



ABSTRACTS

DELEGATE HANDBOOK

**The 3rd Annual International Seminar On
Trends In Science And Science Education 2016**

Organized by :

**Faculty of Mathematics and Natural Sciences
State University of Medan**

**Medan, Garuda Plaza Hotel
October 7th, 2016**



**TRENDS IN SCIENCE
AND SCIENCE EDUCATION
2016** State University of Medan
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Welcome



Assalamualaikum Warrahmatullahi
Wabarakatuh

Welcome to the 3rd Annual International Seminar on Trends in Science and Science Education 2016. This is the third time we are hosting this seminar and we are proud to inform you that this seminar is an annual event in our calendar and will be held every year since 2014. We are inviting international recognized speakers from several countries to share their latest discoveries to all of us in Biology, Chemistry, Physics, Mathematics and Science Education fields. Well known researchers in science and science education will share their experiences and knowledge so we can have up to date the information. This is one of the goals of this seminar.

As science researcher we realize the importance of information exchange among us. The new information enlighten our mind and give us ideas on what to do next in our research and how to do it. This new information often become the basic for our next project in particular, and become the upcoming year research trends in general. Information exchange also keeps us updated, allow us to give and receive suggestions and critics which will lead us to better results. Thus, we need a forum

where we can share and exchange information. Seminar, conference and other scientific gathering are media for us to do so.

We would like to thanks to all the researchers who responded to our call for papers and participant of this seminar. Let us share information about our latest discoveries in science and science education and set the trends for the upcoming year. Let us collaborate and create new opportunities for a better and more holistic research.

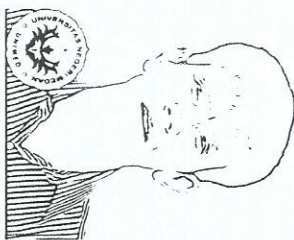
Finally, we convey our thanks to the Rector of State University of Medan, Prof. Dr. Syawal Gultom, M.Pd and all the vice rector for the support and attention to this seminar and also to all of the committee members for their work in ensuring the run of this seminar. Once again, welcome to the 3rd Annual International Seminar on Trends in Science and Science Education 2016.

Thank you very much

Dr. Asrin Lubis, M.Pd.

Dean
Faculty of Mathematics and Natural
Sciences
State University of Medan

Chairman



First, let us be thankful to the one and all-powerful God that on this fine morning we are still given bodily and spiritual health and can gather together in this room, on our beloved capital city of North Sumatra, Medan.

A warm and special welcome goes to our keynote speakers, Dr. Mohd. Sazali Khalid (from University Tun Hussein Onn Malaysia), Prof. Dr. Janchai Yingprayoon (Suan Sunandha Rajabhat University, Thailand), Rabeta bt. Mohd. Salleh, Ph.D (University Sains Malaysia), Dee-Jean Ong (R.E.A.L. Education Group Malaysia) and Dr. Anna Ratna Wulan (from Universitas Pendidikan Indonesia).

The special welcome also goes to all invited speakers from top Universities all over Indonesia.

This seminar, The 3rd International Seminar on Trends in Science and Science Education 2016 is an annual seminar organized by Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Negeri Medan. This is the third year seminar following the successful first and second year seminar held in 2014 and 2015. This year seminar is focusing on the contribution of research to the development of technology. The committee expects the information exchange among researchers in this seminar will encourage collaboration among the different actors in

science and science education community so as to achieve a better result for the benefit of the community. This third annual international seminar will be held from October 7 – 8, 201.

The committee are really honored to have attention from approximately 200 speakers and participants from three different countries. They come from Thailand, Malaysia and of course Indonesia. About 20 universities from all over Indonesia participate in this event. It is expected that those who participate in the seminar will afterwards be familiar and able to interact with their international counterparts in their scientific area. This is in line with the vision of Universitas Negeri Medan to become a world class and character building university.

The committee received more than 100 seminar abstracts and full papers from science education, biology, chemistry, physics, and mathematics sciences. Most of the abstract have been edited and bound into an abstract collection book which is a part of the seminar kit. The seminar full papers are now in editing stage by the committee before publish in seminar proceeding that will be available in both printed and on-line forms, in the next January 2017. Please, remind the committee if you want to get the copy of the seminar proceeding.

This year seminar is a special event because it is held together with the annual meeting of all mathematics and natural science faculties from LPTK in Indonesia or Forum*MIPIA LPTK Indonesia. The meeting will be held from

October 7-9, 2016, in Medan and Parapat. This forum is intended to built collaboration among LPKT's in Indonesia.

I would like to take this opportunity to acknowledge the important role of the honorable Prof. Dr. Syawal Gutom, M.Pd, rector of Universitas Negeri Medan for giving us his full support and attention and for providing his precious time to be with us and to honour us by opening this seminar.

Our sincere thanks also goes to the honorable Dr. Asrin Lubis, M.Pd, Dean of Fakultas Matematika dan Ilmu Pengetahuan Alam, who havelead and encourage all the committeemembers to be always focused and worked hard even in a very short period of time to prepare the seminar.

My sincere thanks also goes to all members of the committee and to all staff of Fakultas Matematika dan Ilmu Pengetahuan Alam for their continuous support and hard work because without their assistance this seminar may not have taken place today.

Finally, I conclude my speech by kindly inviting Honourable Prof. Dr. Syawal Gutom, M.Pd, Rector of Universitas Negeri Medan, to give special direction and officially open the seminar.

We wish you good luck and success in this endeavor.

Thank you very much

Prof. Dr. Herbert Sipahutar, MS., M.Sc.

Chairman ALSTSSE 2016

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 Prof. Dr. rer.nat. Binari Manurung, M.Si. - Biology

Keynote Speaker



Prof. Dr. Syawal Gultom, M.Pd.

Born in North Tapanuli, February 3rd, 1962 is an academic from Medan, North Sumatra. He served as rector of the State University of Medan period 2007-2011 and the period 2015-2019. He graduated on Mathematics Education in 1986 at the undergraduate of IKIP Medan. Furthermore, continued his studies at the Master Program (S2) at IKIP Yogyakarta in 1992 and passed the Doctoral Program (S3) of Education Management at State University of Jakarta in 2009. Syawal Gultom was professor of mathematics education at State University of Medan. Before returning to serve in education, he has served as first echelon in the Ministry of National Education of the Republic of Indonesia as Head of Human Resources Development of Education and Culture and Education Quality Assurance (BPSDMPK-PMP) in Jakarta. During his time as Head of SDMPK and PMP, he contributed as an author and trainer curriculum in 2013 which is being implemented in Indonesia.

Conference Programme

Time	Activity	Performed by
07.30 – 08.00	Registration	Committee
08.00 – 08.05	Welcome Speech from announcer	Announcer: Nora Susanti Lumbantoran & Andrea Artisya Nasution
08.05 – 08.10	Indonesia National Anthem	Dr. Melva Siltonga
08.10 – 08.20	Welcome Dance	Sendratask UNIMED
08.20 – 08.25	Committee report	Prof. Dr. Herbert Sipahutar, M.Sc
08.25 – 08.35	Welcome speech from Dean of FMIPA	Dr. Asrin Lubis, M.Pd
08.35 – 09.35	1. Welcome speech 2. Official opening 3. Keynote speech Souvenir – giving Praying	Rector: Prof. Dr. Syawal Gultom, M.Pd Rector and Dean Muhammad Kadri, S.Si, M.Si Committee Moderator: Prof. Drs. Motlan, M.Sc., Ph.D
09.35 – 09.40	Coffee break	
10.00 – 10.45	Keynote Speaker 1 and 2 Dr. MohdSazali Khalid and Asst. Prof. Dr. JanchaiYingprayoon	
10.45 – 11.30	Keynote Speaker 3 and 4 Rabetaht.MohdSalleh, Ph.D and Dr. Anna RatnaWulan	Moderator: Prof. Drs. ManiharStumorang, M.Sc., Ph.D Moderator: Dr. Ely Djulla, M.Pd Committee Committee
11.30 – 12.15	Workshop: Dee-Jean ONG (Ms. D.)	
12.15 – 14.00	Parallel session I	
14.00 – 15.00	Coffee break	
15.00 – 15.15	Parallel session II	
15.15 – 17.00	Closing Ceremony	Committee

Plenary 1: Chemistry

Invited Speaker:
1. Suyana (State University of Yogyakarta)
2. I Wayan Mudarawan (Education University of Ganesha)
Moderator 1: Freddy Tua Musa Panggabean
Moderator 2: Moondra Zubir

Name	Affiliation	Title
Suyana	Chemistry dept. Of State University of Padang	Analysis of Students' understanding in learning Chemistry about Solubility
I Wayan Mudarawan	Ganesha University of Education	Aniline Oligomers: Synthesis, Identification and New Opportunities for Nanostructured Materials
Moondra Zubir	Universitas Sumatera Utara	Antioxidant and Antibacterial Activity Tests of Dragon Scales leaves Crude Methanol Extracts (<i>Drymoglossum pilosellodes</i> (L.) Presl)
Freddy Tua Musa Panggabean	Gorontalo State University Indonesia	Antioxidant Activity and Fractionation Protein in The Extracts of Blood Cockle (<i>Anadara granosa</i> , L.)
I Wayan Mudarawan	State University of Gorontalo	Bioactivity of alkaloids from <i>Derris elliptica</i> (Roxb.) as biopesticide agents against rice black bugs
Asrin Lubis	Universitas Negeri Gorontalo	Characterization of Chitosan from the Waste of Shrimp's Shell: Potential as Metal Adsorbents
Moondra Zubir	Polytechnic of ATI Padang	Design and Performance Test of Films TiO2 for Solar UV-TiO2 Photocatalytic Reactor
Manihar Stumorang	State University of Medan	Effect of Variations in The Fermentation Time in Making Bioethanol from Waste Banana
Dee-Jean ONG	UMN Al Washiyah Medan	Effect of Zeolite Sarulla composition toward Characteristics and Performance of Chitosan-Zeolite Sarulla Membrane (Ch-ZAS) for Ethanol-Water Separation
Wenny A. A.	State University of Gorontalo	Flavonoid compound in the methanol extract of bitter melon (<i>Momordica charantia</i> L.)

Characterization Of Chitosan From The Waste Of Shrimp's Shell: Potential As Metal Adsorbents

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Abstract - This study aims to obtain a product of chitosan from shrimp shell waste as environmentally friendly adsorbent through the isolation and characterization process. Chitosan is obtained from shrimp shell waste (Peneaus monodon) through deproteinase, demineralization, depigmentation, and deacetylation. The results showed the yield obtained at stage of deproteinase 48.28%, demineralization 24.98%, depigmentation 22.71%, and deacetylation 71.73%. The results of moisture test is 6.48%, ash content 0.40% and the degree of deacetylation 73.88%. Test of solubility in water, ammonia and sodium sulfate are insoluble and in hydrochloric acid, nitric acid are slightly soluble while in acetic acid is soluble.

Keywords: Chitosan, *Peneaus monodon*

Alkaloids from *Caesalpinia bonduc* (L.) Roxb. as biopesticide agents against rice black bugs

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Abstract - The aim of this study was to evaluate the biopesticide activity of methanol extract of tombili seeds or nickernuts from pan tropical plant *Caesalpinia bonduc* at different concentrations against Hemipteran rice pest *Scotinophara coarctata* or rice black bugs. The active compounds in tombili seeds were separated and purified from the methanol extract using bioassay-guided isolation on a laboratory-scale. After phytochemical analysis, the biopesticide activities of the identified agents were studied at the concentration of 0.1%, 0.01% and 0.05%. Among two compounds identified, terpenes and alkaloids, the highest biopesticide activity was demonstrated by alkaloids at the concentration of 0.1%. Result from this study show that the alkaloids from *Caesalpinia bonduc* can be used as a potent natural pesticide against rice black bugs at the concentration of 0.1%.

Keywords: *Caesalpinia bonduc*, tombili seeds, biopesticide activity, *Scotinophara coarctata*, black rice bugs



Flavonoid compound in the methanol extract of bitter melon (*Momordica charantia* L.)

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Abstract- This study was aimed to isolate and identify flavonoid compound in the Asia-African herbaceous fruit *Momordica charantia* L. known as bitter melon or *pare* in Indonesia. A methanol maceration was performed to extract the compound, followed by fractionation and purification using column chromatography. The phytochemical analysis of the pure isolate yielded positive result for flavonoid compound, confirmed by infrared spectroscopy (showing wavenumber $3,436.9\text{ cm}^{-1}$ suggesting OH and peaks around $1,710.0\text{ cm}^{-1}$ suggestive for C=O) and ultraviolet-visible spectroscopy (showing 220.90 nm wavelength and 0.286 of absorbance). This results indicated the availability of flavonoid compound in the methanol extract of bitter melon, suggesting its medicinal use for cancer prevention.

Keywords: *Momordica charantia*, bitter melon, IR spectrophotometry, UV/Vis spectrophotometry, flavonoid, cancer prevention



UTILIZATION BURNING WASTE MATERIAL SHELL OIL PALMS AS FILLER MODIFIED ASPHALT

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Jurusan Fisika FMIPA Universitas Negeri Medan, *Email: winsyahputra@gmail.com

Abstract - This study aims to determine the characterization and modification of asphalt strength after the addition of (Shells Palm Oil Ash) ACKS the sieve of 200 mesh (76 μm) at the time of testing the physical properties of the asphalt and testing marshall. This sample is asphalt mixture of 200 g, (Cyclic Natural Rubber) CNR with a composition of 20 g, 40 g, 60 g, 80 g, and added compatibilizer (Benzoyl Peroxide) BPO as much as 0.336 g, (Acid Acrylate) AA 5 ml, and ACKS as much as 1%. The samples were then tested the terms of its physical properties include penetration testing, softening point, and density. Then the asphalt grading 6.0% mixed with aggregate 1200% to produce specimens. Specimens were then tested his powers include tests of stability, density and flow. From the results of testing the strength of a specimen after a stability value added ACKS maximum is 1.554 the maximum value of the density is 2.227 g/ml, and a maximum value of test flow is 3.85 mm. The conclusion of this study is the addition of ACKS affect the value marshall and optimum strength of obtained on the addition of 80 g CNR.

Key Words: ACKS, Marshall Test, Modified Asphalt



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07 October 2016*

FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM, UNIVERSITAS NEGERI MEDAN, MEDAN-INDONESIA