-G31 isolated from *Valanga nigricornis* can form aggregates against bacterial-tests biofilm and increase degradation of cellulose, thus, the isolate could probably be used as novel probiotic to digest cellulose.

Keywords: Cellulase, antagonistic activity, *Valanga nigricornis*, probiotic

ISN19-BIO-009

Formulation of Jasmine Aromatheraphy with Variaton of Jasmine (Jasminum sambac Air.) Esscence and Menthol

Fahmi Arifan[1], Satriyo Adhy[2], Lana Milatul Khusna[3], Ira Roza Milinda[4], Astrid Laksmita Djati[5]

[1]S1 Terapan Teknologi Rekayasa Kimia Industri, Vocational School, Diponegoro University

[2]Department of Computer System, Faculty Science and Mathematics, Diponegoro University

[3]Department of Physics, Faculty Science and Mathematics, Diponegoro University

[4] Department of Nutrition Science, Faculty of Medicine, Diponegoro University

[5]Department of Biology, Faculty Science and Mathematics, Diponegoro University

Jl. Prof. Sodharto, SH, Tembalang, Semarang 50275, Indonesia

E-mail: fahmiarifan80@gmail.com

Abstract

Aromatherapy is a method of body treatments and a cure with scents of essential oil derived from aromatic herbs, savory and delicious. The aim is to improve the health and well-being of body, mind and soul. The study used an experimental method to do the mixing. Variations made on the amount of essential oils and menthol. The first variation 3 ml of essential oil of jasmine and 3 grams of menthol. The second variation 6 ml jasmine essential oil and 3 grams of menthol. Variation 6 ml of essential jasmine and 6 grams of menthol. Jasmine aromatherapy formulations of the results of physical tests and trials carried preferences. The physical properties such as homogeneity was good with a pH of 6.5. A test shows if the formula II is made by comparison of the scent of jasmine and lavender 2: 1 more desirable.

Keywords : Aromatherapy, essential oil, menthol

ISN19-BIO-010

Isolation and identification of rare actinomycete-like bacteria from soil based on 16S ribosomal RNA gene sequences

Y Eshananda[1], F Ningsih[1,2], Y Sakai[3,4], A Yokota[3], S Yabe[3,4], W Sjamsuridzal[1,2]

[1]Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Indonesia, Kampus UI Depok, Depok 16424, Indonesia

[2]Center of Excellence for Indigenous Biological Resources-Genome Studies, Faculty of Mathematics and Natural Sciences, Universitas Indonesia, Kampus UI Depok, Depok 16424, Indonesia

[3]Department of Microbial Resources, Graduate School of Agricultural Science, Faculty of Agricultural, Tohoku University, 468-1 Aoba, Aramaki, Sendai, Miyagi 980-0845, Japan

[4]Hazaka Plant Reseach Center, Kennan Eisei Kogyo Co., Ltd., 44 Aza-Inariyama, Oaza-Ashitate, Murata-cho, Shibata gun, Miyagi 989-1311, Japan.

Abstract. The rare actinomycete-like bacteria are mycelium-forming bacteria other than phylum *Actinobacteria* that difficult to isolate and cultivate. This group of bacteria was recently speculated by many scientist as a potential new microbal resource for the discovery of novel compounds, as a substitute for actinomycetes. In this study we isolate and identify rare actinomycete-like bacteria from forest soil collected under bamboo trees, near the Cisolok Geysers, Sukabumi, Indonesia. The isolation of bacteria was performed using Reasoner's 2A (1:10 dilution) medium with 2% gellan gum instead of agar, and incubated at 30 °C for three weeks. The 16S rRNA gene sequences of the isolates were examined to determine their taxonomic position. Four isolates, designated K17-1, K17-2, K42, and K44 showed pale oranges colonies and formed mycelia were obtained. The results of 16S rRNA gene sequences of these isolates showed high similarity to members of the genus *Dictyobacter* in the family *Dictyobacteraceae* of the class *Ktedonobacteria* of the phylum *Chlorofexi*, with values 97.16-98.02%, and most closely related to the species *Dictyobacter aurantiacus* S-27^T (97.16-98.02% similarities). This result suggested that the member of the class *Ktedonobacteria*, which considered as rare actinomycete-like bacteria, such as *Dictyobacter* could be found in the forest soil of geothermal area.

Keywords: *Isolation, Identification, rare actinomycete-like bacteria, 16S rRNA gene sequences*

ISN19-BIO-012

THE DENSITY OF MICROPLASTIC IN SEA CUCUMBER (*Holothuria* sp.) AND SEDIMENT AT TIDUNG BESAR AND BIRA BESAR ISLAND, JAKARTA

Budiarto Heru Sayogo[1], Mufti Petala Patria[2], Noverita Dian Takarina[3]

[1]Marine Science Postgraduate Program, Faculty of Mathematics and Natural Science University of Indonesia Kampus Depok Pondok Cina, Depok 16424, Indonesia
[2]Departement of Biology, Faculty of Mathematics and Natural Science University of Indonesia Kampus Depok Pondok Cina, Depok 16424, Indonesia
[3]Departement of Biology, Faculty of Mathematics and Natural Science University of Indonesia Kampus Depok Pondok Cina, Depok 16424, Indonesia

Corresponding author: acroporansayogo@gmail.com

Abstract. Plastic waste is the dominant type of marine waste found. The plastics are degraded in physics, chemistry and biology to a size of <5 mm. Sea cucumbers are deposite feeder type animals that get food by stirring up sediments so that there is microplastic content in sea cucumbers. This research aims not only to analyze the microplastic density in sediments and sea cucumbers but also to analyze the correlation between microplastic density in sediments and sea cucumbers. This research was conducted from February to April 2018. The research data was the descriptive with purposive random sampling and correlational studies method. Based on calculation analysis, microplastic found in sediments and sea cucumbers on Tidung Island and Bira Besar Island, consists of 4 (four) types. There are fiber with 2722 particles/g; 1982 particles/g, fragment 254 particles/g; 547 particles/g, film 100 particles/g; 50 particles/g and pellets 14 particles/ g; 9 particles/g. Microplastic found in sea cucumbers consists of Tidung Island and Bira Island. Consist 4 (four) types, which are fiber, 2033 particles/g; 1247 particles/g, 137 particle fragments/g; 183 particles/g, film 60 particles/g; 69 particles/g and pellets 9 particles/g; 4 particles/g. Correlation results showed a positive correlation with microplastic in sediments and in sea cucumbers

Keywords: Microplastic, sea cucumber, sediment, Kepulauan Seribu

ISN19-BIO-013

Analysis of Total Plate Count and Fungus Yeast of Mahkota Dewa Fruit as Raw Material for Making Syrup

Sri Winarni[1], Fahmi Arifan[2], Agus Setyawan[3], Asri Nurdiana[4], Windari[5]

Corresponding author: wiwin.undip@gmail.com

[1]Department of Biostatistics and Population Study, Public Health, Diponegoro University, Semarang, Indonesia
[2]Programme Diploma of Chemical Engineering, Vocational School Faculty, Diponegoro University, Semarang, Indonesia
[3]Departement of Physics, Faculty of Science and Mathematics, Diponegoro University
[4]Departement of Civil and Planning, Vocational School Faculty, Diponegoro University, Semarang, Indonesia
[5]Departement of Biology, Faculty of Science and Mathematics, Diponegoro University

Abstract

Mahkota Dewa (*Phaleria macrocarpa* L.) or Simalakama plants are native plants from Papua. The Mahkota Dewa fruit can be used to treat various diseases ranging from flu, rheumatism, lungs, cirrhosis of the liver to cancer. The Mahkota Dewa fruit contains alkaloids, saponins, and flavonoids. The presence of flavonoids in the fruit of this plant can be used as an antioxidant. One of the innovations in the use of this fruit is m turn fruit into syrup. Syrup manufacturing process has several stages, namely by choosing the fruit that is ripe and dried first. The Mahkota Dewa syrup from Tazakka in Pledokan Village, Sumowono Subdistrict still uses direct sunlight during the drying process. This study aims to determine the bacterial content of the dried fruit of the Mahkota Dewa with the sun and dry with the oven so that producers can still use the oven aids if the results are not much different. The test site is located in Peldokan Village, Sumowono District, Central Java Medical Laboratory and Medical Devices Testing and Diponegoro University Semarang. The materials and tools used are the mature Mahkota Dewa, tray, oven, dried fruit Mahkota Dewa and oven, the crown god syrup sample, and laboratory equipment . Bacterial testing uses the TPC (Total Plate Count) and Fungus Yeast methods. Based on the results of the bacteriological test analysis of the dried fruit Mahkota Dewa it is known that the number of general germs or TPC and Fungus Yeast in oven dried fruit is more than that of the sun dried which is 1.8×10^5 CFU / gram and 3.9×10^4 CFU / gram. The proximate content of the Mahkota Dewa syrup is 1.43% protein, 0.09% fat, 70.16% carbohydrate, 28.18% water content and 0.14% ash content.

Keywords: Mahkota Dewa, Syrup, Total Plate Count (TPC), Fungus Yeast

ISN19-BIO-014

ABSTRACT

THE TEST OF ANTIINFLAMMATORY ACTIVITY OF INFUSE BRYOPHYLLUM PINNATUM LEAF (Kalanchoe pinnata) ON EDEMA IN THIGH LEG SWISS WEBSTER MALE MICE

xvi, V chapters, 35 pages, 2015, 7 images, 5 tables, 15 appendixes

A research to know effect of anti-inflammatory of infuse bryophyllum pinnatum (Kalanchoe pinnata) against edema on leg thigh Swiss Webster male mice and to see relationships increased concentrations with increased anti-inflammatory effect.

This research was conducted in the Science Laboratory, Faculty of Fisheries, Agriculture, and Biology of the Bangka Belitung University. The method : The animals test that used were 25 Swiss Webster male mice were divided into 5 groups, namely group I: negative control (aquadest), group II: positive control (aspirin), group III, IV, V given infuse bryophyllum pinnatum with concentrations 20%, 40%, and 80%. This research uses a method byinjecting acetic acid in mice thigh.

The measured data is a murine thigh volume for 3 hours using a caliper. Data analysis using the Kruskalwallis, the results showed that there was no significant differences as a value greater than 0.05 is 0.533. This suggests that increasing the concentration did not give a considerable influence on the volume of edema thigh male mice Swiss Webster. From the Mann Whitney test between the concentration of 20%, 40%, 80% and negative controls showed that the difference in significance because the value of significance less than 0,05. This shows that there is a potential infusion of leaf bryophyllum pinnatum (Kalanchoe pinnata) towards healing leg edema in the thigh swiss webster male mice.

Key words : bryophyllum pinnatum leaf (Kalanchoe pinnata), inflammation, anti-inflammatory.

Refences : 29 (1979-2012)

ISN19-BIO-015

PRODUCTION OF COCO-VINEGAR IN A BUBBLE BIOFERMENTOR

Siti Nur Jannah[1*], Susiana Purwantisari[1], Dwi Handayani[2], Indah Hartati[3], Mohamad Endy Yulianto[2]

[1]Department of Biology, Diponegoro University. Jl. Prof Soedarto, Tembalang, Semarang, 50275, Central Java, Indonesia

[2]Diploma III Programe of Chemical Engineering, Engineering Faculty, Diponegoro University. Jl. Prof Soedarto, Tembalang, Semarang, 50275, Central Java, Indonesia

[3]Chemical Engineering Department, Enginering Faculty, Wahid Hasyim University, Jl Menoreh Tengah X no 22 Semarang, Central Java, Indonesia

*Email: nurjannah.suroso@gmail.com

Abstract

The economic value of coconut water can be increased through its convertion into functional drink of coco vinegar powder having anti oxidant and anti diabetic properties. The fermentation of coconut water into coco-vinegar is more beneficial and cheaper than the chemical routes. Nevertheless, in order to guarantee the product stability and increase the fermentation rate, the fermentation process must be controlled. Bubble biofermentation is an aplicative technique in upgrading the production scale and in preserve the coco vinegar quality due to its uniques characteristics i.e: simple design, fixed part, controled flow and agitation, uniform space time, larger contact area, lower energy input, larger capacity and higher mass transfer rate. This research objective was to investigate the influence of parameter process i.e sugar and alcohol concentration towards the formation of acetic acid in the coconut water fermentation. The research showed that bubble fermentation of coconut water was proven as a potential methods for coco vinegar production process. The bubble biofermentation of coconut water conducted by the addition of 8% of sugar, 10% of ethanol and 15% of Acetobacter acetii inoculum and fermentation process for 21 hours was able to give a vinegar having acetic acid concentration up to 1.04%.

Keywords: coconut water, vinegar, bubble biofermentor.

ISN19-BIO-016

ABSTRACT

Suli Arum Sari. 24020115130102. Antibacterial Activity Tests of Isolat Endophytic Bacteria from Tea Plant (*Camellia sinensis*) againts *Staphylococcus aureus* and *Staphylococcus epidermidis*. (Lecturers: **Sri Pujiyanto dan Agung Suprihadi**).

Staphylococcus is one of the most common types of bacteria in Asia that causes local infectious diseases of the skin, nose, urethra, vagina, digestive tract, pneumonia, endocarditis, septic arthritis, and septicemia. *Staphylococcus aureus* and *Staphylococcus epidermidis* are the most common types of Staphylococcus in Asia. Tea plants contain bioactive compounds and endophytic bacteria which are widely used as antimicrobial agents. Endophytic bacteria are bacteria that exist in plant tissues, not pathogenic, and have the ability as the host plant. The purpose of this study was to determine the antibacterial activity of endophytic bacterial isolates of tea plants (*Camellia sinensis*) against the growth of *Staphylococcus aureus* and *Staphylococcus epidermidis* bacteria. The antibacterial activity test of endophytic bacteria of tea plants includes a series of processes such as sample selection, surface sterilization of samples, isolation of endophytic bacteria in agar medium, screening, suspension of endophytic bacteria in 0.9 % NaCl and standardized with 0.5 McFarland, making endophytic bacterial culture in nutrient borth medium, making endophytic bacterial supernatant and antibacterial activity test with paper disc diffusion method. The results obtained are the antibacterial activity of the endophytic bacterial supernatant isolates B23, B14, and A2 on the growth of *Staphylococcus aureus* and *Staphylococcus epidermidis*. The best antibacterial activity was found in endophytic bacterial B14 isolates with inhibition zones of 7.75 mm and 12.5 mm followed by B23 isolates with 7.5 mm and 8.25 mm inhibition zones and A2 isolates with large inhibition zones of 7.42 mm and 8.16 mm. Endophytic bacteria of tea plants showed antibacterial activity against the growth of *Staphylococcus aureus* and *Staphylococcus epidermidis*.

Keywords : Antibacterials, Endophytic bacteria, *Staphylococcus aureus*, *Staphylococcus epidermidis*

ISN19-BIO-017

IDENTIFICATION TEST OF ANTHRAX DISEASE AGENT IN COW'S BLOOD SMEAR ON SURAKARTA

Sunarno[1], Dea Ananda Salsabila[1]

[1)]Department of Biology, Faculty of Sciences and Mathematics, Diponegoro University, Semarang, Indonesia, Email: sunzen07@gmail.com, +6285693142989, Phone/Fax (024) 76480923
Jl. Prof. Soedarto, SH Kampus Undip Tembalang Semarang, 50275

Abstract

Cow is one of farm product that developed by continued for meat needs and also provider animal protein consume in society.The production of Cow's fresh meat can obstructed because Anthrax disease that caused by *Bacillus anthracis.* This type of bacil bacteria can cause people or animal death especially for ruminants like cows. This bacteria also can make significant economic loss. This method can detected Bacillus antrachis existence quickly and accurate so the Cow's death rate can be suppressed, the health quality will be increasingly and can make sure consumer food security maintained. This research was conducted to identify the agents and serologycal indications related to bacteria existence in cow's blood smear.The results of the research is negative from Antrhax test. This conclusion of the research is in Surakarta's cows blood smear not contains *Bacillus antrachis.* It means that in Surakarta's cow free from disease and safe for society consumption.

Key words: Cow, *Bacillus antrachis*, animal protein, cattle, serological

ISN19-BIO-018

THE CONTROL SYSTEM FOR THE NUTRITION CONCENTRATION OF HYDROPONIC USING WEB SERVER

Abstract. This research was conducted to realize a nutrient solution concentration control system using web interface monitoring. The hydroponic system only relies on nutrient solutions whose nutrient levels must be maintained to anticipate the increase in acidic acid levels of the nutrient solutions. Provision of monitoring and recording changes in hydroponic system nutrition is very helpful in maintaining the quality of hydroponic agricultural production. Provision of data from electrical power measurements needs to be supported by information technology, especially remote data measurement technology. This remote data monitoring uses a wireless network system using TDS (Total Desolve Solid) sensor, Arduino DUE microcontroller, WiFI module and internet connection for the observation process. The TDS sensor used previously was characterized and calibrated. The data obtained by the sensor is used to exercise control before sending it to the thingspeak.com channel to be recorded and displayed in realtime. In testing the sensor TDS meter error of 2.88%. The results of the test for 2 hours obtained the results of the control system can increase the nutritional PPM from 213 PPM to 451 PPM within 30 seconds with a nutrient enhancer sample of 779 PPM, and decrease from 779 PPM to 431 PPM within 70 seconds with a water-enhancing sample of 213 PPM for the 445 PPM set point. In the second test result for 2 hours, the control system results can increase the nutritional PPM from 215 PPM to 814 PPM within 30 seconds with a nutrient enhancer sample of 956 PPM, and decrease from 956 PPM to 754 PPM within 40 seconds with a water-enhancing sample of 215 PPM for the 780 PPM set point. PPM value of nutrients can be affected by the presence of other solids such as sand which dissolves with water.

ISN19-BIO-019

Histologic Response of Aortic *Rattus norvegicus* Male Strain Wistar Hyperlipidemia After Giving Kersen Fruits Juice and Extract Lakum Leaves

Agustina, E[1], T R Saraswati[2], S Tana[3]

[1]Department of Biology, Faculty of Science and Mathematics, Diponegoro University

Semarang, Indonesia.

Abstract. People lifestyle who tend to consume high fat diet is one of the risk factors causing cardiovascular diseases such as atherosclerosis and coronary heart disease. The aims of this study were to analyze the effect of kersen fruits juice and extract lakum leaves on lumen width and thickness of aortic wall and to find out the histological features of male *Rattus norvegicus* white rats due to hiperlipemia. The study used a Completely Randomized Design (CRD) consisting of 5 treatments with 4 replications, i.e. the control group (P0), the standard feeding group (P1), the hyperlipid feed group+0.2 mL/200gBB kersen juice (P2), the hyperlipid feed group+40mg / 200gBB extract lakum leaves (P3) and hyperlipid feed group + 0.18mg / 200gBB simvastatin (P4). Hyperlipid feeds were given for 28 days. Data were analyzed by ANOVA followed by Duncan Test at a confidence level of 95, while histological features were observed directly using photomicrograph with 400x magnification and were seen aortic lumen narrowing, foam cells and intracellular lipid accumulation in smooth muscle. The results showed that the addition of kersen fruits juice and extract lakum leaves gave a significant effect on lumen width and thickness of the aortic wall ($p < 0.05$). Histological features show the presence of foam cells and accumulation of smooth muscle lipids in the control and group treatments with hiperlipemia feeding. The conclusion of this study is that the addition of kersen juice fruits and extract lakum leaves can reduce atherosclerotic lesions by eliminating foam cells and proliferating smooth muscle cells so the size of the aortic lumen width returns to normal.

Keywords: *Cayratia trifolia* L., *Muntingia calabura* L., *Atherosclerotic, Hyperlipidemia, Foam Cell, Cardiomegaly.*

ISN19-BIO-020

Leaf Anatomy Response of Several Varieties of Rice (*Oryza sativa* L.) to the Application of Silica Fertilizers

Kristamtini[1], Christina Astri Wirasti[1], dan Sugeng Widodo[1]

[1]Assessment Institute for Agricultural Technology Yogyakarta,
Jl. Stadion Maguwoharjo No. 22, Wedomartani, Ngemplak, Sleman, Yogyakarta, Indonesia **)**
*** Email address: krisniur@yahoo.co.id**

Abstract

Rice (Oryza sativa L.) requires large amounts of silica for its growth. This study aims to determine the response of leaf anatomy and agronomic performance of several rice varieties to the application of Silica fertilizer. The study was conducted in the first rainy season of 2018 (November 2017 to March 2018 in Semanu, Gunungkidul, Indonesia. The study was arranged in factorial, the first factor was 4 rice varieties (V1 = Inpari blast, V2 = Inpari 42, V3 = Ciherang, and V4 = Inpari 33), the second factor is the treatment of Silica fertilizer dosage (P1 = 250 kg / ha of Silica fertilizer; P2 = 500 kg / ha of Silica fertilizer, P3 = 1,000kg / ha of husk ash, and P4 = 750 kg / ha of Silica fertilizer). Observing agronomic traits include plant height, number of productive tillers, number of filled grains per panicle, and productivity). In addition to observing agronomic traits, microscopic observations of leaf anatomy were also carried out with thick upper and lower epidermal cells, cuticles in upper and lower epidermis, mesophyll thickness in major and minor intervenous regions. The data obtained were analyzed for variance (ANOVA = Analysis of variance) and Duncan's advanced test using SAS version 9.2. The results showed that administration of silica fertilizer increased rice growth and productivity as well as increasing the thickness of the epidermis and upper and lower cuticles both in major and minor intervenous. The highest productivity was achieved by Inpari 42 varieties in the application of 750 kg Silica fertilizer / ha (9.69 ton/ha Harvested Dry Grain).
Keywords: response, leaf anatomy, rice, silica fertilizer.

ISN19-BIO-021

Preparation and characterization of lignin nanoparticles from rice straw after biosynthesis using *Lactobacillus bulgaricus*

R Rismawati[1], I A Nurdin[2], M N Pradiptha[3,] A Maulidiyah[4], N J Mubarakati[5]

[1,2,3,5]Department of Biology, Faculty of Science and Mathematics, University Islamic of Malang, JL MT. Haryono, 65144 Malang, Indonesia

[4]Faculty of Science and Mathematics, Diponegoro University, JL Prof. Soedharto, Tembalang 50275 Semarang, Indonesia

E-mail: nurul.jadid@unisma.ac.id

Abstract. Lignin is the most abundant aromatic natural polymer and comprises about 25% of straw biomass. Nanolignin biosynthetic production method is a simple method and safely better than chemical or physical methods. It has interest for using lignin in more advanced applications. In particular, lignin based nanoparticles could find potential aplication use in functional surface coatings, nano glue, drug delivery, microfluidic devices and food additive. The aim of this study was to optimize *Lactobacillus bulgaricus* in nanolignin synthesis, the effect of the incubation period and freeze drying on quality of the nanolignin. Lignin particles were biosynthesized using rice straw and *Lactobacillus bulgaricus* in dark place with temperature of 37^0 C for the period of 24 hours, 48 hours, and 72 hours. Lignin nanoparticle was characterized using Fourier Transformer Infrared Spectroscopy (FTIR), Particle Size Analyzer (PSA), Scanning Electron Microscope (SEM) and Energy Dispersive X-ray (EDX). The results indicated that nanolignin has spherical and amorphous shape. The average size of particles are 101.6 nm with incubation period of the 24 hours, 57.2 nm with incubation period of 48 hours, and 276.9 nm with incubation period of 72 hours. The incubation periods affect the size and shape of nanolignin and also show that the lignin chemical structure is within the nanoparticle formation process. Samples using freeze drying enable have natural antibacterial compounds and has phenolic fragments containing recommended for nanopreservative.

ISN19-BIO-023

Potency of essential oil plants from Batang Indonesia as natural hand sanitizer based on antimicrobial activities

Hermin Pancasakti Kusumaningrum [1], Muhammad Zainuri[2], Endang Dwi Purbajanti[3], Azalia Puspa Herida[1], Hikmah Putri Pratiwi[1], Raditya Setiawan[1]

[1]Department of Biology, Faculty of Science and Mathematics, Diponegoro University

[2]Marine laboratory. Faculty of Faculty of Fisheries and Marine Science, Diponegoro University

[3] Department of Agroecotechnology, Faculty of Agriculture and Animal Science, Diponegoro University

Jl. Prof. Soedharto, SH, Tembalang, Semarang 50275, Indonesia

E-mail: herminpk@live.undip.ac.id

Abstract

Essential oil is an important natural product of medicinal plant from Batang area. This essential oil are known for their antimicrobial activity. Several essential oil produced on Batang area such as patchouli oil, citronellas oil, *Piper cubeba* essential oil and cardamom oil. The information about combination of this essential oil based on their microbial activity was very limited Comparation of these antimicrobial effects with synthetic household products for hand sanitizer is less clear. In this study, the antibacterial activity of individual single oil and combinaton of essential oil formulation was carried out against *Escherichia coli, Staphylococcus aureus* and *Bacillus subtilis* bacteria comparing with synthetic household products for hand sanitizer. The research method was done by making gel hand sanitizer from each sample and their combination and analyzed its homogenity, pH, skin irritation test, stability test and antibacterial activity test. The results of this study indicate that all essential oil were stable physically in the form of gel, pH 6-8, and safe for the skin. Antimicrobial activity of all essential oil were vary, but patchouli oil and their combination tend to show highest microbial growth inhibition activity against all microbial test. This result indicated high potency of essential oil as natural hand sanitizer.

ISN19-BIO-024

Production of Alkali Protease from *Aspergillus Flavus* DUCC K225 on Rice Bran Containing

Isworo Rukmi[1], **Susiana Purwanti Sari**[1]

[1]Department of Biology, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof. Sudarto, SH, Tembalang, Semarang 50275, Indonesia

E-mail: isworo.rukmi@gmail.com

Abstract

Alkaline protease is an industrial important enzyme which can produced by microoorganisme including fungi. The alkalotolerant *Aspergillus flavus* DUCC K225 is an indigenous mold from lime soil Madura island, which is potential in producing alkaline protease on Czapeks dox liquid medium containing 1% casein as inducer.

The production of alkaline protease by *Aspergillus flavus* DUCC K225 was conducted by submerged fermentation on modified Czapeks Dox medium containing rice bran as N source. The enzyme production was observed after 7th days incubation, by measuring the protease activity at pH 8.5 and examining the temperature stability as well.

The results showed that the enzyme activity is higher on the rice bran medium comparing to the standard medium, with the value of 237,84 U/ml and 94.85 U/ml respectively. This alkali protease enzyme produced was also thermostable, which showed with the temperature stability value of 89.3%. at 60^{o}C.

Keywords : *Aspergillus flavus, alkaline protease, protease activity, thermostable*

ISN19-BIO-025

Morphotypes and Molecular Characterisation of Pink Pigmented Bacterial Symbiont of *Turbinaria* sp.

A.T. Lunggani[1], E. Kusdiyantini[1], and F. D. Imtiyaz[1]

Biology Departement, Faculty of Science and Mathemathics Diponegoro University,
Jl. Prof H. Soedharto, SH, Tembalang, Semarang 50275, Indonesia
Email : arinalunggani@live.undip.ac.id

Turbinaria sp. is one of the species of the brown algae class that has extraordinary prospects for human health. The potential of the brown algae makes it a target for the search for sources of beneficial bioactive compounds in the pharmaceutical world. However, a serious problem in the development of bioactive compounds from these biota is the problem of supply, because to obtain a relatively small number of active compounds requires a large number of marine organisms. It was reported that there are associations of microorganisms with brown algae which are thought to synthesize secondary metabolites such as the host organism. The presence of bacteria that is symbiotic with brown algae has made it possible to use these organisms as the main source of bioactive compounds from marine. KRT-7 isolate is a pink bacterial isolate from the *Turbinaria* sp. collected from Menjangan Kecil, Karimunjawa Island, Indonesia. This isolate has been known to produce biopigmen and genes coding for its bioactive compounds. However, the physiological morpho character and its molecular identity are unknown. The study aims to determine the morphophysiological character and molecular identification of the prospective isolates. The research results obtained will contribute a scientific finding about the prospect of genetic diversity of Indonesian marine bacterial isolates and their corridor utilization as a source of bioactive compounds.

Keywords: *marine bacteria, symbionts, Turbinaria* sp. *, molecular and morphotypes*

Flour Based Analogue formulation corn with addition chlorella sp. For obesity sufferers

D W Puspita[1], N L Safitri[1], and A Y Susilowati[1], E S Rahayu[1], U N Danayanti[2,] I M Budiati[3]

[1]Department of Biology, Faculty of Sains and Mathematics, Diponegoro University
[2]Department of Chemistry, Faculty of Sains and Mathematics, Diponegoro University
[3]Department of Physics, Faculty of Sains and Mathematics, Diponegoro University
Jl Prof.H.Soedarto, S.H., Tembalang, Semarang 50275, Indonesia
E-mail: dellawon448@gmail.com

Abstract. Indonesia is an agricultural country with an agricultural area that supports a very wide range of food production including rice production. Rice is a staple food that cannot be left behind by the Indonesian population. However, rice actually contains high carbohydrate levels. These conditions can cause an increase in the number and size of fat cells, which can cause obesity. One of the factors causing obesity is poor eating behavior and the type of food consumed. The purpose of this study was to determine the composition of the addition of Chlorella sp. in corn analog rice and nutrient content in it so it is safe for consumption by obese people. Analog rice is artificial rice made from raw materials other than rice and flour. In Indonesia, corn (Zea mays L.) is the second cereal commodity to produce carbohydrates (75%) after rice and also contains high protein content (7–12%) so that it can be a good source of protein. Chlorella sp. contains high nutrition, namely 42.2% protein, 15.3% crude fat, nitrogen in the form of extracts, 5.7% moisture content, and 0.4% fiber. This study uses the RAL (Randomized Complete Design) method, which is the composition of 5% Chorella sp. and 83% corn flour as samples 1, 10% Chlorella sp. and 78% corn flour as sample 2, and 15% Chlorella sp. and 72% corn flour as sample 3. Each variable added 2% GMS as adhesive and 10% water. Quantitative data results were obtained by the glycemic index test and proximate test, while qualitative data were obtained through organoleptic tests. Making analog rice from corn (Zea mays) and Chlorella sp is expected to be reliable as one of the staple food substitutes for rice and can be developed as a functional food for obese people. Quantitative data results show that the correct analog rice composition for obese people is sample 3, while the exact Caucasian results are found in sample 2.

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Finding Parameters Relationship for Disinfectant Gas Production

Mochammad Facta[1], Hermawan[1], Ngurah Ayu Ketut Umiati[2] and Muhammad Amjad[3]

[1]Department of Electrical Engineering, Diponegoro University, Indonesia

[2]Department of Physics, Diponegoro University, Indonesia

[3]Department of Electronic Engineering, The Islamia University of Bahawalpur, Pakistan

E-mail: facta@elektro.undip.ac.id; mochfacta@gmail.com

Abstract

Water purifying is important process to get fresh water for human needs. Several treatments such as advanced filtering using activated carbon and chlorine have been done to get clean water. However, most of the previous treatments required complex maintenance and left a by product. The choice for disinfectant gas is goes to ozone gas because it has minor harmful impact to the environment. This work is to find related parameters and to formulate those parameters in equation to predict disinfectant gas production in silent discharge process. Theoretical analysis provides general approach for the equation models and experimental results complete the required data for regression technique to determine constants and terms in equation model at saturated region. Finally, a proposed equation model has successfully produced a prediction curve which is matched with experimental results.

Keywords : *disinfectant gas, ozone, Buckingham theorem, silent discharge*

ISN19-CHE-003

THE INFLUENCE OF *HIGH ENERGY MILLING* TO THE ADSORPTION OF Cd(II) AND Zn(II) IONS ON ACTIVATED ZEOLITE

[1]Pardoyo, [2]Yayuk Astuti, [3]Gading Herinnayah, [4]Suhartana, [5]Pratama J. Wibawa
[1-5]Departement of Chemistry, Faculty of Science and Mathematics, Diponegoro University, Prof. Soedarto St., Tembalang, Semarang, Telephone(024) 7474754 Author's correspondence:
pardoyoku@gmail.com

ABSTRACT

Zn (II) and Cd (II) are heavy metals which are generally contained in water. If exceeding the threshold concentration on water can be dangerous and toxic if consumed by humans. Natural zeolite is believed to be able to effectively reduce heavy metal levels in water. However, due to the weakness of natural zeolites which have a low surface area and impurity so that the adsorption ability of heavy metals becomes less optimal. Increasing the surface area by using high energy milling is expected to optimize the ability of adsorption. In this study, the particle size of natural zeolite was reduced by using high energy milling then activated with HCl and NH_4Cl. The adsorption process was carried out by mixing activated zeolite and activated zeolite fine powder in a solution of metal ions Zn (II) and Cd (II). SEM-EDX analysis showed a change in morphology size on activated zeolite fine powder. An increase in the previous surface area of 69.48 m^2/g to 97.9 m^2/g obtained with GSA. Activated zeolite fine powder tend to having bigger and shorter in ability and time of adsorption than activated zeolite. The activated zeolite on Cd (II) metal ion had the highest adsorption ability up to 800 ppm in the adsorption range of 19.05 mg/g at 15 minutes while the Zn (II) metal ion was also 800 ppm which is equal to 39.6 mg/g in 45 minutes.The adsorption ability of activated zeolite fine powder on Cd (II) metal ios was 19.47 mg/g at 30 minutes, while Zn (II) metal ion was 39.5 mg/g at 1 minute.

Keywords: high energy milling, activated zeolite, activated zeolite fine powder, adsorption

Probing the interaction between EC1-EC2 domain of E-cadherin with conformational structure of cyclic ADTC7 (Ac-CDTPDC-NH_2) peptide using molecular docking approach

P Siahaan[1, *], N E Darmastuti[1], S Aisyafalah[1], N A Sasongko[1], D Hudiyanti[1], M Asy'ari[2] and V D Prasasty[3]

[1] Physical Chemistry Laboratory, Department of Chemistry, Faculty of Sciences and Mathematics, Diponegoro University, Semarang, Indonesia

[2] Biochemistry Laboratory, Department of Chemistry, Faculty of Sciences and Mathematics, Diponegoro University, Semarang, Indonesia

[3] Faculty of Biotechnology, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia

* Corresponding author e-mail:
siahaan_parsaoran@yahoo.com, siahaan.parsaoran@live.undip.ac.id

Abstract.

Increasing significantly brain disease every year make difficult to help people who suffer disease in their brain. Drug delivery can be reached through a paracellular pathway. The use of the derivative cadherin peptides (ADT and HAV) to enhance the porosity in this pathway was investigated.

The aim of this studied to determine the best conformation of cyclic ADTC7 peptide which interacts with EC1-EC2 domain of E-cadherin with energy binding and active sites parameters. The method used in this study are : 1). MD simulation using GROMACS software, and 2). Molecular docking with AutoDock software. The variation used on MD simulation are atomic distances and constant restrains in atom S_{14}…S_{78} for 20 ns.

The result of MD simulation for 20 ns shows that the linear and cyclic ADTC7 peptide are -118,824.84 kJ.mol^{-1} and -52,985.95 kJ.mol^{-1}, respectively. The best conformation of cyclic ADTC7 peptide with the EC1-EC2 domain of E-cadherin is C1 with the lowest binding energy of -24.56 kJmol-1. The active site at residues such as Val3, Ile4, Pro5, Pro6, Ile7, Ser8, Leu21, Val22, Gln23, Lys25. It has RMSD value less than 2 Å, low energy binding and low inhibition constant, a large population and a stable pose when validation docking.

Keyword: ADTC7, peptide, E-cadherin, molecular docking

Potential of Phytotechnology in Wastewater Treatments to Produce Alternative Electrical Energy

Badrus Zaman[1], Budi Prasetyo Samadikun[1], M Arief budihardjo[1], Nurandani Hardyanti[1], Aghniessa Fathiya Rachma[1], Saffana Iliyuna Hasna[1]

Department of Environmental Engineering, Faculty of Engineering, Diponegoro University, Tembalang, Semarang, Central Java, Indonesia 50275

Abstract. Recently, phytotechnology has gained much attention due to its capability in treating wastewater by biological processes. Phytotechnology is application of science and engineering to examine environmental problems and provide solutions by the direct use of plants for in situ removal or degradation of contaminants or improving environmental function and quality. This processes using bacteria which formed in the roots of the plant and it can be applied to treat the wastewater. In this phytotechnology process, it presents the potential for energy generation and comprehensive wastewater treatment in Microbial Fuel Cell (MFC) system, which in the process utilizes bacteria that can produce alternative electrical energy because of the activity of bacteria which can self-mediate electrons to the anode through contact between the membrane-anode. MFC are expected to be applied to energy-saving wastewater treatments (WWT). One of the advantages of MFC is promising low cost, highly efficient, and renewable energy-producing alternative to conventional wastewater treatments. The combined of MFC and phytotechnology system have function to degrade organic compunds and remove contaminant contained in wastewater to produce bacterials that come out in the roots and then the bacterials will be used by electrodes to produce electricity. This paper will analyze the advantage and disadvantage of phytotechnology system while use for produce electrical energy by MFC system as hybrid system.

ISN19-CHE-006

JELLY CANDY FORMULATION PURWACENG GELATIN WITH CONCENTRATION VARIATION AND CARRAGEENAN

[1]Arwinda Nughraheni, [2]Fahmi Arifan, [3]Mardiyanti Dwi Pratama, [4]Nanda Al Faizah
[1]Medicine, Faculty of Medicine, University of Dipoegoro
[2]Technology Chemical Industry, Vocational School, Diponegoro University
[3]Chemical Engineering, Faculty of Engineering, Universitas Diponegoro
[4]Departement Of Physics, Faculty of Science and Mathematics, University of Diponegoro

Abstract

Purwoceng a drug crops that have high economic value. Purwaceng used as medicine stamina enhancer and aphrodisiac drugs (tonic) are known and hereditary by people around Dieng. Purwaceng as aphrodisiac containing a chemical component of the steroid group, astiri, furanokumarin, and vitamins terdapa header section mapun root (Rahardjo et al., 2006a). Purwaceng extract can be utilized to berbahagai case one of them for the manufacture of jelly. Ways of making jelly extract that is easy purwaceng purwaceng extract gelatin and carrageenan are added in accordance with the formula that 26,28,24,22 gelatin and carrageenan 7 grams, 8 grams stirring until well blended. Citric acid is then added with stirring until the Count homogeneous and formed a sticky mass. Then lift and pour it in the mold. Jelly is then tested for organoleptic, A-level and water content. Showed that the more the addition of carrageenan obtained the water content the more. While the test oragnoleptis more preferably formula II.

Keywords: Purwaceng Extract, Gelatin, Carrageenan.

ISN19-CHE-007

Understanding The Interaction of Polysulfone With Urea And Creatinine At The Molecular Level and Its application for Hemodialysis Membrane

Abstract.

The formation of polysulfone and its interaction with urea and creatinine have been evaluated at the density functional theory (DFT) level (B3LYP/6–31G**) to study the transport phenomena in hemodialysis membrane at molecular level. The interaction of energy structure of PSf-creatinine and PSf-urea complexes are -3.87 kcal/mol and -6.31 kcal/mol, respectively; which were classified in weak hydrogen bond interaction. Further more the size of urea is smaller than creatinine by 5.6 and 3.2 Å, respectively. All data presented that urea has stronger interaction with PSf than creatinine that indicated urea easier to transport in the PSf membrane than creatinin during hemodialysis process.

ISN19-CHE-009

Preliminary Study of Auto Catalytic Palm Oil Hydrolysis into Fatty Acid Through Hydrothermalysis Process

Mohamad Endy Yulianto[1], Rizka Amalia[1], Vita Paramita[1], and Qurrotun A'yuni Khoirun Nisa'[1]

[1] Department of Technology and Industry, Vocational School, Diponegoro University, Semarang, Indonesia
Jl. Prof H Soedarto, Tembalang, Semarang 50275, Indonesia
E-mail: qurrotunayuni@student.undip.ac.id

Abstract

This research aims to carried out the production of fatty acids through hydrothermal autocatalytic hydrolysis of palm oil. The production of commercial fatty acids is the hydrolysis of crude palm oil which is carried out using the Colgate-Emery process. This process is considered to be less efficient, because the hydrolysis time is quite long, the conversion is relatively low and the product purification load is more complex in the presence of an acid catalyst. Hydrothermal autocatalytic hydrolysis is a liquid phase reaction which is maintained at a temperature of 100-374°C under certain pressure or referred to as subcritical water Research on the forming of fatty acids through autocatalytic hydrolysis of palm oil in a hydrothermal reactor was investigated experimentally. The research variables varied were temperature, and reaction time. To conclude, as the reactor temperature increases and the hydrothermal reaction time is longer, the number of acids obtained increases, meaning that the fatty acids produced through the autocatalytic reaction get bigger.

Keywords : *fatty acid, auto catalytic, hydrothermal, palm oil, subcritic*

ELECTROLYSIS RESULTS COMPARISON OF METFORMIN USING ALUMINIUM, ZINC AND IRON (AS ANODE) AS WELL AS USED CARBON (AS CATHODE)

S. Suhartana[1], P. Purwanto[1.2], Adi Darmawan[1.3]
[1]Doctoral Program in Environmental Science, School of Postgraduate Studies, Universitas Diponegoro, Semarang Indonesia
[2]Departement of Chemistry, Faculty of Engineering, Universitas Diponegoro, Semarang Indonesia
[3]Inorganic Chemistry Laboratory, Departement of Chemistry, Faculty of Sciences and Mathematics, Universitas Diponegoro, Semarang Indonesia

ABSTRACT

Metformin is an antidiabetic drug that can be obtained easily in pharmacies / on the market, because it is traded freely, so people can easily buy and consume it. Ferrous metal, aluminium metal and zinc metals are metal quite easy to find and are often used by the public. Metformin and Ferrous metal, aluminium metal and zinc metals are metal are quite familiar in the community. This research aims to deconcentrate metformin which can be obtained easily in pharmacies / on the market by electrolysis method, using ferrous metal, aluminium metal and zinc metals are as an anode and carbon as cathode.

An electrolysis of metformin has been carried out using ferrous metal, aluminum metal and zinc metal as an anode. The success of the electrolysis process was seen with a decrease in the sample COD index. In the case without the addition of electrolytes using ferrous metals, the COD index of the sample reduction was very low (9- 17%). This research aims to increase the success of the electrolysis process, by adding various kinds of electrolytes, such as acetic acid (weak electrolytes), hydrochloric acid (strong electrolytes), sodium chloride and fenton reagents. The addition of electrolytes can increase electrolysis yield significantly. The interaction between metformin during electrolysis is traced to the possibility of changes in the chromophore group (with UV-Visible spectra) and the functional group (with FTIR spectra) of the sample. From the research data obtained information that there is a decrease and shift in UV-Visible spectra and changes in functional groups after the electrolysis process occurs. The best electrolysis percentage is obtained, after adding NaCl solution and Fenton's reagent in the range of 50 - 66%.

Key words: Metformin, ferrous metal, aluminum metal and zinc metal electrolysis, NaCl solution and Fenton's reagent

ISN19-CHE-011

Amino Acid Substitutions in The N-terminal Region of A Vegetative Insecticidal Protein (Vip3Aa) from Bacillus thuringiensis

ABSTRACT

Vip3A vegetative insecticidal proteins produced by *Bacillus thuringiensis* (Bt) are an important bioinsecticides for crop protection against Lepidoptera pest and had been used to overcome the problem of Cry toxin resistance. Previous studies about Vip3Aa agreed that C-terminal region is Vip3Aa toxic core. However, N-terminal region of Vip3Aa potentially required for protein toxicity based on its predicted structure and activity after protein activation. The aims of present study were to determine the effect of amino acid substitutions at N-terminal region of Vip3Aa towards the proteins and investigate crucial amino acid residues required for protein toxicity proved by mutant inactivity due to substitutions. The Vip3Aa mutants were generated using site-directed mutagenesis technique to substitute single amino acid residues at the N-terminal region of Vip3Aa. To examine the substitution effect, mutant proteins production, characterization and bioassay were performed and compared to the wild type. Fifteen mutants were achieved from single amino acid substitutions at the proposed helix-turn-helix motif of N-terminal fragment. All mutants were expressed in *E. coli* and able to produce soluble protein during vegetative growth phase. Amino acid substitution results showed that N-terminal region of Vip3Aa protein potentially plays an important role in protein toxicity. This study verifies that leucine residues in the N-terminal fragment of Vip3Aa were critical for protein toxicity against *Spodoptera exigua*. Insect bioassay exhibited that changes of leucine residues into alanine in mutant L72A and L75A causing protein inactivity against *S. exigua*, while L81A and E84A were reduced the toxicity with the LC_{50} 0.12 and 0.06 μg/cm^2, respectively compared with the wild type.

Keywords: *Vegetative insecticidal protein, Bacillus thuringiensis, N-terminus substitution, Bioinsecticides, Lepidoptera*

ISN19-CHE-012

GOLD IMPRINTED ADSORPTION BASED ON EUGENOL

Muhammad Cholid Djunaidi
Analytical Chemistry Laboratory, Department of Chemistry, Faculty of Science and Mathematics, Diponegoro University, Semarang Indonesia

Abstract

Synthesis of Ionic Imprinted Polymer (IIP)-Au have been carried out using polyeugenoxy acetate (PA) as the base polymer. IIP is formed through the transfer of a basic polymer with a metal template which is then crosslinked with ethylene glycol dimethacrylate (EGDMA) and the release of the metal template using acid. Non Imprinted Polymers are also synthesized for use as a comparison. Polymerization of up to IIP and NIP was carried out using infrared spectrophotometers and SEM-EDX. IIP and NIP are used to determine the rate and capacity of adsorption through kinetics and adsorption isotherms studies. Adsorption selectivity tests were carried out on a mixed metal solution system Au(III)/Cd(II), Au(III)/Pb(II), and Au(III)/Fe(III). The amount of adsorbed metal ions is calculated based on the remaining metal ions in the solution measured using atomic absorption spectroscopy. The results of the adsorption of Au(III) metal ions in IIP and NIP followed the second-order pseudo and isotherm followed Langmuir. adsorption capacity in IIP-PA is (28,305 mg/g), and NIP-PA adsorption capacity is (45,080 mg/g). IIP adsorption selectivity is greater than NIP in binary solutions in the order of Au(III)/Cd (II)> Au(III)/Pb(II)> Au(III)/Fe(III).

Keywords: Polieugenoxy Acetate, Au(III) -Ionic Imprinted Polymer, Selective Adsorption

ISN19-CHE-013

SYNTHESIS OF SILICA-RICH ZEOLITE USING QUARTERNARY AMMONIUM-BASED TEMPLATES

Sriatun[1], Adi Darmawan[1], Widayat[2], Rima Kurniasari[1], Ratna Kurniawati[1] , Sriyanti[1]
1) Chemistry Department, Sains and Mathematic Faculty, Diponegoro University
2) Chemical Engineering Department, Faculty of Engineering, Diponegoro University
sriatun@live.undip.ac.id

ABSTARCT

In this study, silica-rich zeolite was made at a ratio Si/Al= 30. The template used was cationic surfactant from quaternary ammonium, tetrapropylammonium bromide (TPAB) and cytyltrimethylammonium bromide (CTAB). The CMC for TPABr $(n - C_3H_7)_4N$ *is* 10^{-3} *M and spherical micelle of CTAB is* $8.9.10^{-4}$ *M. The concentration of the TPAB and CTAB which used in this study were 0.0325; 0.125; 0.25 and 0.5 M. The results show that the type of synthesized zeolit are silica-rich sodalite with the crystal size 216* A^o*. The using of quaternary ammonium-based templates can increase crystallinity and reduce the size of silica-rich sodalite crystal grains, but remain in the mesopore material size range. The concentration of tetrapropylammonium bromide (TPAB) template is very influential on surface area and pore volume, whereas for cetyltrimethylammonium bromide (CTAB) it affects surface area but not on pore volume. The largest surface area and pore volume of 96* m^2/g *and* $3.4x10^{-2}$ *were obtained for silica-rich sodalite using a landfill template at small concentrations.*

Key words: silica-rich sodalite, quartenary ammonium, template

ISN19-CHE-015

Finding Parameters Relationship for Disinfectant Gas Production

Mochammad Facta[1], Hermawan[1], Ngurah Ayu Ketut Umiati[2] and Muhammad Amjad[3]

[1]Department of Electrical Engineering, Diponegoro University, Indonesia

[2]Department of Physics, Diponegoro University, Indonesia

[3]Department of Electronic Engineering, The Islamia University of Bahawalpur, Pakistan

E-mail: facta@elektro.undip.ac.id; mochfacta@gmail.com

Abstract

Water purifying is important process to get fresh water for human needs. Several treatments such as advanced filtering using activated carbon and chlorine have been done to get clean water. However, most of the previous treatments required complex maintenance and left a by product. The choice for disinfectant gas is goes to ozone gas because it has minor harmful impact to the environment. This work is to find related parameters and to formulate those parameters in equation to predict disinfectant gas production in silent discharge process. Theoretical analysis provides general approach for the equation models and experimental results complete the required data for regression technique to determine constants and terms in equation model at saturated region. Finally, a proposed equation model has successfully produced a prediction curve which is matched with experimental results.

Keywords : *disinfectant gas, ozone, Buckingham theorem, silent discharge*

Utilization of Oil Palm Bunch into Liquid Smoke with Pyrolysis Method as an Innovation for Milkfish Preservation

I M Budiati[1], N L Safitri[2], H Ulya[2] M P Irham[1], M W Andriyan[1], U N Damayanti[3]
[1]Department of Physics, Faculty of Sains and Mathematics, Diponegoro University
[2]Department of Biology, Faculty of Sains and Mathematics, Diponegoro University
[3]Department of Chemistry, Faculty of Sains and Mathematics, Diponegoro University
Jl Prof.H.Soedarto, S.H., Tembalang, Semarang 50275, Indonesia

E-mail: wahyuandriyan1998@gmail.com

Abstract. Indonesia is one of the world's palm oil producing and exporting countries, with annual production exceeding 18 million tons. In 1 ton of palm oil will be able to produce waste in the form of oil palm empty fruit bunches (TKKS) as much as 23% or 230 kg, shell waste (Shell) as much as 6.5% or 65 kg, wet solid decanter (palm mud) 4% or 40 kg, fiber (13%) or 130 kg and 50% liquid waste. Of the four solid wastes of oil palm empty fruit bunches (TKKS) can be produced quite large amounts of around 126,317.54 tons / year, but their use is still limited, while this is only burned and partially spread on empty land as mulch / fertilizer in the surrounding area factory. Oil palm empty fruit bunches (TKKS) have great potential for liquid smoke. The acid content in liquid smoke has the potential to be a food preservative. Liquid smoke from pyrolysis is phenol compound of 4.13%, carbonyl 11.3% and acid 10.2%, the compound is antimicrobial which can preserve food. Liquid smoke produced will be used as a natural preservative of milk fish with a level of 2%, 3%, 5%, 7.5% and 10%. In 2015 milkfish production increased by 352.81 tons to 865.93 tons. Fish is included in food that is prone to decay or decomposition of the network if no further handling (which aims to prevent spoilage) so that the fish remains fit for consumption. Coarse liquid smoke is re-distilled at 180 0C and used as an ingredient in milkfish storage. Observations were made on the chemical quality and organoleptic test of milk fish. Liquid smoke from oil palm empty fruit bunches can be used as a natural preservative and is expected to reduce

ISN19-STA-003

Analysis of Queue and Performance of Automatic Toll Booths with Normal Distribution (Case Study: Automatic Booths Toll Gate Muktiharjo)

Sugito[1], Mustafid[2], Dwi Ispriyanti[3], Alan Prahutama[4], Arief Rachman[5], and Erna Sihotang[6]

[1,2,3,4,5] Lecturers of Department of Statistics, Faculty of Science and Mathematics, Diponegoro University

[6] Alumna of Department of Statistics, Faculty of Science and Mathematics, Diponegoro University

Semarang, Indonesia

E-mail: ernaefa@gmail.com

Abstract

Queue process is a process related to the arrival of customers in a service facility, waiting in line queue if it cannot be served, get service and finally leaves the facility after being served. Research on the queue process can be seen directly through the queue system. Queue models and their distribution were obtained using the Sigma Magic program. The model of the vehicle queue system at the Muktiharjo Automatic Toll Gate is (NORM/NORM/4):(GD/∞/∞). Based on the values of the queue system performance measures obtained through the MATLAB GUI program as a whole it can be concluded that the queue of vehicles at the Muktiharjo Automatic Toll Gate has a condition where the average number of vehicles estimated in the system every 30 minutes is 99,2564 vehicles. The average number of vehicles in the queue system every 30 minutes is 98,2557 vehicles. The waiting time in the system is estimated to be around 15,51732 seconds. The estimated waiting time in line is around 15,36084 seconds. The queue system has a busy opportunity of 63.2849%. The simulation of the vehicle queue system at the Automatic Toll Gate of Muktiharjo Toll Gate by using ARENA is optimal with 4 automatic toll booths.

Keywords: *Automatic Toll Gate, Queue, Normal Distribution, Performance Measures, Queue Simulation*

Supplier selection in rank order using fuzzy ahp and fuzzy molp with sensitivity analysis

Faiz H Kurniawan[1], Bayu Surarso[2] and Jatmiko E Suseno[3]

[12]Information System Department, Faculty of Postgraduate School, Diponegoro University, jalan Prof Soedarto, Semarang 50275, Indonesia
[3]Physics Department, Faculty of Mathematic and Natural Sciences, Diponegoro University, jalan Prof Soedarto, Semarang 50275, Indonesia

Abstract

Supply chain management (SCM) plays a great role in any company, a good SCM requires a good selection to all its components. One of the components is raw material supplier selection that need to consider both tangible and intangible factors in each supplier. Therefore, we can use fuzzy AHP which use intangible approach and fuzzy MOLP which use tangible approach.

In this paper, we aim to use both methods to get the rank order of best supplier from all 5 suppliers in a woodworking company. The result shows that both methods can work together as the rank order from both methods give the same result. However, sensitivity analysis is done in case both methods give different rank order.

Sensitivity analysis shows that change in criteria from 10% to 100% make variance in fuzzy AHP from 0% to 30% while fuzzy MOLP from 75% to 100%. That means fuzzy AHP is more robust than fuzzy MOLP. We also found that fuzzy AHP is influenced heavily by the expertise of the expert as two experts gives different result while fuzzy MOLP is more objective-oriented using real data. These results suggest that each Method has its own characteristics that must be put into mind when we use it.

Keywords: *Supplier Selection, Fuzzy AHP, Fuzzy MOLP, Sensitivity Analysis*

Multivariate capability indices in inventory control

Mustafid[1*], Dwi Ispriyanti[2], Sugito[3], and Arief Rachman Hakim[4]
[1,2,3,4]Department of Statistics, Faculty of Science and Mathematics, Diponegoro University
Jl. Prof. Soedarto, SH, Tembalang, Semarang 50275, Indonesia
E-mail: mustafid55@gmail.com

Abstract

Inventory control in the industry has an important role in supply chain management to produce products according to management standards or quality standards based on consumer demand. In the apparel industry, inventory control is adjusted to the type of apparel product according to consumer demand. The research aims is to derive multivariate inventory control model with multivariate capability analysis based on several types of apparel product as the quality characteristics. The method in the research uses the T^2 Hotelling multivariate control chart and the multivariate capability indices for analysis apparel inventory control in accordance with management specification standards. We derived the T^2 Hotelling multivariate control chart and the multivariate capability indices using data with the assumption that multivariate data are controlled and has multivariate normal distribution Variable research uses quality characteristics that are grouped into two types of apparel products. This model is useful as a multivariate inventory control model that can manage the amount of production and supply of products based on probabilistic consumer demand.

Keywords : *Multivariate inventory control, T^2 Hotelling multivariate control chart, multivariate capability indices*

Modeling of Composite Stock Price Index (CSPI) using Semiparametric Regression Truncated Spline Based on Gui R

Suparti[1], Di Asih I Maruddani[2], and Wilson Marbun[3]

[1,2]Department of Statistics, Diponegoro University, Semarang, 50275, Indonesia

[3] Department of Statistics, Diponegoro University, Semarang, 50275, Indonesia

E-mail: wilsonmarbunlate@gmail.com

Abstract: The Composite Stock Price Index (CSPI) is widely used as the beginning of consideration for investors to invest, because from the CSPI it can be known the general situation of market conditions is whether stock prices are experiencing an increase or decrease. This condition is characterized by a decrease or increase in the price of the CSPI. The Amount of Money Supply and the NASDAQ Index is thought to affect the price movements of the CSPI. The Amount of Money Supply has a nonparametric relationship pattern to the CSPI and the NASDAQ Index has a parametric relationship pattern to the CSPI. The correct method for conducting modeling is use the semiparametric *spline truncated* regression. The semiparametric regression *spline truncated* coefficient is estimated using the *Ordinary Least Square* (OLS) method which is determined based on the polynomial degree, much and the location of the optimum *knot* point is seen from the criteria of *Mean Square Error* (MSE). This study uses (*Graphical User Interface*) GUI R with the intention of facilitating the analysis process. The data used are monthly data from June 2014 to March 2019. Based on the results of the analysis that has been done, the best semiparametric *spline truncated* regression model with order 3 with the optimal three *knots* is 4246.361, 4443.078, and 4730.38. Evaluation results the *in-sample* data model produces a coefficient of determination of 90.25%. The results of the performance evaluation of the *out sample* data model resulted in a MAPE value of 3770204% indicating the performance of the model was very good.

Keywords: *Automatic Toll Gate, Queue, Normal Distribution, Performance Measures, Queue Simulation.*

An optimization model of economic order quantity with financial constraints and market tolerance in ud plastikq

Rindiana Hanif Larasati[1], Siti Khabibah[2], and Abdul Aziz[3]

[1,2,3] Department of Mathematics, Faculty of Science and Mathematics, Diponegoro University, Semarang, Indonesia

E-mail: [1]rindianamath15@gmail.com, [2]khabibah.undip@gmail.com, [3]abdulaziz_01@yahoo.com

Abstract

An optimization model of Economic Order Quantity (EOQ) is one of the methods used to determine the inventory order quantity that can be minimize the cost of storage and the cost of ordering supplies. The optimization model in this paper is an optimization model of Economic Order Quantity (EOQ) with financial constraints and market tolerance. Financial constraints include the limited capital available per period and the advanced payment. In the market tolerance factor there are two periods of market tolerance and three levels of backorder. Based on this model, numerical simulations can be formulated and carried out so that the best optimal solution was obtained when conditions are unlimited, complete backorder, no advanced payment and the market tolerance period is 0.2 with a total cost decrease of 28,92% and total profit increase of 13,37% from the initial condition.

Keywords : *Advanced payment, Budgetary limit, Economic Order Quantity (EOQ), Inventory, Stockout.*

Evaluation university ranking system using quacquarelli symonds and integrated performance measurement system approach

Affifiana Prisyanti[1], Oky Dwi Nurhayati[2], and Aris Puji Widodo[3]

[1] Departement of Magister Information System, Postgraduated School, Diponegoro University

Jl. Imam Bardjo SH No.5, Pleburan, Semarang, Jawa Tengah, 50214, Indonesia

E-mail: prisyantiaffifiana@gmail.com

Abstract

Institutional assessment in the current era is indispensable because of increasing global competition and economic and information growth. Assessment efforts were also carried out on various factors including improving the quality of lecturers, meeting study programs that were in line with national development needs, developing educational curricula, improving the quality of community services and research, and adding internal and external collaboration. It aims to strengthen management and governance so that it has good performance and makes the university a World Class University (WCU). Fulfillment of WCU criteria in faculties or departments is one of the steps to determine the strategy for achieving a tertiary institution by giving more weight to faculty excellence so as to encourage the use of relevant new criteria. In addition, in the ranking process there are also different criteria or indicators in several ranking techniques in the world as a manifestation of performance appraisal of the overall implementation of the organization. Quacquarelli Symmond (QS) is a rating agency that evaluates university weaknesses and strengths and produces assessments that show achievement ratings. The QS ranking also has six indicators that are believed to illustrate the value of the university.

Keywords: *Measurement of University Performance, QS, WCU*

Alternative Scale Invariant Higgs Mass Generation Using Hidden Sector $SU(N_c)xU(1)^3$

Qidir Maulana Binu Soesanto[1], Much Azam[1], Very Richardina[1], and Mirza Satriawan[2]

[1]Department of Physics, Faculty of Science and Mathematics, Diponegoro University, Tembalang, Semarang 50275, Indonesia

[2]Department of Physics, Faculty of Science and Mathematics, Gadjah Mada University, Sleman, DIY 55281, Indonesia

Abstract

Instead of using Spontaneaous Symmetry Breaking (SSB) from Standard Model (SM), Hidden sector Lagrangian was introduced in explaining an alternative way to generate Higgs mass. We use Scalar Bilinear Condensation in effective theory to obtain Higgs mass term via Higgs Portal. Hidden sector described by an $SU(N_C)$ gauge theory with $U(1)^3$ flavor symmetry has been used.

Keywords : *Hidden sector, Higgs mass generation, Scale Invariant*

Forecasting of Jabodetabek Train Passengers using Singular Spectrum Analysis and Holt Winters Methods

Diah Safitri[1,2], Subanar[1], Herni Utami[1], Winita Sulandari[3]
[1]Department of Mathematics, Universitas Gadjah Mada, Indonesia
[2]Department of Statistics, Universitas Diponegoro, Indonesia
[3]Study Program of Statistics, Universitas Sebelas Maret , Indonesia

Abstract. Train is one of the convenient transportation, it also reduce traffic jam in Jabodetabek. In order to maintain the convenience of passengers using train services, it is necessary to predict the number of train passengers as a consideration in the planning of Jabodetabek train services. In this study the Singular Spectrum Analysis and Holt Winter methods are used to predict the number of Jabodetabek train passengers and the same MAPE value is 4.02%.

Network boot system for low-cost laboratory computer

G Aryotejo[1], **M Mufadhol**[2],

[1]Information Management of Sekolah Tinggi Elektronika dan Komputer, Majapahit 605, 50192, Semarang, Indonesia
[2]Information Technology of Sekolah Tinggi Elektronika dan Komputer, Majapahit 605, 50192, Semarang, Indonesia
Email: guruh2000@yahoo.com

Abstract. The rapid development of information and communication technology causes every computer user have to frequently upgrade the hardware and software on their respective computers. This is a problem in private universities on developing country that have many computers in the lab but do not have enough resources to maintain it. Generally, the computers on lab have an outdated specification and break down frequently. One of the problems is the high failure rate of a hard disk drive due to unstable electricity and causes many computers to become inactive due to universities inability to replace it. This will lead to many difficulties during teaching and learning process. In this study, we present comprehensive research on reviving existing inactive computers with minimal expenditure, especially those without hard disk. We use combination of PXE, DHCP, TFTP and VHD to implement the network boot system. In addition, we conducted a simulations to evaluate the performance of Network Boot System by using 15 client PCs that boot simultaneously from Network Boot System's Server and record the boot time. These PCs booted using two (2) different Master Images and different storage media on Network Boot System to measure the performance between HDD and SSD on Network Boot System. We found that all of the inactive computer could be revived and works normally. The use of SSD could increase the performance of Network Boot System significantly, especially during loading the application. The expenditure cost to use mainstream SSD for a network boot system's server is much lower than having to replace the HDD for the entire inactive computer. Those strengthen that a network boot system is feasible to be used as low-cost laboratory computer.

Keywords: Network, Boot, PXE, VHD, Laboratory, Computer

Enhanced Blocking Blok Area Method for Segmentation of Continuous Speech

Bayu Arasyi[1], Sukmawati Nur Endah[2], Retno Kusumaningrum[3], Satriyo Adhy[4]
[2]Department of Informatics, Faculty of Science and Mathematics, Universitas Diponegoro
Jl. Prof. Soedharto Kampus Undip Tembalang, Semarang, Indonesia
E-mail: sukma_ne@if.undip.ac.id

Abstract

Segmentation is one of the important stages in the speech recognition in the type of continuous speech. The segmentation phase serves to break the sentences into words that can be recognized by the computer. The quality of segmentation results can affect the results of the recognition that is done. This research examines the dynamic threshold used in the process of continuous speech segmentation and also proposes Enhanced Blocking Block Area method in the Indonesian language domain. Three algorithms were compared (K-Means, Fuzzy C-Means, and Otsu) to find the best dynamic threshold and add morphological operations and overlapping to the blocking block area method to obtain the best segmentation accuracy. Based on the results of the research, the Fuzzy C-Means algorithm provides the best threshold results compared to the other two algorithms. By using the Fuzzy C-Means algorithm with the addition of morphology and overlapping, this study can improve the accuracy of continuous speech segmentation in Indonesian Language from 24% to 90%..

Keywords : *Continuous Speech, Speech Recognition, Speech Segmentation*

Designing Computer Assisted Problem Based Learning (CAPBL) Environment for Performance Analysis of Isolation Forest Algorithm

R D Hastuti[1], I Waspada[1], P W Wirawan[1], and N Bahtiar[1]

[1]Departement of Computer Science, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof. H. Soedarto, S.H., Tembalang, Semarang 50275, Indonesia

E-mail: rinadwihastuti27@gmail.com

Abstract

Abstract. Anomaly detection is important applied in various fields of application to determine errors in the system. By detecting it can minimize losses on the system. Anomaly detection can be done using several algorithms. One such algorithm is the Isolation Forest algorithm.

Isolation Forest Algorithm is an efficient and effective algorithm in detecting anomalies. Isolation Forest has better performance than other algorithms in terms of execution time, especially in large datasets. Although the Isolation Forest algorithm has many advantages, there are still very few tools that provide this algorithm. One tool that provides the Isolation Forest algorithm is Scikit Learn.

However, using special tools such as Scikit Learning requires sufficient time and experience to be able to manage the features of the tool. Thus, in this study the authors developed a web-based application that is used to assist users in assisting and improving the performance of Isolation Forests by using sample data sets, setting the parameters of Isolation Forests, visualization and evaluation.

This application was developed using the waterfall process model and CAPBL concept. In determining the features of the application, an analysis of features is based on the CAPBL concept with the business process of CRISP-DM. The software testing result shows that this application is fit to be used as a new solution to facilitate users who want to learn and analyze the performance of Isolation Forest.

Kata Kunci : *Isolation Forest, Anomaly Detection, Waterfall, Data Mining, CAPBL, CRISP-DM*

Usability Testing Mozita Application Based on Use Questionnaire Model

Abstract. Mozita is an application used by midwives to record and report the toddler nutritional status in the local health center (Puskesmas). In addition to nutritional status information, Mozita can present information that is used by heads of puskesmas, district health offices and provincial health offices for monitoring and decision making in terms of health policy based on nutritional status. To be able to increase application usage, feedback from users is needed. With USE Questionnaire-based usability testing covering aspects of Usefulness, Satisfaction and Easy of Use. Usability testing is focused on the interaction part of the user interface (midwife), as the main source of data collection. This study used 15 midwife respondents who were randomly drawn from puskesmas in the city area of Semarang. The technique used to measure usability testing is to provide an explanation and guidelines for using the Mozita application before respondents fill in the questionnaire using a Likert scale from 1 to 7. The questionnaire used is equipped with in-depth interviews for question items whose Likert scale value is less than equal to 3 The indepth interview aims to provide a focus on improving the Mozita application interface to suit user needs.
The results of usability testing that has been done on the Mozita application shows that the value of the Usefulness component is 84.52%, Easy of Use is 83.53%, Easy of Learning is 80.95%, and Satisfaction is 85.03%. Based on the value of each component measured shows that the Mozita application has a high usability value that is equal to 83.52%, and makes it easy for users to carry out work more efficiently. Some user feedback related to satisfaction aspects, especially in the Mozita application layout section is still simple needs to be done for a better layout design.

Keywords: *Usability, Usefullness, Satisfaction, Easy of Use, and Questionnaire*.

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The use of mobilenet v1 for identifying various types of freshwater fish

E Suharto[1], Suhartono, A P Widodo and E A Sarwoko
Department of Informatics, Faculty of Science and Mathematics, Diponegoro University
Jl. Prof.Dr.Soedarto, SH, Tembalang, Semarang 50275, Indonesia
[1]E-mail: edys@lecturer.undip.ac.id

Abstract

In recent years, the business opportunities of freshwater fish potential utilization are very promising. Freshwater fish including pomfret, nile tilapia, carp, gold fish, tilapia fish, snapper fish, and catfish have a great economic value. They are usually exported in living condition to several countries such as Singapore, Japan, Hong Kong, Taiwan and Malaysia. The business of fish particularly freshwater fish is one of national income sources. As the forms of fish vary, it is important to distinguish the types of freshwater fish by means of object detection. This detection can be done by implementing deep learning. MobileNet V1 is a deep learning model that can be used for object detection or image classification. MobileNet V1 can work on smartphones or other embedded devices that still produce high level accuracy. In this study, MobileNet V1 was trained with learning rate parameters 0.0004 and epoch 20.000. The use of these parameters obtained an accuracy rate of 90% in the detection of types of freshwater fish.

Keywords : *Freshwater fish, identification, deep learning*

ISN19-INF-006

The Best Architecture Selection With Deep Neural Network (DNN) Method For Breast Cancer Classification Using MicroRNA Data

Abstract. Breast cancer is one of the most common causes of death in the world. One way that can be done to reduce the number of death cases are to do early detection using MicroRNA data. MicroRNA is one of the cancer biomarkers that can help in the classification process. MicroRNA can be used to identify whether a cell is a cancer cell or not even in the earliest stages. Deep Neural Network (DNN) method consists of two or more layers of self-learning units (hidden units). The weight of hidden units that are fully connected between two layers can be learn automatically. However, DNN still has a weakness which is the changes in the distribution of each layer's inputs that cause problems, because the layers need to continue to adapt to the new distribution and produce less optimal accuracy values. This research was conducted to get the best architectural selection of DNN method used for breast cancer classification using MicroRNA data. The results of the DNN method with the best architecture obtained was 3 hidden layers with 200 hidden units each, 30% dropout rate in the combination of the ReLU, ReLU, ReLU activation functions and the learning rate of 0.04 resulting in the highest accuracy of 94.58% with a specificity of 96.45% and sensitivity of 91.02%.

Evaluation of student academic performance using e-learning with the association rules method and the importance of performance analysis

Ramadiani Ramadiani[1], Adi Kurniawan[1], Muhammad Labib Jundillah[1] , Azainil Azainil[2] and Achmad Nizar Hidayanto[3]

[1]Faculty of Computer Science and Information Technology Mulawarman University, Samarinda, East Kalimantan, Indonesia

[2]Faculty of Teacher Training and Education Mulawarman University, Samarinda, East Kalimantan, Indonesia

[3]Faculty of Computer Science Indonesia University, Depok, Jakarta, Indonesia

***** Corresponding Author: mmi_ugm04@yahoo.com

Abstract. In managing the student study process, there is a pattern that occurs repeatedly every year. The recurring data will produce information in the form of student profiles, entry paths, student academic results, study period, average graduate level and many other information as long as students take the process of teaching and learning activities. This research was conducted to predict the student performance and e-learning satisfaction at Computer Science department in Mulawarman University using the Association Rules method and Importance Performance Analysis. The sample in this study was 389 data of computer science graduate students. Based on the results of the research that has been done, it can be concluded that the graduation rate of computer science students of the Faculty of Computer Science and Information Technology, as follows; students who have graduated most have a GPA interval of 2.76 - 3.50 with male gender and take a study period of more than 6 years which has a support value of 0.321 and a confidence value of 0.628. Their perception about e-learning with according to IPA coordinates community, collaboration, materials, social media, knowledge, synthesis, application, understanding, multimedia, evaluation, video, and news in quadrant II has a high level of importance with a relatively high level of performance and must be maintained.

ISN19-INF-008

QoS of Network Infrastructure in wireless sensor system for real-time measurement pH Parameter of Fishery

Abstract.
The problem of mass fish mortality in Indonesia is already common and generally occurs. Environmental conditions determine the survival of fish. Acidity (pH) is one of the important things in determining the water quality of water. real-time information of pH water is important to avoid the danger of mass fish dies because of unhandled water pH. *Network Infrastructure* devices comprise those devices that facilitate the movement of data along the communication media. the difference between the station distance and the wireless access point does not affect the change in the bitrate of each station QoS measurements based on data distribution delay. Shows that if the wireless sensor's connectivity in sending data acquisition pH from the node station to the web service, Delay data transmission affects the accuracy of the measurement and presentation of data on the cloud server.

Consumer purchase patterns based on market basket analysis using apriori algorithms

Abdul Rezha Efrat[1], Rahmat Gernowo[2] and Farikhin[3]

[1]Information System Department, Faculty of Postgraduate School, Diponegoro University, jln Prof Soedarto, Semarang, Indonesia
[2]Physics Department, Faculty of Mathematic and Natural Sciences, Diponegoro University, jln Prof Soedarto, Semarang, Indonesia
[3]Mathematics Department, Faculty of Mathematic and Natural Sciences, Diponegoro University, jln Prof Soedarto, Semarang, Indonesia

Abstract. Analyzing customer purchasing patterns can help grocery stores expand marketing strategies by gaining insight into which items are often bought together by customers. Also, transaction data are a source of information available at the grocery store or minimarket and one thing that can be used for business decision making. In this paper, we aim to use the Apriori algorithm method to obtain consumer purchasing patterns by using the PHP programming language and My SQL database as a tool to build analytical information systems in determining consumer purchasing patterns. This system uses a priori algorithm calculation method where the input data is consumer transaction data. Transaction data will be sorted and calculated by providing a minimum support value and based on trust results. In this study, the authors conclude that the results of the analysis information system in determining consumer purchasing patterns can be as information to determine sales and in the application of Apriori algorithm can provide information in the form of a combination of patterns of consumer transaction data that is with support of above 10% and confidence above 65% on the item set.

Portable Machine With Android Application Display for Measuring CO and HC of Vehicle Exhaust Gas

Heru Supriyono [1]*, Anton S [1], Umi Fadlilah [1] , Kun Harismah [2]

[1] Department of Electrical Engineering, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

[2] Department of Chemical Engineering, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

Email: Heru.Supriyono@ums.ac.id

Abstract. Two main pollutant components produced by vehicle exhaust gas are hidrocarbon (HC) and monoxide carbon (CO). In the car service center, these two gasses are measured using commercial instrument called as automotive emission analyser (AEA). However, this instrument is not practicable for personal daily used. The problem which would be discussed in this publication is how to design and build a simple and portable instrument for measuring HC and CO gasses. The objective of the published research is to measure HC and CO gasses and then displayed it in the Android based smartphone. In the designing and building step, MQ-2 and MQ-7 sensors were used to detect HC and CO gasses respectively. The produced data of MQ-2 and MQ-7 sensors were processed and calculated using Arduino and then the results were sent to be displayed in the Android based smartphone. The result showed that MQ-2, MQ-7 and Arduino were successfully implemented for building portable HC and CO measuring instrument. When compared to comercial AEA, the measurement resulted by the developed instrument has average error of 2 ppm for HC and 0.0075% for CO.

Development of smart parking system based on internet of things using object oriented analysis and design method

M. Fahreza Maulana, Satriyo Adhy, Nurdin Bahtiar, Indra Waspada

Department of Informatics, Faculty Science and Mathematics, Diponegoro University

E-mail: satriyo@live.undip.ac.id

Abstract. Smart City is one of the Smart Initiatives that tries to provide solutions to parking problems that are found in big cities. The growth of vehicle population is not matched by the growth of parking infrastructure, which raises various problems such as illegal parking, traffic jams, and driving safety. Thanks to the massive evolution of the Internet of Things, the Smart Parking idea became a major breakthrough in solving the growing parking problem. In this paper, we explain the prototype development of the Smart Parking System using the Internet of Things which has three subsystems, namely embedded systems, as well as Android and web based applications. Smart Parking System's software was developed using the Object-Oriented Analysis and Design (OOAD) method and has been tested using blackbox testing with 41 test cases that were successfully received.

Identifying IT Governance condition (case study: KPRI-UNDIP)

Abstract. *Koperasi Pegawai Republik Indonesia Universitas Diponegoro* (KPRI Undip) consists of various service units. One of them is *Unit Simpan dan Pembiayaan* that provides savings and loan services from and only to members. Currently KPRI UNDIP already uses computer-based accounting systems and information system that can help administrative and operational processes become effective and more efficient. This research aim is to identifying IT IT Governance condition using COBIT 5 framework. From the mapping process the scope of IT governace audit are EDM01, EDM02, EDM05, APO10, BAI06, DSS01, DSS02, DSS03, DSS04, DSS06, and MEA0, which selected to identify IT governace KPRI UNDIP condition. The result is that in domain EDM01, EDM02, EDM05, APO10, BAI06, DSS03, DSS04, DSS 06 and MEA01 at level 0. As for the domain DSS01 and DSS02 are at level 1.

Keywords : *Audit, Capability, COBIT 5, IT Governance*

Designing advertisement board game and examining factors correlated with board gaming behaviors

M. Satrio[1], R. Sanjaya[2], and B. Harnadi[3]

[1,2,3] Department of Information Systems, Faculty of Computer Science, Soegijapranata Catholic University

Jl. Pawiyatan Luhur Selatan. IV No.1, Bendan Duwur, Semarang 50234, Indonesia

E-mail: 13070004@student.unika.ac.id

Abstract

Advertising is a form of mass education for people to learn that something exists in a market. In this post information era, from a consumer products, to consumer services, every company in various business such as airlines, marketplace, even education have used various advertising medias in order to raise public awareness of the brand. It can be concluded that to raise awareness of a product or public services, advertising is one of the essential parts as well as in the field of education.

The study has a purpose to design a board game advertising a program in an university. The board game has the element of advertisement concealed, making the students able to enjoy searching for information about university and increasing their will to learn about university. This study results in a board game prototype "Flow Into The System" game tested towards 29 high school students and 9 college students in age range of 19 to 23. The questionnaires from 38 respondent has been analyzed using SPSS statistical analysis. The finding of analysis proves that the game is able to make the respondents want to play it again and again because the game is fun to play, making their bonds stronger, and being perceived as useful.

Keywords :Boardgame,Closeness,Enjoyment,Intention,Usefulness

ISN19-INF-014

THE EFFECT OF SHADING ON DENSITY AND SIZE OF GLANDULAR TRICHOMES IN *ARTEMISIA CINA* TETRAPLOID, THE SOURCE OF ANTI CANCER ARTEMISININ

Maria Marina Herawati [1)], Sri Kasmiyati [2)], Betty Elok Kristiani[3)]

[1)] Fakultas Pertanian dan Bisnis Universitas Kristen Satya Wacana
[2)] Fakultas Biologi Universitas Kristen Satya Wacana
[3)] Fakultas Biologi Universitas Kristen Satya Wacana

Email Author : marinakartika@gmail.com; Email Coressponding author : kas@uksw.edu; betty.elok@uksw.edu

Abstract

Artemisinin is a sesquiterpene lactone found in Artemisia cina having many medicinal properties. Artemisinin produced and stored in Glandular trichomes The purpose of this study was to determine the effect of shade 0%, 50% and 75% on the density and size of glandular trichomes and the content of artemisinin in A. cina tetraploid plants. The shade treatment significantly affected the density and size of glandular trichomes and the content of artemisinin in Artemisia cina tetraploid. 50% shade treatment showed the highest density of Glandular trichome, the width of glandular trichomes, and Artemisinin content. The results of the correlation analysis show that there is a very significant relationship between the density of glandular trichomes and the content of artemisinin.

Key Word : Grandular trichomes, Artemisinin, Artemisia cina tetraploid,density, size

ISN19-INF-016

Aplication of Smartphone Based Information Technology on Pregnancy Treatment : Systematics Literature Review

Raffiky Pinandia Sustamy[1]*, M N Widyawati[2], S Suryono[3]

[1]Master of Applied Science in Midwifery, Poltekkes Kemenkes Semarang, Indonesia
[2]Postgraduate Applied Science Midwifery Program, Poltekkes Kemenkes Semarang, Indonesia
[3]Department of Physics, Faculty of Science and Mathematics, Universitas Diponegoro, Semarang, Indonesia

*E-mail: raffikypinandia@gmail.com

Abstract. Smartphone is a new medium that provides greater advantages compared to conventional health education, presenting information for users to repeat the information they need at any time, thus providing convenience and quick access to pregnancy information. The purpose of this study is to analyze the use of some smartphone application features related to pregnancy care. The study design used a systematic review of the literature. The review was carried out with the electronic Science Direct, Pubmed and Google Scholar electronic databases of 5 international journal articles. Journal criteria used by using RCT techniques and journals in English. Smartphone application is a medium that is used easily, quickly and efficiently. Proven in 5 research articles showing effective results in information acquisition, anxiety management, weight management, management of pregnancy visit visits and management of maternity preparations, thus helping pregnant women in optimal pregnancy care. Future recommendations regarding application features by integrating the needs needed for pregnancy care based on standard operating procedures that have been determined or agreed according to government program policies.

Keywords: Application, Smartphone, Information, Technology, Pregnancy.

Analytic Hierarchy Process (AHP) in Health Services: Systematics Literature Review

Dwi Hesti Diah Citrawati[1*], M N Widyawati[2], S Suryono[3]

[1]Master of Applied Science in Midwifery, Poltekkes Kemenkes Semarang, Indonesia
[2]Postgraduate Applied Science Midwifery Program, Poltekkes Kemenkes Semarang, Indonesia
[3]Department of Physics, Faculty of Science and Mathematics, Universitas Diponegoro, Semarang, Indonesia

*E-mail : dwihestidc1@gmail.com

Abstract. Increasing and quality health services are solution of current health services, so developed countries and developing countries have begun to developing midwifery health services that prioritize midwifery emergency referral services using information systems. Indonesia is a developing country that is just starting to developing services towards information systems. Unicef has tried to developing a midwifery referral system with the program of the golden finger in the process of completing the referral but the application is still found in the planning. AHP is one of the tools of the information system that supports decisions in supporting the choice of health services. Midwifery referral services have not used information systems to make decisions and obtain health services that are appropriate to the needs of patients. This study uses the PRISMA protocol guideline method. From 1250 journals to 20 selected studies used from PubMed which are complete papers. The application of the exclusion and exclusion criteria was also applied in the selection of journals used in the systematic review of this literature. This research will see the application of AHP in any health service that has been agreed to be very effective. A systematic journal review of this literature can be used literature based on evidence based in practice reaserch which is material focused on the application of AHP in health services. This study also discusses a number of detailed journals with studying the details in the background study, the object of the research, the goals indicators reaserch, variables and methods applied, so students can briefly learn the benefits of AHP in health service. The bennefit in the health business is as an aiding strategy choice in quality improving in health services.

Keywords: Aplication, Multi Criteria Decision Analysis (MDCE), Analytic Hierarchy Process (AHP), Health Services, Health Care.

Contribution of Information Technology (IT) System in Overcoming Neonatal Jaundice: Systematic Literature Review

Dina Anggraini[1*], M N Widyawati[2], S Suryono[3]

[1]Master of Applied Science in Midwifery , Poltekkes Kemenkes Semarang, Indonesia
[2]Postgraduate Applied Science Midwifery Program, Poltekkes Kemenkes Semarang, Indonesia
[3]Department of Physics, Faculty of Science and Mathematics, Universitas Diponegoro, Semarang, Indonesia

*E-mail: dina_anggraini76@yahoo.com

Abstract. Information technology can improve efficiency, quality of service, security and can improve the quality of dianosis, especially in the incidence of neonatal jaundice, because the incidence of neonatal jaundice that is not monitored can cause increasingly severe problems, so that it can experience kernicterus and can also cause death in neonates. The purpose of this research is focused to analyze the contribution of information technology to the problem of jaundice neonatorum. The research design uses a systematic review of the literature. The review was conducted with an electronic science direct, pubmed and BMC electronic database of 7 international journal articles. Journal criteria used the Randomized Controlled Trial (RCT) technique and an English language journal from 2011-2019. Information technology has a role in health care, where from a number of technologies proven to be able to detect, education and treat easily, quickly, effectively, and can be used whenever needed in overcoming the problem of iketrus neonatorum. However, the use of information technology has not been comprehensive so that there is a need for development especially in areas with limited access.

Keywords: System, Technology, Information, Jaundice, Neonatorum.

A Systematic Literature Review: The Role Of Information Systems on The Success of Programs Family Planning (FP)

Kiki Yusika[1]*, MN Widyawati[2], S Suryono[3]

[1]Master of Applied Science in Midwifery , Poltekkes Kemenkes Semarang, Indonesia
[2]Postgraduate Applied Science Midwifery Program, Poltekkes Kemenkes Semarang, Indonesia
[3]Department of Physics, Faculty of Science and Mathematics, Universitas Diponegoro, Semarang, Indonesia

E-mail: kikiyusika28@gmail.com

Abstract. At present population growth is a problem of all countries in the world, the higher the population growth, the greater the effort that must be done by the state to maintain the welfare of its people because, it will have an economic and social implications of uncontrolled population growth. Family planning (FP) is an organization that aims to form a prosperous family by limiting the number of births by using contraception. Birth control can reduce unwanted pregnancies, high-risk pregnancies, and prevent maternal death. Deployment of innovative mobile technology can facilitate health workers, provide support to health workers and overcome health problems. One of the information systems that has been used in the health world is the immunization day reminder and management of hospital activities. The reminder system is effective as a reminder of the immunization schedule and the wireless technology helps health workers quickly and practically in health services. The use of information systems in the Family Planning (FP) program can support the success of family planning, one of which is to reduce the number of family planning failures and the accuracy of family planning use. This study uses the PRISMA protocol guidelines. From the various journals used came from Science direct and PubMed which is a full paper. The application of exclusion and exclusion criteria was also applied in the selection of journals used in this systematic literature review. This research will discuss how information systems contribute to the success of the program family planning. The method used in this article is a systematic literature review or SLR. This systematic journal review literature can be one of the literature reviews in family planning material. This research also discusses several journals in detail by examining in detail in their preliminary studies, the object of the research, the performance indicators, variables and methods applied. So that you can briefly study the benefits of information systems as a tool for the success of family planning in midwifery services.

Keyword : Family Planning (Fp), System Information, Reminder, Women Health Care, Health Service.

The Analysis Correlation Aspects of Usability in Sipetang (Case Study : Central Java Prosecutor)

Asa Ustatun Nada[1], Dinar M.K. Nugraheni[2]
Department of Computer Science/ Informatics, Faculty of Science and Mathematics, Diponegoro University
Jl. Prof.H.Soedarto S.H, Tembalang, Semarang 50275, Indonesia
E-mail: asanadanada@gmail.com[1] dinar.mutiara@live.undip.ac.id[2]

Abstract. Sistem Pencatatan Piutang (SIPETANG) is a recording accounts receivable system used by every District Attorney Satker Pidsus (Satpid) and High Prosecutor's Office of Finance (Bidkeu) in Central Java. The purpose in this paper is to analyze the SIPETANG correlation between aspects of ease of use, ease of learning, and confidence with skills of users. The sample of this study was the District Attorney Satker Pidsus (Satpid) in central Java totaling 20 respondents. The questionnaire was used to collect responses regarding the use of SIPETANG. Each aspect of the questionnaire made several questions using the Likert scale, namely 1 = strongly disagree; 2 = disagree; 3 = quite disagree; 4 = quite agree; 5 = agree; and 6 = very agree. The analysis shows that there is a strong correlation and direction of a positive relationship between the aspects used in the paper.

Keywords : SIPETANG, District Attorney, High Prosecutor’s, Satker Pidsus, Likert Scale

Evaluating the Management of the Official Pekalongan Government Website Using COBIT 5

E Erawati[1], D M K Nugraheni[2]

Department of Computer Science/ Informatics, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof.H.Soedarto S.H, Tembalang, Semarang 50275, Indonesia

E-mail: erna.erawatty@gmail.com[1] dinar.mutiara@live.undip.ac.id[2]

Abstract. The Government of Pekalongan Regency has implemented e-Government, one of them is the official website of the Pekalongan Government. The website is managed by the Communication and Information Office of Pekalongan Regency. The website is expected to improve the quality of governance. However, the Government of Pekalongan Regency has never conducted an evaluation of website management. Therefore, evaluation of website management is needed to ensure that the website has supported governance and is in line with the Pekalongan Regency Government goals. The evaluation carried out refers to the COBIT 5 framework. COBIT 5 was chosen because it can help to align government goals with the website goals. The evaluation was carried out with several domains obtained through mapping the vision and mision of Regent of Pekalongan Regency to COBIT goals. Based on the mapping results, 3 domains were selected namely APO01 (manage the IT management framework), DSS03 (manage problems), MEA01 (monitor, evaluate, and assess performance and conformance). Each domain is assessed to get capability level. From the assessment results obtained each domain is at level 3 (established process) that is the activity in the domain has been managed in a structured ad ind accordance with standards.

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Probability of Caused Factors Stroke Disease Use Link and Reliability Functions

Sudarno[1], Tatik Widiharih[2], Moch. Abdul Mukid[3]
[1,2,3] Department of Statistics, Faculty Sciences and Mathematics,
Diponegoro University, Semarang, Indonesia
Corresponding author e-mail: dsghani@gmail.com

Abstract. Diabetes mellitus disease is disease which abnormal metabolism for along time, because pancreas can not be able to produce insulin hormone be enough, or because body can not be able to use isulin hormone has been producted by effective. A stroke occurs if the flow of oxygen-rich blood to a portion of the brain is blocked. Without oxygen, brain cells start to die after a few minutes. Sudden bleeding in the brain also can cause a stroke if it damages brain cells. These objectives are find significant factors which cause diabetes mellitus disease and determine ordinal regression model. Ordinal regression model is used to look for probability and reliability functions of a patient has stroke disease. The method used to three link functions, that are logit link function, normit link function, and cloglog link function. Testing of homogenity prediction result of link functions use linear hypothesis test. Factors caused diabetes mellitus are body mass index, high density lipoprotein, and albuminuria. These factors cause to diabetes mellitus and stroke could be used to prevent diseases, in order to all persons are healthy and happy. The result that probability of a patient with macroalbuminuria has stroke greater than microalbuminuria, and a patient with microalbunuria has stroke greater than normal. Probability of patient with macroalbuminuria by logit, normit, and clogloc link functions is decrease, respectively. Probability of patient with microalbuminuria by logit, normit, and cloglog link functions is increase, respectively. Reliability of a patient with macroalbuminuria, normal, and microalbuminuria have stroke, respectively, is decrease. Reliability of patient with macroalbuminuria by logit, normit, and clogloc link functions, respectively, is increase. Reliability of patient with microalbuminuria by logit, normit, and clogloc link functions, respectively, is zero. All of link function methods yield estimation probability value is the same. AIC value of logit link function, normit link function, and cloglog link function are, respectively, 167.6826, 168.3965, 169.6107. These results are same by the result of linear hypothesis analysis that AIC values are not different meanwhile their AIC values are not equal. Therefore, logit model, normit model and cloglog model could be used to predict probalility with result almost same.

Keywords: Diabetes mellitus, stroke, link function, reliability function, linear hypothesis, AIC.

The lipid profile of rats **(Rattus norvegicus L.) induced by high fat ration after exposed to ethanolic neem (Azadirazchta indica) leaf extract**

Sri Isdadiyanto, Agung Janika Sitasiwi, Siti Muflichatun Mardiati
Biology Department. Faculty of Science and Mathematics. Diponegoro University.
E-mail: isdadiyanto@yahoo.com

ABSTRACT.

The objective of this study was to analyze the effect of neem leaf ethanol extract as an herbal antihyperlipidemia agent on white rats induced by high fat ration. The white rat used was male Wistar strain with 2 months of age and average body weight of approximately 200 grams. The rats were divided into 6 groups of 4, namely: Negative control (P0) was given commercial ration, positive control (P1) was given high fat ration and duck egg yolk per oral 2.5 ml / g BW, P2 was given high fat ration and duck egg yolk per oral 2.5 ml / 200 g BW + 8 mg / g BW simvastatin in 1 ml of distilled water, P3 was given high-fat ration and duck egg yolk orally 2.5 ml / 200 g BW + 75 mg / g BW ethanol extract of neem leaf in 1 ml of distilled water, P4 was given high fat ration and duck egg yolk per oral 2.5 ml / 200 g BW + 100 mg / g BW ethanol extract of neem leaf in 1 ml of distilled water, and P5 was given high fat ration and duck egg yolk per oral 2.5 ml / 200 g BW + 125 mg / g BW ethanol extract of neem leaf in 1 ml of distilled water. The variables observed were total cholesterol, HDL, LDL and TG levels. Data were analyzed using ANOVA followed by Least Significant Difference (LSD) test with 95% confidence level using SPSS 10.0 software. The results showed that administration of the ethanol extract of neem leaf (A. indica) can raise levels of HDL, lowering levels of LDL cholesterol and TG in blood serum of white rats (Rattus norvegicus L.).

Keywords: Cholesterol, HDL, LDL,TG, high fat ration

Topical Ozonated Virgin Coconut Oil Improves Diabetic Ulcer Wound Healing in Diabetic Mice Model

Renni Yuniati [1,*], Prasetyowati Subchan [2], Wibi Riawan [3], Matthew Brian Khrisna [4], Maryam Restiwijaya [5], Niken Safitri Dyan [6], and Muhammad Nur [7]

[1] Department of Dermatology and Venereology, Faculty of Medicine, Diponegoro University; renniyuniati@yahoo.com
[2] Department of Dermatology and Venereology, Faculty of Medicine, Diponegoro University; prasetyowatisubchan@yahoo.com
[3] Department of Biochemistry, Faculty of Medicine, Brawijaya University; wibiriawan@yahoo.co.id
[4] Faculty of Medicine, Diponegoro University; matthew.brian.k@gmail.com
[5] Center of Plasma Research, Faculty of Science and Mathematics, Diponegoro University; resti.afid@gmail.com
[6] Department of Nursing, Faculty of Medicine, Diponegoro University; niken.safitridk@fk.undip.ac.id
[7] Center of Plasma Research, Faculty of Science and Mathematics, Diponegoro University; nur.cpr@gmail.com

***** Correspondence: renniyuniati@yahoo.com; Tel.: +628122874008

Abstract. Diabetic ulcers are open sores on the skin through into the dermis, which if not properly managed, can increase amputation cases. Over the past few decades, ozone generated using plasma medical technology has been investigated to have the ability as an agent that helps wound healing. This study aims to evaluate the effect of topical ozonated VCO on the diabetic wound healing in the diabetic mice model. This study was an experimental study with post-test control design. Ulcer wound model was made in 50 diabetic male Wistar mice. They are divided into 5 groups, the first group (control) was given conventional therapy and the other groups (treatment) were given conventional therapy and topical ozonated VCO with different flow durations (0 min, 90 min, 7 h, 14 h). Then, the characteristics of wound healing (macroscopic and wound lengths) were observed in day 1, 3, 5, 7, and 14. The results of this study showed that the reduction of wound length was proportionally related to the duration of ozone flow. Topical VCO with the longer duration of ozone flow would heal the wound more quickly and had the shortest wound length at the end of the observation. VCO with ozone flow for 14 hours (16837.10 µm) had the biggest reduction of wound length, following by VCO with ozone flow for 7 hours (14209.64 µm), 90 minutes (14071.96 µm), 0 minutes (8531.99 µm), and control group (6370.77 µm). Therefore, we concluded that topical ozonated VCO improved diabetic wound healing process in diabetic ulcer mice model and can be used as adjuvant therapy for diabetic ulcers.

Dynamical analysis model of HIV-1 infection in $CD4^+$ T cells with antibody response

Sutimin[1,*], Siti Khabibah[1], Dita Anies Munawwaroh[1], R. Heri Soelistyo U[1] , Anindita Henindya P[1]

[1] *Department of Mathematics, Faculty of Sciences and Mathematics, Diponegoro University, Semarang – Indonesia.*

*Corresponding author: sutimin@live.undip.ac.id

Abstract. The spread of HIV infection one of which is affected by cell to cell transmission. A dynamical model of HIV-1 infection in $CD4^+$T cells with considering viral transmission from cell to cell and antibody response is constructed in this paper. Antibody response determines viral load in early HIV-1 infection.The existence and stability of the equilibrium is investigated by the basic reproduction ratio. The local stability of uninfected equilibrium is analyzed using Routh Hurwitz linearization. After investigating the local stability, we construct a Lyapunov function to investigate the global stability of endemic equilibrium. Numerical simulation is given to illustrate the control of HIV-1 infection based on the effect of antibody response and the effectiveness of antiretroviral treatment.

Keywords: HIV-1 infection, $CD4^+$T cells, Antibody, Stability, Equilibrium

Data Normalization in Classification of Liver Cancer with MicroRNA Data Using the Deep Neural Network (DNN) Method

Oliver Hiskia Purba[1], Eko Adi Sarwoko[2], Suhartono[3], and Adi Wibowo[4]

[1]Department of Informatics/Computer Science, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof. Soedarto, SH, Tembalang, Semarang 50275, Indonesia

E-mail: oliverpurba@students.undip.ac.id

Abstract

Liver cancer is one of the highest causes of death in the world. According to IARC data in 2018, the number of cases of liver cancer reached 841,080 cases and 781,631 of them declared dead. One effort that can be done to reduce cases of death from liver cancer is early detection by doing a classification on MicroRNA data. MicroRNA can be used to identify whether a cell is a cancer cell or not at the earliest stages. MicroRNA data studied was obtained from the GDC Data Portal of the National Cancer Institute (NCI). The Deep Neural Network (DNN) method is one of the methods that can be used in classifying cancer. Data normalization in the DNN method brings input values with an unlimited range into a limited range of output values. Data normalization at data pre-processing works more optimally by adding activation functions and Batch Normalization in each hidden layer. Different types of normalization and use of different activation functions can be compared to get the best accuracy value for DNN. This study compares three types of data normalization, namely Min-Max, Sigmoid, and Softmax. Whereas the activation functions being compared are ReLU, Sigmoid, and TanH. The results showed the best accuracy for the classification of liver cancer with MicroRNA data obtained using Min-Max data normalization, ReLU activation function, batch normalization with parameters of 2 hidden layers, 200 epochs, and 0.004 learning rate with an accuracy value reaching 98.33%

Keywords : *Liver Cancer, Deep Neural Network, Data Normalization, Activation Function, Batch Normalization*

DIAGNOSIS METHOD OF LEPTOSPIROSIS DISEASE WITH TEST MICROSCOPIC AGGLUTINATION TEST **(MAT)**

Sunarno[1] dan Adhitya Yoga Pradana Riyadi[1]

[1)]Department of Biology, Faculty of Sciences and Mathematics, Diponegoro University, Semarang, Indonesia, Email: sunzen07@gmail.com, +6285693142989, Phone/Fax (024) 76480923
Jl. Prof. Soedarto, SH Kampus Undip Tembalang Semarang, 50275

Abstract

Leptospirosis is a contagious disease in animals and humans that has been known to be caused by motile bacteria with the genus Leptospira. This disease is found throughout the world, both in animals or humans, especially in tropical or sub-tropical regions with high rainfall. Leptospirosis is initially often misdiagnosed as meningitis, influenza, liver disease or fever (pyrexia) from an unknown source. Many methods are used to diagnose leptospirosis, one of which is a serological method with the MAT (Microscopic Agglutination Test) for antibody diagnosis. The purpose of this study was to determine the stages in conducting the MAT test for the diagnosis of leptospirosis. The MAT method is divided into two groups, namely tools and materials for preparation of the Leptospira antigen culture and tools and materials for the MAT test. The stages of the MAT test are divided into three stages, namely the preparation of the Leptospira antigen culture, the preparation of the sample to be tested and the MAT test. The results showed that the MAT test was divided into three stages, namely the preparation of the Leptospira antigen culture, the preparation of the sample to be tested and the MAT test procedure. There is one sample of human serum from a total of 32 samples that show agglutination. The conclusion of this study is that there is 1 sample that shows agglutination with its infecting serovar, namely Canicola, Djasiman, Hebdomadis with titer 1: 320 and Icterohaemorrhagiae with titer 1: 640.

Key words: Leptospira, leptospirosis, MAT test, serological test

Background: Coronary heart disease is the second leading killer disease after Diabetes Mellitus. Indonesia ranks 1st in the world's highest number of coronary heart patients. Scientific / According to (books / scientific journals), kebo leaf (ficus elastica roxb) contains Flavonoids, Polyphenols and Tannins. Flavonoids in the leaves of ficus elastica roxb such as catechins, isoflavones are antioxidant polyphenols from plant metabolites (Wikipidea, 2010). The work of catechins is to decrease cholesterol absorption in the gut and increase excretion of stool by increasing the regulation of LDL receptors in the liver. **Problem formulation**: How is the effect of ethanol extract concentration of Ficus elastiica roxb leaf effect on total cholesterol reduction in Swiss Webster mice Research Objective: To find out how the study of leaf extract of kebo rubber to the decrease of cholesterol level in Wistar strain mice fed high fat diet Research Design: This research is an experimental research with pre and post test only control group design.

The design of this study was conducted pre and post test of the sample. Time and Location Research: This research was conducted in April-June 2017 at Biology Laboratory Faculty of Agriculture, Fisheries and Biology University of Bangka Belitung. Data Analysis: Data were analyzed statistically using Dependent T Test, ie to see the relation of ficus elastica roxb leaf extract to total cholesterol level in Swiss Webster males.

Results and Discussion: Significant Value (Sig) of Total Cholesterol on Day 10 was 0.00 (<0.05) showed that H0 rejected means there is a significant relationship between the concentration of ethanol extract of Ficus Elastica Roxb leaf and total cholesterol level in Swiss Webster Mice on Swiss various doses. The mechanism of tannin as anti hypercholesterolemia is by inhibiting adipogenesis and inhibiting intestinal absorption. In addition tannin is also an antioxidant that acts as a free anti-radical and activate antioxidant enzymes

Conclusion and Suggestion: Provision of 22,5 mg and 45 mg kebo rubber extract able to decrease total cholesterol level of mice (Mus musculus L.) males with hypercholesterolemia and Need to do further research about leaf rubber kebo compound test in decreasing cholesterol level

Keywords: Leaf Ethanol extract Leaf Ficus Elastica Roxb, total cholesterol, mice

Oil content analysis on yam bean fermented by *Aspergillus niger*

Rafaella Chandraseta Megananda[1], Yayan Nur Azhizhah[2], Pujiati[2], Cicilia Novi Primiani[2]
[1]Food Technology, Faculty of Animal and Agricultural Science, Diponegoro University
Prof. Soedarto Street, Tembalang, Semarang 50275
[2]Faculty of Teacher Training and Education, PGRI Madiun University
Setiabudi Street 85, Madiun 63118
Corresponding author email: primiani@unipma.ac.id

Abstract. The richness and diversity of nutrition contained in yam bean (*Pachyrhizus erosus*) have a great potential to be developed in various industries, such as food and health industries. The purpose of this study was to analyze the influence of inoculum' concentration and duration of incubation by *Aspergillus niger* on the level of oil content and glucose in fermented yam bean. Three different levels of solid state fermentation using *Aspergillus niger* molds are grouped as follows: control group (P_0), 0.2 ml/g (P_1), 0.4 ml/g (P_2), and 0.6 ml/g (P_3), and three different durations of fermentation are grouped as incubation control (K_0), 24 hours (K_1), 48 hours (K_2), and 72 hours (K_3). The oil content analysis was completed using soxhlet extractor and n-hexane solvent. The analysis results showed that the highest level of oil content of 70.15% was at the inoculum level of 0.4 ml/g with the incubation time of 96 hours.

Key words: *Apergillus niger,* yam bean (*Pachyrhizus erosus*), oil content

Development of smart parking system based on internet of things using object oriented analysis and design method

M. Fahreza Maulana, Satriyo Adhy, Nurdin Bahtiar, Indra Waspada
Department of Informatics, Faculty Science and Mathematics, Diponegoro University
E-mail: satriyo@live.undip.ac.id

Abstract. Smart City is one of the Smart Initiatives that tries to provide solutions to parking problems that are found in big cities. The growth of vehicle population is not matched by the growth of parking infrastructure, which raises various problems such as illegal parking, traffic jams, and driving safety. Thanks to the massive evolution of the Internet of Things, the Smart Parking idea became a major breakthrough in solving the growing parking problem. In this paper, we explain the prototype development of the Smart Parking System using the Internet of Things which has three subsystems, namely embedded systems, as well as Android and web based applications. Smart Parking System's software was developed using the Object-Oriented Analysis and Design (OOAD) method and has been tested using blackbox testing with 41 test cases that were successfully received.

ISN19-MBI-003

The Growth and Potential of *Gamma-Aminobutyric Acid* (GABA) by Lactic Acid Bacteria Isolated from Fish Fermented Food from Maluku, Indonesia.

Adde Lolita Octavia Putri[1], Endang Kusdiyantini[1] dan Sri Pujiyanto[1]
[1] *Biotechnology Laboratory, Department of Biology, Faculty of Science and Mathematics, Diponegoro University*
Jl. Prof. H. Soedarto, SH Tembalang, Semarang, Indonesia 50275
e-mail: Ade.lolita98@gmail.com

ABSTRACT

GABA is a non-protein amino acid that is widely distributed in plants, animals and microorganisms. GABA can increase plasma concentration, growth hormone and protein synthesis in the brain. Several studies have shown that LAB can reduce pathological conditions due to oxidative stress, which indicates that LAB has antioxidant activity. One of the metabolites produced by LAB is GABA. The purpose of this study was to determine the growth of LAB isolates, the ability of GABA production and to know the character of INS-A2 and INS A4 isolates as a result of isolation from fish fermented. Bacterial growth was carried out for 60 hours 37°C. The growth of LAB isolates INS-A2 and INS-A4 were treated with the addition of MSG and non-MSG 2% in MRSB. GABA production can be identified qualitatively by the Thin Layer Chromatography (TLC) method using the aluminum TLC plate (Silica gel F254, Merck, Mumbai India). The LAB inoculum which was treated on MRSB media was centrifuged at a speed of 6000 rpm for 20 minutes at 4ºC, the supernatant was deposited or dropped on the TLC plate. TLC was carried out using an eluent consisting of a mixture of n-butanol: acetic acid: distilled water in a ratio of 5:3:2. The Rf value of GABA compound produced by LAB INS-A2 and INS A4 isolates was 0.62, GABA standard (Pregabalin) 0.62, Rf MSG = 0.23. Based on the results of the study it can be concluded that the highest growth of INS A2 MSG isolate at 24 hours, INS-A2 non MSG highest at 30 hours. The highest growth of INS A4 MSG isolate at 30 hours and INS-A4 non MSG highest at 36 hours. The highest GABA concentration was owned by INS-A2 MSG isolate of 20,0 mg/ml. INS-A2 non MSG isolate 17,5 mg/ml, INS-A4 MSG 18,8 mg/ml and INS-A4 non-MSG 15,9 mg/ml. LAB characterization of INS-A2 and INS-A4 isolates obtained negative catalase, negative motility, fermentation type test (homofermentative) and gram-positive staining in accordance with the characteristics of BAL in general.
Keyword: Fish fermented food, TLC, *GABA, Lactic Acid Bacteria*

ISN19-ECO-003

Study of Railway Noise Level Against the Level of Disruption of Communities Living in the Area Around the Railway in the City of Semarang

Agus Margiantono[1], Sujito[2], and Mulya Virgonita[3]

[1]Department of Electrical Engineering, Faculty of Engineering, Semarang Private University

Jl. Soekarno- Hatta, Semarang 50196, Indonesia

E-mail: Agus_margiantono@usm.ac.id

Abstract

The increase in railway development in Indonesia in addition to having a positive impact also has a negative impact. One of the negative impacts caused is the increase in noise in the area along the Railroad, therefore this research team investigates the level of railroad noise on the level of community disturbance in the area around the railroad in the City of Semarang.

Noise measurement in this study was carried out in accordance with the provisions in Kep-48 / MENLH / 11/1996, namely the level of noise day and night while measuring the psychological condition of the community was measured using a questionnaire that would be distributed to the people who lived around the railroad in Semarang city.

Lsm measurement results show all locations that have measured the level of noise has exceeded the Kep-48 / MENLH / 11/1996 provisions namely; Bulu Lor settlement 65 dBA, Tawang Station 71 dBA and Tlogomulyo 60 dBA while from the questionnaire obtained, almost 50% of respondents experienced symptoms of stress, both physical, emotional, intellectual and interpresonal.

Keywords : Noise, psychological condition, symptoms of stress

Study on water quality physical-chemical parameters aquaculture areas in Menjangan Besar Island, Kepulauan Karimunjawa, Jepara, Indonesia

Rafita Farantika[1], Sapto Purnomo Putro[2,3], Mochamad Hadi[2], and Imam Triaso[4]

[1]Magister of Biology, Faculty of Science and Mathematics, Diponegoro University, Jl. Prof. Soedarto SH, Tembalang, Semarang, Indonesia

[2]Departmen of Biology of Faculty of Science and Mathematics, Diponegoro University Jl. Prof. Soedarto SH, Tembalang, Semarang, Indonesia

[3],Canter of Marine Ecology and Biomonitoring for Sustainable Aquaculture (Ce-MEBSA), 2and floor, Central Laboratory for Research and Services, Diponegoro University, Jl. Prof. Soedarto SH, Tembalang, Semarang Indonesia

[4]Department of Capture Fisheries, Faculty of Fisheries and Marine Science, Diponegoro University Jl. Prof. Soedarto SH, Tembalang, Semarang, Indonesia

E-mail: rafitafarantika21@gmail.com

Abstract

Good water quality is extremely important to support life of organisms. The purpose of this research is to know the condition of physical and chemical factors in aquatic biota in aquatic ecosystems against sea Menjagan Besar Island.

The taking of sampling is carried out for 2 months (August and November 2018) with two research locations i.e floating net cage of monoculture and reference areas. Sampling was done in situ and exitu (Laboratory test). Data of abiotic parameters included the composition of DO, pH, salinity, temperature, water current, organic matter content (carbon and nitrogen), phosphate, nitrate, and ammonia.

The results were compared with water quality standards based on KEPMEN-LH No. 51 tahun 2004 years for marine biotas. The results showed that the parameters in according to the quality standards are temperature, pH, salinity, and DO while those that have exceeded the quality standards are phosphate, nitrate, and ammonia.

Keywords: *Water Quality, Physic-Chemical Parameters, Menjangan Besar Island*

ISN19-ECO-005

Generalized of Properties Symmetric element on Rings with involution

Titi Udjiani SRRM [1], Suryoto[2], and Harjito[3]

[1]Department of Mathematics, Faculty of Science and Mathematics, Tembalang University

Jl. Setia budi, SH, Ngesrep, Semarang 50275, Indonesia

E-mail: udjianititi@yahoo.com

Abstract.

The definition of symmetric elements in a ring equipped with involution can be generalized by multiplying it as many as n natural number . Generalizing of symmetric elements is known as the generalized symmetric elements. Not each generalized symmetric element has a generalized Moore Penrose inverse. That condition is an extension of the symmetric elements properties in a ring. This paper produces others properties of generalized symmetric elements. Method which is used is by generalizing the commutative properties between symmetric elements with generalized Moore Penrose inverse.

Keywords : *Generalized, Symmetric, Moore Penrose, Inverse*

ISN19-ECO-006

Non-Poisson queue with normal logistic distribution (case study in Semarang automatic toll gate)

Sugito[1], Alan Prahuama[2], Dwi Ispriyanti[3]and Mustafid[4]

[1]Department of Statistics, Faculty of Science and Mathematics, Diponegoro University

Jl. Prof Soedharto, SH, Tembalang, Semarang 50275, Indonesia

E-mail: sugitostat@gmail.com

Abstract

Queue theory is a method that can be used to analyze the performance of a service system. This study aims to apply queue theory for analysis system performance's size at the Gayamsari Toll Gate by using data obtained through observation. Then the analysis step starts with checking the steady state assumption, goodness of fit tests to data, determines the queue model, and calculates the system performance's size. Based on analysis with Sigma Magic software, the results of the study obtained queue model with normal distribution on the number of arrivals and logistic distribution on the number of services data. From this model, it can be used to calculate the service system performance's size at the Gayamsari Toll Gate. The result of this calculation include estimates of the waiting time and the number of vehicles in the system or queue. It can be concluded that the service system at the Gayamsari Toll Gate is in good condition because the waiting time is less than half minute.

Keywords: Queue, Normal distribution, Logistic distribution

Interpretation of Fault Area Jabungan (City of Semarang) Based on Magnetic Data

Abstract. Survey geophysics in the Jabungan area (Kota Semarang) has been done with 53 points measurement use it method magnetic. The aim of the research is looking for the existence fault structure section in the Jabungan area and apply the *moving average method* in the separation of regional-residual anomaly based on The RTP magnetic total anomaly. Results obtained from the residual anomaly map modeled 3D is obtained existence value anomaly high amounting to 0.0222 cgs and anomalies with value low amounting to 0.0293 cgs of this model could be interpreted there are 2 faults directed Northwest-Southeast. The study area consist of clay, volcanic braccia, gravel, stone, tuff, sand, and sandstone.

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A Description of The Characteristics of Shallot Farmers Using Pesticides

Sri Winarni[1], Hardhono Susanto[2], Apoina Kartini[3], Ari Suwondo[4], Choirun Nissa[5], Dharminto[1]
Corresponding author: wiwin.undip@gmail.com

[1]Department of Biostatistics and Population Study, Public Health, Diponegoro University, Semarang, Indonesia
[2]Faculty of Medicine, Diponegoro University, Semarang, Indonesia
[3]Department of Public Health Nutrition, Diponegoro University, Semarang
[4]Department of Occupational Health and Safety, Public Health, Diponegoro University, Semarang
[5]Nutrition Department, Medical Faculty, Diponegoro University

Abstract
The biggest use of pesticides is in the Brebes Regency, which is an onion farmer. Farmers in Brebes use a mixture of more than 5 types of pesticides. At the onion pest season farmers can spray pesticides every 2 days. The results of research on pesticide residues in the soil show that the soil in Brebes still contains chlorpyrifos residues from 0.39 to 0.72 mg/kg. On average, farmers spray onions 15-20 times during the planting period, which is about 2 months. The most widely usage of pesticide is in Dursban 200 EC. This study aims to look at the characteristics of sprayers male farmers and the use of pesticides.
The population of shallot male farmers are sprayers male farmers who live in the villages of Pamulihan, Larangan, Siandong, Rengaspendawa, and Sitanggal. The control sample is taken randomly while the case sample is taken by purposive sampling. The results obtain that the majority of respondents''s education is elementary school graduation (40%), have no history of chronic illness (76%), BMI (Body Mass Index) normal (64%), smoking (66.7%), not drinking alcohol (65.3%), the average spraying frequency is ≥ 3 times a week. The use of high dossage of pesticides (> 183.12 cc) was most in the control group at 66.0% compared to case group 44.0%.
The agricultural activities that cover all activities from planting to harvest are mostly carried out by the case group at 100% compared to 97.3% of control group. Much personal protective equipment (PPE) is not used when spraying. The storage distance of shallots is ≤ 5 meters from the gathering place of the family. At the time of spraying, the opposite direction when spraying is more in case respondents at 28.0% compared to 26.0% controls. Post-harvest spraying is performed more in cases with 52.0% compared to 40% in controls. The use of spraying clothes that are the same as clothes worn at home was more in the control group which was 72.0%. The behaviour of not handwashing with soap after spraying pesticides is mostly carried out by case group at 92.0%. Information and education related to pesticide usage is still needed.

Keywords: Male Farmers, Pesticide Sprayers, Shallots, Brebes

ISN19-ECO-010

The Diversity of Fern in Petungkriyono Mixed Forest Pekalongan, Central Java

I Lestari[1], Murningsih[2], S Utami[3]

[1]Department of Biology, Faculty of Science and Mathematics, Diponegoro University Semarang, Indonesia.

Abstract. Fern are group of seedless vascular plants (Tracheophyta). Fern have a wide distribution in Indonesia. The aim of this study is for know the types of ferns in the mixed forest of Petungkriyono. The reseacrh methode used in the cruised method by exproling the entire mixed forest in Petungkriyono. The number of fern species found in the mixed forest of Petungkriyono is 44 species that belong to 14 families. The Snannon index of fern in mixed forest was 3,09. Therefore Petungkriyono mixed forest having a medium diversity level of fern. Humidity, temperature, light intensity and soil pH in the mixed forest of Petungkriyono are suitable for growing ferns.

Keywords : *Fern, Diversity, Petungkriyono.*

ISN19-ECO-011

Desalination of Sea Water Using a Polymer Inclusion Membrane (PIM) Continuously

Muhammad Cholid Djunaidi[1)]

[1)] Chemistry Department, Faculty of Mathematics & Natural Sciences, Diponegoro University

Abstract

Desalination of Sea Water using a Polymer Inclusion Membrane has been done. PIM is known to have a high stability membrane to overcome the instability of a liquid membrane. PIM was placed among two phases: the source phase was seawater and the receiving phase is aquadest. The determination of salinity is determined by the argentometry volhardic titration method in the feed phase and the receiving phase, while membrane characterization is done using FTIR. SEM and UV-Vis spectroscopy. The PIM membranes purchased for the desalination process using HTTA-TBP and D2EHPA synergy carrier compositions have a thin layer transparent clear and flexible nature. The results showed that the salinity value with percent desalination of seawater with SLM technique on PIM for D2EHPA-TBP carrier compounds was 81.690%, HTTA-TBP was 84.504% and it was also found that use of D2EHPA-TBP and HTTA-TBP mixed carrier compounds with a concentration ratio of 4: 1 had a synergy effect on the desalination process. Membrane characterization results by FTIR and UV spectroscopy showed that the PIM membrane is stable enough.

Keywords: Polymer Inclusion Membranes, Salinity, and Desalination.

The Impact of Mangrove Plantation in Ponds on the Secondary Metabolite Content

E D Hastuti[1‡], M Izzati[1] and S Darmanti[1]

[1]Faculty of Science and Mathematics, Diponegoro University, Jl. Prof. Soedarto, SH Tembalang, Semarang, Central Java, Indonesia 50275

[‡]Corresponding author: endah_pdil@yahoo.com

Abstract. Planting of mangrove vegetation integratively in silvofishery pond alters the possibility of metabolite accumulation pattern. This research aimed to analyze the metabolite content in mangrove root and leaf of *Avicennia marina*, to analyze the difference of metabolite content between pond and shore area, and to analyze the correlation of metabolite content between the root and the leaf. The research was carried out through field sampling in Mangunharjo Village followed by laboratory analysis for alkaloid, phenol and terpenoid content. Samples were taken from *A. marina* root and leaf planted in the pond and shore areas by triplication. Data analysis were including t-test and correlation. The result showed that total alkaloid and total phenol content was varied between growing location. Significant differences between pond and shore mangrove metabolites were obtained for total alkaloid content in the root and total phenol content in the leaf. Correlation analysis between root and leaf metabolite contents showed its significance for total phenol content in the pond area. The research implied that mangrove in pond area underwent higher environmental stress compared to the ones in shore area.

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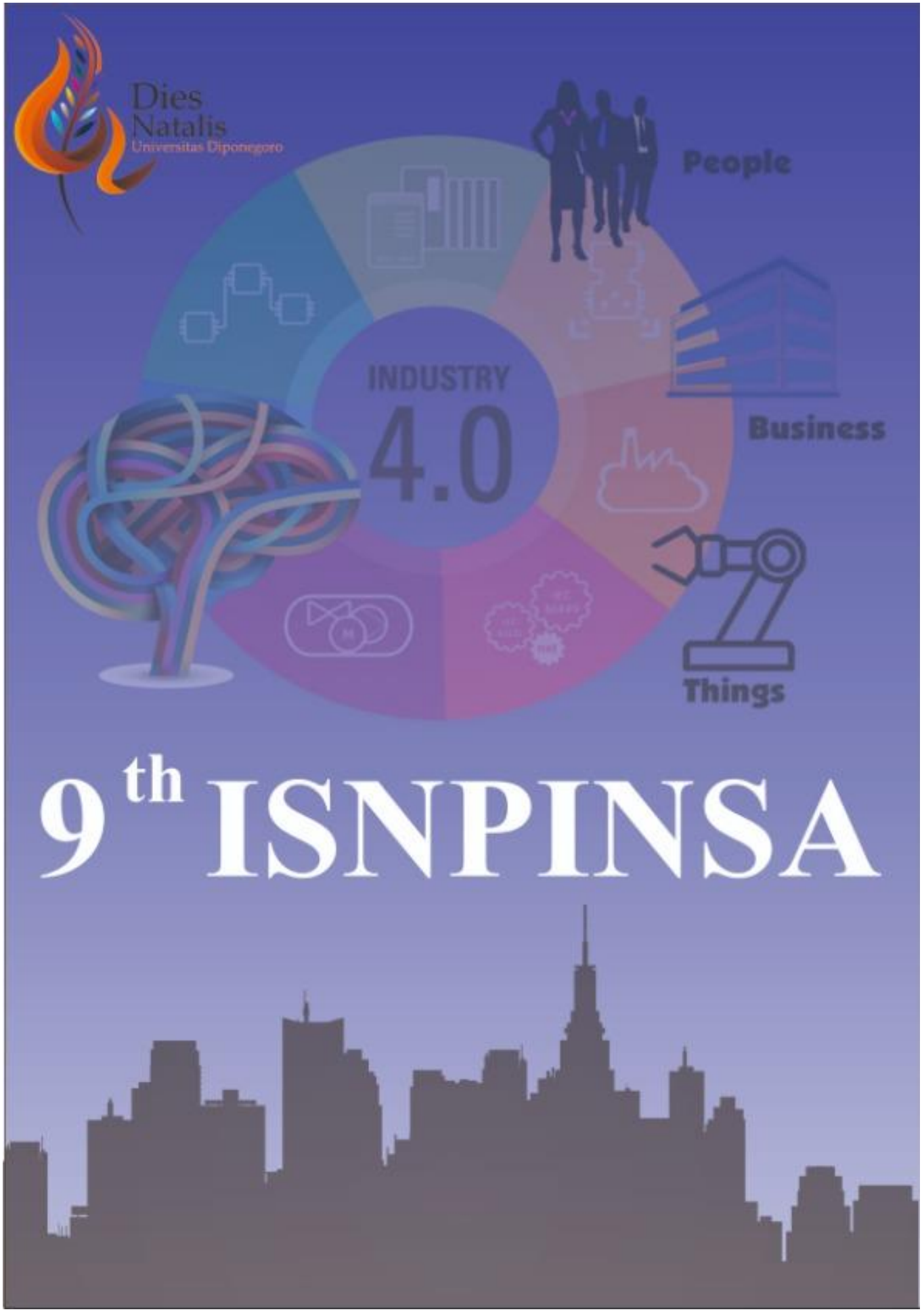
Subsurface mapping of Diponegoro University campus Tembalang based on resistivity data

Agus Setyawan[1], Rahmat Gernowo[1], Jatmiko Endro Suseno[1], Wijayaningrum[2], Yoga Aribowo[3], Najib[3]
[1]Department of Physics, Faculty of Science and Mathematics, Universitas Diponegoro, Jl. Prof. Soedharto, SH, Tembalang, Semarang 50275, Indonesia
[2] Undergraduate Student Department of Physics, Faculty of Science and Mathematics, Universitas Diponegoro, Jl. Prof. Soedharto, SH, Tembalang, Semarang 50275, Indonesia
[3]Department of Physics, Faculty of Science and Mathematics, Universitas Diponegoro, Jl. Prof. Soedharto, SH, Tembalang, Semarang 50275, Indonesia
E-mail: agussetyawan@fisika.fsm.undip.ac.id

Abstract

Subsurface mapping using the geoelectric method has been carried out in the area of Undip Campus, Tembalang to determine the distribution of subsurface layers resistivity. This study empolys the Wenner configuration geoelectric method. Data were collected at seven points with a track length of 100 meters and a distance among electrodes of 5 meters. Data processing is carried out using RES2DINV software packages that produce rock resistivity values and depth estimates, then the interpretation of each track is carried out in detail by taking into account the geological information available in the Undip campus, Tembalang. The results of the interpretation show that the study area is dominated by breccias which are Kaligetas formations. The breccia rocks themselves are claystone which tends to be water-resistant and there is also sandstone. Nearly every data collection point has the same cross-section. Claystone with resistivity ranges from 3.05 Ωm to 26.5 Ωm. Sandstones with resistivity range from 20.0 Ωm to 135 Ωm. The rest found alluvium and sand with a resistivity of almost more than 100 μm

Keyword: Resistivity, subsurface, Wenner configuration, UNDIP Tembalang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