KPRC & ICChEAS 2025

PROGRAMME BOOK

THE 2nd KUUB POSTGRADUATE BY RESEARCH COLLOQUIUM

In Conjunction with:

THE 6th INTERNATIONAL CONFERENCE ON CHEMICAL ENGINEERING AND APPLIED SCIENCES

Banjarmasin, 16 October 2025

"BORNEO'S MANGROVES: A NEXUS OF BIODIVERSITY, SUSTAINABLE FUTURES, AND CARBON SEQUESTRATION"



INTERNATIONAL WORKSHOP

PROGRAMME BOOK

Pre-Conference of KPRC-ICChEAS 2025
Banjarmasin, 15 October 2025

"BLUE FORESTS AND CIRCULAR SOLUTIONS: HARNESSING MANGROVES AND SUSTAINABLE WASTE MANAGEMENT FOR CLIMATE AND ENERGY RESILIENCE"



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WELCOMING SPEECH

CONFERENCE CHAIR



Assalamualaikum Warrahmatullahi Wabarakatuh

On behalf of the organizing committee, it is a great pleasure to welcome you to the 2nd KUUB Postgraduate by Research Colloquium (KPRC), held in conjunction with the 6th International Conference on Chemical Engineering and Applied Sciences (ICChEAS). We are truly delighted to host this meaningful gathering of dedicated professionals, passionate researchers, and esteemed participants.

The theme of this conference, "Borneo's Mangroves: A Nexus of Biodiversity, Sustainable Futures, and Carbon Sequestration," reflects our shared commitment to building a greener and more sustainable future. The mangrove ecosystems of Borneo stand as a powerful symbol of resilience, balance, and harmony with nature. These are the values that we should continue to promote through collaboration, innovation, and research.

This gathering offers an invaluable opportunity for students, researchers, and professionals to exchange ideas, share knowledge, and establish meaningful connections. It serves as a meeting ground where academia, industry, government, and communities come together to shape solutions that matter both locally and globally.

During KPRC-ICChEAS, you will experience inspiring keynote talks, engaging discussions, interactive presentations, and a tour of Banjarmasin, the City of a Thousand Rivers. KPRC-ICChEAS 2025 has brought together a total of 800 participants, including workshop attendees, keynote speakers, invited speakers, presenters, the organizing committee, and other participants. We are proud to welcome international contributions from Indonesia, Malaysia, Brunei Darussalam, Australia, Japan, China, France, and the United States. Your presence enriches this event and fosters a global dialogue that transcends disciplines and borders.

Throughout this colloquium and conference, the discussions and presentations will be held across three main panel rooms: Environmental Science; Sustainability, Society, and Technology; and Chemical Engineering. Each panel represents an important dimension of our shared commitment to sustainable innovation and environmental progress.

We hope this event serves as an inspiring platform for sharing knowledge, building collaborations, and sparking new ideas. More importantly, may it remind us that research is not only about discovery, but also about connection, purpose, and impact.

Prof. Ir. Muthia Elma, S.T., M.Sc., Ph.D

Conference Chair
KPRC-ICChEAS 2025

OPENING SPEECH

PRESIDENT OF KUUB



Assalamualaikum warahmatullahi wabarakatuh,
A very good morning and warm greetings to everyone.

It is a great pleasure and honour, on behalf of the Konsortium Universiti Universitas Borneo (KUUB), to welcome all distinguished guests, keynote speakers, researchers, postgraduate students, and participants to the 2nd KUUB Postgraduate by Research Colloquium (KPRC 2025), held in conjunction with the 6th International Conference on Chemical Engineering and Applied Sciences (ICcHEAS 2025) here in Banjarmasin.

The theme of this year's conference, "Borneo's Mangroves: A Nexus of Biodiversity, Sustainable Futures, and Carbon Sequestration," is both timely and meaningful. The mangroves of Borneo symbolize biodiversity, resilience, and balance, reminding us of our shared responsibility to protect the environment through science, innovation, and collaboration.

KUUB continues to strengthen academic partnerships across Malaysia, Indonesia, Brunei Darussalam, and the wider BIMP-EAGA region through research collaboration, academic exchange, good governance, and regional capacity-building.
Through this colloquium and conference, we hope to provide an inspiring platform for dialogue, discovery, and collaboration. May this gathering encourage meaningful exchanges of ideas and inspire sustainable solutions for our region and the global community.

I would like to express my sincere appreciation to Universitas Lambung Mangkurat, all partners, speakers, committees, and participants for their valuable support and contributions.

Once again, I warmly welcome everyone to KPRC 2025 and ICcHEAS 2025. May our discussions be fruitful, our friendships strengthened, and our shared vision for a sustainable future renewed.

Prof. Dr. Shahrul Razid Sarbin

President of KUUB

OPENING SPEECH

RECTOR, LAMBUNG MANGKURAT UNIVERSITY



Assalamualaikum Warahmatullahi Wabarakatuh

On behalf of Lambung Mangkurat University, it is my honor and delight to extend a warm welcome to all of distinguished guests, academicians, and participants to the 2nd KUUB Postgraduate by Research Colloquium (KPRC) in conjunction with the 6th International Conference on Chemical Engineering and Applied Sciences (ICChEAS) 2025.

With the theme "Borneo's Mangroves: A Nexus of Biodiversity, Sustainable Futures, and Carbon Sequestration," this conference is a platform where knowledge and collaborations combine. This event stands as a celebration of knowledge, innovation, and collaboration—bringing together researchers, academicians, and professionals from across Indonesia, Australia, Japan, Brunei Darussalam, Malaysia, France, the United States, China, and Ghana.

We invite all participants to engage actively, exchange ideas, and build lasting networks throughout the sessions—spanning environmental science, sustainability and technology, and chemical engineering. May this gathering inspire new perspectives and strengthen our shared commitment to innovation that sustains both people and the planet.

Welcome to KPRC & ICChEAS 2025—where ideas take root and the future grows.

Prof. Dr. Ahmad, SE., M.Si.

Rector
Lambung Mangkurat University

ABOUT KPRC-ICCHEAS 2025



Innovation is defined as an action or process to create ideas, methods, modifications or novelty. Whereas, technology is the application of scientific knowledge to the practical aims for human life. Both are inherently aligned, meaning that technology is used as equipment to implement innovation. As life continues to evolve, innovation and technology improved gradually, which is supported by learning and education, for example in engineering fields.

Engineering education has a significant contribution to developing technological innovation in life by integrating resources, design methods, and system integration. In response to current developments, countries worldwide are striving to incorporate sustainability into their practices, with the goal of achieving it by 2030. Sustainability is aimed at overcoming poverty, improving health, overcoming climate change, preserving natural resources, and increasing economic growth. One of the developments of sustainability can be achieved by technological innovation. Today, technology and innovation play a vital role in everyday life and are essential for advancing sustainability. Science, technology, and innovation are key components of both global and national efforts to address the economic, social, and environmental dimensions of development and their interactions. These fields are crucial in finding solutions to the current sustainability crisis facing the world. Therefore, the conference theme addresses common issues that must be discussed by educators, students, and industry practitioners from all backgrounds and nations.

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(Syiah Kuala University, Indonesia)

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(University of Riau, Indonesia)

REVIEWER COMMITTEES

Prof. Chris Lenhart
(University of Minnesota)

Prof. Tim Roberts
(University of Newscatle)

Assoc. Prof. Guazhao Ji
(Dalian University)

Dr. Didik Triwibowo, S.T., M. Env. Man
(PT Adaro Indonesia)

Prof. Dr. Ir. Udin Hasanudin, M.T
(Lampung University - Indonesia)

Datin Paduka Prof. Dr Dayang Hajah Zohrah binti Haji Sulaiman
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(Hiroshima University - Japan)

Prof. Agus Saptoro
(Curtin University- Australia)

Prof. Kiswanto, S.Hut., M.P., Ph. D.
(Mulawarman University - Indonesia)

Assoc. Prof. Dr. Ir. Krismadinata, S.T., M.T.
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REVIEWER COMMITTEES

Prof. Akhmad Rizali Saidy, S.P., M. Agr. Sc., Ph. D.
(Lambung Mangkurat University)

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(Palangka Raya University)

Prof. Dr. Ir. Sri Aprilia, M.T.
(Syiah Kuala University)

Prof. Dr. Ing. Ir. Yulian Firmana Arifin, S.T., M.T.
(Lambung Mangkurat University)

Prof. Dr. Ir. Luthfi, M. S.
(Lambung Mangkurat University)

Prof. Dr. Ir. Yudi Firmanul Arifin, M. Sc., IPU
(Lambung Mangkurat University)

Prof. Dr. Emi Roslinda, S.Hut., M. Si.
(Tanjungpura University)

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ABOUT PRE-CONFERENCE INTERNATIONAL WORKSHOP

The Pre-Conference International Workshop was held on 15 October 2025 at the General Building of Lambung Mangkurat University, Banjarmasin, Indonesia. The workshop served as an academic and professional forum for scholars, practitioners, industry representatives, students, and environmental stakeholders to discuss issues, solutions, and innovations related to Borneo's mangroves, wetland ecosystems, biodiversity, carbon sequestration, and sustainable development.

With the theme "Blue Forests and Circular Solutions: Harnessing Mangroves and Sustainable Waste Management for Climate and Energy Resilience," the workshop highlighted the important role of mangroves and blue forest ecosystems in supporting climate resilience, ecological balance, sustainable livelihoods, and low-carbon development. Borneo's mangroves, peatlands, wetlands, rivers, coastal areas, and biodiversity hotspots provide key environmental services such as carbon storage, shoreline protection, water regulation, habitat provision, and community-based economic support, while also facing threats from land-use change, degradation, pollution, climate change, and unsustainable development.

The workshop featured keynote speakers from Australia, China, Indonesia, and the United States, covering topics such as environmental science, ecological restoration, sustainable waste management, biomass conversion, post-mining rehabilitation, peatland restoration, biodiversity conservation, and community-based sustainability.

To begin the discussion, Emeritus Professor Tim Roberts AM from the University of Newcastle, Australia, discussed the effects of habitat loss on animal survival, followed by an explanation of the importance of biodiversity protection. Assoc. Prof. Guozhao Ji from Dalian University of Technology, China, presented the potential of algal biomass and seaweed for renewable energy and circular economy development. Dr. Ir. Didik Triwibowo, S.T., M.Env. Man. from PT Adaro Indonesia shared a case study on transforming the Paringin post-mining landscape into an ecological asset through inland blue forest approaches. Prof. Chris Lenhart from the University of Minnesota, United States, explained lessons from peatland restoration in the Global North, focusing on hydrology, carbon balance, greenhouse gas emissions, plant recovery, and community involvement.

Overall, the workshop strengthened international collaboration and interdisciplinary dialogue on mangrove protection, wetland restoration, circular solutions, sustainable waste management, and climate resilience. It also reinforced Lambung Mangkurat University's role in promoting sustainable futures for Borneo and the global environment.

CONFERENCE PROGRAM

DAY 1 WORKSHOP 15 OCTOBER 2025 (Wednesday)	
TIME	**PROGRAMME**
08.30-09.00	Registrations of the Participants
09.00-09.10	Traditional Dance Performance
09.10-09.25	Opening by MC
09.25-09.35	Indonesia Raya and Mars of Lambung Mangkurat University
09.35-09.40	Pray
09.40-09.45	Activity Report by Prof. Muthia Elma (Organising Chairman - 2nd KUUB Postgraduate by Research Colloquium 2025)
09.45-10.00	Opening Speech by Professor Ahmad (Rector of Lambung Mangkurat University)
10.00-10.15	Presentation of a Commemorative Plaque and Photo Session
10.15-10.25	Introducing the moderator by the MC
10.25-10.55	Keynote Speech 1 Prof. Chris Lenhart (University of Minnesota)
10.55-11.25	Keynote Speech 2 Prof. Tim Roberts (University of Newcastle)
11.25-11.45	Discussion
11.45-11.50	Closing First Session
11.50-14.00	Lunch and Prayer Break

CONFERENCE PROGRAM

DAY 1 WORKSHOP 15 OCTOBER 2025 (Wednesday)	
TIME	**PROGRAMME**
14.00-14.10	Opening 2nd Session Presentation
14.10-14.40	Keynote Speech 3 Assoc. Prof. Guazhao Ji (Dalian University)
14.40-15.10	Keynote Speech 4 Dr. Didik Triwibowo, S.T., M.Env. Man (PT. Adaro Indonesia)
15.10-15.35	Discussion
15.35-15.45	Closing by MC

CONFERENCE PROGRAM

DAY 1 CONFERENCE 16 OCTOBER 2025 (Thursday)	
TIME	**PROGRAMME**
08.30-09.00	Registrations of the Participants
09.00-09.15	Traditional Dance Performance
09.15-09.30	Opening by MC
09.30-09.40	Indonesia Raya and Traditional Song
09.40-09.45	Pray
09.45-09.50	Activity Report by Prof. Muthia Elma (Organising Chairman - 2nd KUUB Postgraduate by Research Colloquium 2025)
09.50-10.05	Speech by Guest of Honor by Dr. Hanif Faisal Nurafiq (Minister of The Environmental of Republic Indonesia)
10.05-10.20	Opening Speech by Professor Ahmad (Rector of Lambung Mangkurat University)
10.20-10.30	Opening Speech by Professor Shahrul Razid Sarbin (President of KUUB)
10.30-10.40	Presentation of a commemorative plaque and Photo Session
10.40-10.45	Introducing the moderator by the MC
10.45-11.00	Keynote Speech 1 Prof. Dr. Ir. Udin Hasanudin M.T (Lampung University)
11.00-11.15	Keynote Speech 2 Datin Paduka Prof. Dr Dayang Hajah Zohrah binti Haji Sulaiman (University Teknologi Brunei)
11.15-11.30	Keynote Speech 3 Assoc. Prof. Hiroki Nagasawa (Hiroshima University)

CONFERENCE PROGRAM

DAY 1 CONFERENCE 16 OCTOBER 2025 (Thursday)	
TIME	**PROGRAMME**
11.30-11.45	Discussion Section
11.45-12.00	Closing First Session
12.00-13.30	Lunch and Prayer Break
13.30-13.35	Opening Second Section by MC and introducing a Moderator (Alia Rahmi, S.TP., M.Eng.Sc. PhD)
13.35-13.50	Keynote Speech 4 Prof. Agus Saptoro (Curtin University, Perth)
13.50-14.05	Keynote Speech 5 Pak Kiswanto, S.Hut., M.P., Ph.D.
14.05-14.20	Keynote Speech 6 Assoc. Prof. Dr. Ir. Krismadinata, S.T., M.T (Padang State University)
14.20-14.35	Discussion Section
14.35-14.40	Closing MC to Paralel Section
14.40-17.00	Paralel Section

KEYNOTE SPEAKERS



Prof. Chris Lenhart

University of Minnesota - United States



Prof. Tim Roberts

University of Newcastle - Australia



Assoc. Prof. Guazhao Ji

Dalian University - China



Dr. Didik Triwibowo, S.T., M.Env.Man

PT Adaro Indonesia



Prof. Dr. Ir. Udin Hasanudin, M.T

Lampung University - Indonesia



Datin Paduka Prof. Dr Dayang Hajah Zohrah binti Haji Sulaiman

Universiti Teknologi Brunei - Brunei



Prof. Hiroki Nagasawa

Hiroshima University - Japan



Prof. Agus Saptoro

Curtin University - Australia



Prof. Kiswanto, S.Hut., M.P., Ph.D

Mulawarman University - Indonesia



Assoc. Prof. Dr. Ir. Krismadinata, S.T., M.T

State University of Padang - Indonesia

INVITED SPEAKERS



Prof. Akhmad Rizalli Saidy, S.P., M.Agr.Sc., Ph.D
Lambung Mangkurat University



Rendy Muhamad Iqbal, S.Si., M.Si
Palangka Raya University



Prof.Dr. Ir. Sri Aprilia, M.T
Syiah Kuala University



Prof. Dr.-Ing. Ir. Yulian Firmana Arifin, S.T., M.T
Lambung Mangkurat University



Prof. Dr. Ir. Luthfi, M.S.
Lambung Mangkurat University



Prof. Dr. Ir. Yudi Firmanul Arifin, M.Sc., IPU
Lambung Mangkurat University



Prof. Dr. Emi Roslinda, S.Hut., M.Si.
Tanjungpura University



Prof. Dr. Mahidin, S.T., M.T
Syiah Kuala University



Riani Ayu Lestari, S.T., M.Eng
Lambung Mangkurat University



Prof. Sholeh Ma'mun, S.T., M.T., Ph.D
Universitas Islam Indonesia

PAPER TRACKS AND SCHEDULE

Cluster 1 : **ENVIRONMENTANL SCIENCE**
Session Chair: **Prof. Dr. Emi Roslinda, S. Hut., M. Si.**

TIME	PAPER ID	PAPER TITLE & AUTHORS
14.50-15.00	151	An Assessment On Forest Management Options To Prevent Forest Fire In Indonesia **Prof. Dr. Ir. Luthfi, M.S.**
15.00-15.10	152	Analysis of Ecological Factors Influencing the Formation of Mangrove Zoning and Carbon Sequestration in Indonesia **Prof. Dr. Ir. Yudi Firmanul Arifin, M.Sc., IPU**
15.10-15.20	153	Local Ecological Knowledge and Community-Based Conservation of Mangrove Forests in Kalimantan **Prof. Dr. Emi Roslinda, S.Hut., M.Si.**
15.20-15.30		DISCUSSION
15.30-15.35	113	Spatial Impact of IKN Development Process on Landuse Dynamics and Its Environmental Parameters (2019 2024) **Wisnu Putra Danarto**
15.35-15.40	126	Mangrove Vegetation for Proboscis Monkey Natural Feeding in the Bekantan Research Station Area, Curiak Island **Amalia Rezeki**
15.40-15.45	143	Silvofishery and Mangrove Ecosystem Management: Enhancing Biodiversity, Carbon Sequestration, and Community Benefits in Wetland Areas **Maya Amalia**
15.45-15.50		DISCUSSION
15.50-16.00	145	WETLAND INNOVATION AND AREA DESIGN PROGRAM: ULM Mangrove Area Study Center **Afwin Haq Ma'ayisa**
16.00-16.05	146	WETLAND INNOVATION AND AREA DESIGN PROGRAM: Mangrove Forest Ecotourism Based Economic Zone **Amalia Hayati Abdilla**

PAPER TRACKS AND SCHEDULE

Cluster 1 : **ENVIRONMENTANL SCIENCE**
Session Chair: **Prof. Dr. Emi Roslinda, S. Hut., M. Si.**

TIME	PAPER ID	PAPER TITLE & AUTHORS
16.05-16.10	103	Flood Disaster Risk Assessment In Wetland Areas **Rusmaniah**
16.10-16.15	141	Bridging Upstream–Downstream Ecology: Climate Change Education and Mangrove Conservation in Banua Anam through Systematic Literature Review **Rizal Fahmi**
16.15-16.20		DISCUSSION

PAPER TRACKS AND SCHEDULE

Cluster 2 : **SUSTAINABILITY, SOCIETY, AND TECHNOLOGY**
Session Chair: **Prof. Akhmad Rizalli Saidy**

TIME	PAPER ID	PAPER TITLE & AUTHORS
15.00-15.10	148	Exploring Carbon Sequestration via Regenerative Agriculture in Tropical Regions: Opportunities and Challenges **Prof. Akhmad Rizalli Saidy**
15.10-15.15	119	Air Pollution, Vascular Injury, and Cognitive Decline: Biomarker Evidence for Climate and Air Quality Policy **Zulfikar Ali As**
15.15-15.20	107	Application Innovation For Ship Paint Requirement Calculation: An Effective Step For Maritime Construction Efficiency **Zulfaidah Ariany**
15.20-15.30		DISCUSSION
15.30-15.35	128	The Influence of Safety Climate on Safety Behavior in Power-Plant Construction Projects in Indonesia **Denny Setiawan**
15.35-15.40	117	A new insight of molecular mechanism of heavy metals neurotoxicity: In silico analysis of heavy metals on tyrosine hydroxylase **Iskandar**
15.40-15.45	106	Climate-Responsive Vector Control: Evidence Synthesis for Timing, Targeting, and Cost-Effectiveness against Ae. aegypti/albopictus **Muhammad Pahruddin**
15.45-15.50		DISCUSSION
15.50-15.55	142	From Education to Action: A Local Digital Media Marketing Framework for Mangrove Ecotourism in South **Rahmat Hidayatullah**
15.55-16.00	115	A Geospatial Approach-Based Model for Assessing the Settlement Carrying Capacity in the National Capital City **Rosalina Kumalawati**
16.00-16.05		DISCUSSION

PAPER TRACKS AND SCHEDULE

Cluster 3 : **CHEMICAL ENGINEERING**
Session Chair: **Rendy Muhamad Iqbal, S.Si., M.Si**

TIME	PAPER ID	PAPER TITLE & AUTHORS
14.50-15.00	150	Polyethersulfone Hybrid Membranes for Enhanced Permeability and Antifouling Performance through Integration of Nanosilica and Nanocellulose from Biomass **Prof. Dr. Sri Aprilia, M.T.**
15.00-15.10	157	Galactomannan Extraction from Palm Kernel Oil Processing By-products **Awali Sir Kautsar Harivram, S.T., M.T.**
15.10-15.20		DISCUSSION
15.20-15.30	149	Nonfluorinated Omniphobic Membrane for Seawater Desalination via Direct Contact Membrane Distillation **Rendy Muhamad Iqbal, S.Si., M.Si**
15.30-15.40	155	Pervaporation-Based Removal of Color and Organics from POME Using Polyamide Membranes Modified Lignin on Tubular Alumina Supports **Riani Ayu Lestari, S.T., M.Eng.**
15.40-15.50	189	Investigation on Effects of Oil Type and Formulation on The Characteristics of Oil Modified PFAD-Based Alkyd Resin **Desi Nurandini**
15.50-16.05		DISCUSSION
16.05-16.10	118	Harnessing Light and Catalysts for Sustainable Fuel from Fatty Acid Waste **Aprinanda Nafla Aulia Hanifah**
16.10-16.15	132	Characteristics of Nanofibers Based on Kelakai Extract (Stenochlaena palustris) and Butterfly Pea Flower (Clitoria ternatea) as Smart Coatings **Amelia Kartika**
16.15-16.20		DISCUSSION

PAPER TRACKS AND SCHEDULE

Cluster 3 : **CHEMICAL ENGINEERING**
Session Chair: **Rendy Muhamad Iqbal, S.Si., M.Si**

TIME	PAPER ID	PAPER TITLE & AUTHORS
16.20-16.25	134	Effect of Stearic Acid Modified Peat Clay as an Additive on the Characteristics of PVDF Membranes **Siti Rahmah**
16.25-16.30	136	Comparative Application of Organic Silica Membrane for Wetland Saline Water and Barito River Water in Membrane Distillation **Siti Zakirah**
16.30-16.35	159	Computational Discovery and Evaluation of Anti Salmonella Candidates via Scaffold Hopping of 6 Methylmercaptopurine from Cinnamomum sintoc Oil **Erwin Prasetya Toepak**
16.35-16.40		DISCUSSION
16.40-16.45		Molecular Docking Study of Plastic-Derived Endocrine Disrupting Chemicals on the Potential for Insulin Resistance in Children **Nirsari Anugrahing Putri**
16.45-16.50	144	Effectiveness of Regeneration and Reactivation of Oil Palm Fiber-Based Bioadsorbent in Improving the Chemical Quality of Used Cooking Oil **Adzani Ghani Ilmannafian**
16.50-16.55		DISCUSSION

PAPER TRACKS AND SCHEDULE

Cluster 4 : **ONLINE**
Session Chair: **Aulia Rahma, S.T., M.T. & Sovia Husni Rahmia, S. Pd., M.Pd.**

TIME	PAPER ID	PAPER TITLE & AUTHORS
14.50-15.00	154	New Innovation in the Pretreatment of Palm Oil Mill Solid Waste and Wastewater **Prof. Dr. Mahidin, S.T., M.T**
15.00-15.10	156	Community participation in Sustainable Solid waste management **Dr. Ir. Yeny Dhokhikah, S.T., M.T.**
15.10-15.15	158	A Floristic Study of the Curiak Island Mangrove Ecosystem: Preliminary Inventory **Agustina Ambar Pertiwi**
15.15-15.20		DISCUSSION
15.20-15.25	135	Design of an Automated Water Treatment System (WTP) for YAP Tank Based on Programmable Logic Controllers (PLCs) **Lisa Yihaa Roodhiyah**
15.25-15.30	129	Comparative Long-Term Performance of Ultrafiltration and Pervaporation Membranes for Raw Peat Water Treatment **Najma Nur Alifa**
15.30-15.35	120	Natural Lighting Optimization Through Spatial Relayouting in Block C of Kampung Susun Akuarium to Enhance Energy Efficiency : A Simulation Study Using Dialux Evo **Previari Umi Pramesti**
15.35-15.40		DISCUSSION
15.40-15.45	121	Bifunctional Shelter Design : A Design For During And Post-Disaster/Outbreak **Previari Umi Pramesti**
15.45-15.50	124	Structural Feasibility and Cost Comparison of Petung Bamboo versus Steel Reinforcement in Concrete Columns **FASIKHULLISAN**
15.50-15.55	137	The Inclusivity of A Prefabricated Modular System As An Alternative Development For Adaptive Design: A Solution For School Building in Coastal Area **Muhammad Ismail Hasan**
15.55-16.00		DISCUSSION

PAPER TRACKS AND SCHEDULE

Cluster 4 : **ONLINE**
Session Chair: **Aulia Rahma, S.T., M.T. & Sovia Husni Rahmia, S. Pd., M.Pd.**

TIME	PAPER ID	PAPER TITLE & AUTHORS
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16.05-16.10	122	The Influence of Financial Literacy and the Use of Social Commerce on Business Sustainability (A Study of MSMEs in Banjarmasin City) **Erna Rusnani, S.E., M.M.**
16.10-16.15	140	Green and Community Based Human Resource Management in the Development of Swamp Buffalo Ecotourism in Tanah Laut Regency **Mutia Nurani**
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16.25-16.30	138	An IoT-Enabled Low-Cost Weather Station for Temperature and Climate Monitoring **Ahmad Ridlo Hanifudin Tahier**
16.30-16.35	110	Tailoring Crystallinity and Composition of Hydroxyapatite through Controlled Aging Temperature and Time **Agung Prabowo, M.T.**
16.35-16.40	109	Effect Of Egg Shell Powder And Ash Bamboo Stem Powder On Clay Soil Stabilisation **Fardzanela Suwarto**
16.40-16.45	190	Youth Empowerment through Participatory Problem-Solving and Supervisory Guidance in Environmental Action in Bumi Murakata **Norhasanah, S.Pd., M.Pd**
16.45-16.50		DISCUSSION

ABSTRACT

CONFERENCE

KEYNOTE SPEAKER 1
SUSTAINABLE BIOMASS RESIDUE UTILIZATION IN PALM OIL INDUSTRIES

Udin Hasanudin

Biomass Research Groups, Faculty of Agriculture, University of Lampung Jl. Sumantri Brojonegoro No.1, Bandar Lampung-35145 INDONESIA

Abstract

Indonesian palm oil industry is one of the frontier industries in promoting sustainable industry through biomass waste utilization. Palm oil mill (POM) produced huge amount of biomass residue. The biomass residue was utilized for fulfilling energy need in the mill and some others was used to displace fossil fuel, chemical fertilizers and to maintain soil health in the plantation. The liquid biomass residue, palm oil mill effluent (POME) was promoted to generate renewable energy and reduce greenhouse gas (GHG) emission through methane capture system. The effluent of methane capture system was used as a liquid organic biofertilizer in the oil palm plantation. The land application of liquid organic biofertilizer and was reported has potential to increased fresh fruit bunches (FFB) production more than 10% through maintaining the soil health. Simultaneously, the land application system was avoided water pollution. Co-digestion of POME and EFB under anaerobic condition has potential to increased biogas production, GHG emission reduction, and simultaneously produced ash less EFB pellet as another potential renewable energy. Production of Bio-methane through methane upgrading has potential to use as a fuel for gas engine in remote plantation housing and for vehicle fuel in the plantation. In some places, methane capture system was not adopted due to difficulties on energy utilization. In this case some palm oil industries have been utilized POME together with EFB for producing compost. The composting of EFB with POME in aerobic environment has successfully to reduce GHG emission by 30-70% depend on how much they produced and used the POME in the composting process and at the same time has recycling nutrients to the soil. During replanting period, old palm tree (OPT) also has potential to produce oil palm syrup, renewable energy and others valuable materials.

Keywords: biomass, methane capture, ash less EFB pellet compost, GHG emission, soil health.

ABSTRACT

CONFERENCE

KEYNOTE SPEAKER 2
The History of Sundaland and Borneo: Biodiversity of Fauna

Zohrah Sulaiman

Unversiti Teknologi Brunei, Jalan Tungku, Gadong BE 1410, Brunei Darussalam E.mail:zohrah.sulaiman@utb.edu.bn

Abstract

The Southeast Asian region, including the Sundaland, is one of the most biologically diverse in the world. The region is well known for its geological past (for example, plate tectonic movement), climate change during glacial periods, and the associated rapid speciation process. The geographical distribution of terrestrial fauna in Sundaland and adjacent land masses remains complex, with various and non-universal patterns. The extensive in situ speciation, adaptive radiation, endemism, cryptic genetic differentiation, Pleistocene-facilitated dispersal, and single dispersal events across biogeographic lines, among others, have been documented in animals. In contrast, marine biotas of Sundaland and adjacent waters are not widely studied. Distributional discontinuities in marine organisms appear to be widespread, and strong genetic heterogeneity among the narrow-barred Spanish mackerel (Scomberomorus commerson) has been found at a regional scale. There was also the east-west separation of the narrow-barred Spanish mackerel along the Wallace's Line. Geographic isolation at times of low sea level during the Pleistocene may have restricted gene flow between populations, causing genetic differentiation of narrow-barred Spanish mackerel in Sundaland and adjacent waters. Most studies on the narrow-barred Spanish mackerel in the region showed the presence of a common haplogroup or haplotypes. It was also proposed that the movement of narrow-barred Spanish mackerel was from the west to the east, and migration was hypothesized to be philopatric. The genetic data generated from the narrow-barred Spanish mackerel studies in the region further proves the rich history of the region.

Keywords: biomass, methane capture, ash less EFB pellet compost, GHG emission, soil health.

ABSTRACT

CONFERENCE

KEYNOTE SPEAKER 3

Microporous silica membranes for advanced molecular separations: Hydrogen separation, CO_2 capture, and water purification

Hiroki Nagasawa

Chemical Engineering Program, Graduate School of Advanced Science and Engineering, Hiroshima University

Abstract

Silica membranes are a class of microporous inorganic membranes. Owing to their excellent thermal and chemical stability, and high mechanical strength, silica membranes have been utilized in many molecular separation applications under harsh operating conditions, where conventional polymeric membranes cannot withstand. Since the molecular sieving mechanism governs the separation through microporous silica membranes, precise control of the microporous structure is essential to achieving efficient separation. In this talk, I will present our recent research on the design and development of microporous silica membranes, along with an innovative membrane fabrication technology based on non-equilibrium plasma. The applications of these membranes to challenging molecular separations, including hydrogen separation, CO2 capture, and ultrahigh pressure reverse osmosis for water recovery, will be discussed. Furthermore, I will explore the permeation mechanism of silica membranes with different microporous structures. This includes theoretical modeling to understand the elementary mechanisms of permeation through microporous membranes.

ABSTRACT

CONFERENCE

KEYNOTE SPEAKER 4
Absorption-based CO_2 Capture and Hydrate Based CO_2 Storage: Current Status and Future Perspectives

Agus Saptoro

WA School of Mines: Minerals, Energy and Chemical Engineering, Curtin University Kalgoorlie, WA 6430, Australia

Abstract

Industrial decarbonisation is imperative to meet net zero emission target and smmoth transitioning from a high to low carbon economy. In addition to enhancing energy efficiency and increasing green energy share in the energy mix, decarbonisation can be further accelerated through carbon capture, utilisation and storage (CCUS). This research examines state-of-the art technologies of absorption-based carbon capture and hydrate-based storage. Their current advances and practical issues are critically discussed, and subsequently recommendations for future directions are outlined. It can be concluded and highlighted that more energy efficient and cost-effective carbon capture, utilisation and storage are vital to facilitate decarbonisation agenda and ensure sustainability of the industries.

ABSTRACT

CONFERENCE

KEYNOTE SPEAKER 5
Adaptive Silviculture for Restoring Mangrove Ecosystems to Reach Biodiversity and Blue Carbon Benefits

Kiswanto

WA School of Mines: Minerals, Energy and Chemical Engineering, Curtin University Kalgoorlie, WA 6430, Australia

Abstract

Mangrove ecosystems provide essential ecological functions, including biodiversity conservation, shoreline protection, carbon sequestration, and support for coastal livelihoods. However, mangroves in Indonesia, particularly in Kalimantan and East Kalimantan, are increasingly threatened by human activities such as aquaculture expansion, coastal urban development, mining, illegal logging, oil palm expansion, pollution, pest outbreaks, and natural sedimentation. These pressures reduce ecological connectivity and weaken the ability of mangrove ecosystems to provide biodiversity and blue carbon benefits. This presentation introduces adaptive silviculture as a restoration strategy that combines geospatial modeling and field-based ecological assessment to support more effective mangrove ecosystem restoration. The study focuses on several mangrove areas in East Kalimantan, including Delta Mahakam, Bontang, Tengin Baru, East Kutai, and Berau. Geospatial modeling using National Mangrove Map data, Sentinel-2A imagery, SAS Planet, NDVI analysis, UAV multispectral data, tidal observation, ground truthing, and land surface topography was applied to identify existing mangrove ecosystems, classify forest density, and determine priority restoration areas. Field surveys were then conducted to assess biodiversity, forest structure, and blue carbon stocks across different mangrove density categories. Carbon stock measurement followed recognized field measurement protocols, including SNI 7724:2019 and the mangrove carbon assessment protocol by Kauffman and Donato. The results show that naturally regenerated mangrove forests tend to support higher species diversity than artificially rehabilitated areas. Primary and secondary mangrove forests recorded higher stand density and diversity indices, indicating healthier ecosystem conditions. In contrast, some rehabilitation areas showed high species density due to single-species planting, which may reduce ecological diversity and disrupt natural succession. The presentation also emphasizes the importance of mangrove zonation, where different species are suited to specific ecological zones, such as seaward, middle, and landward zones. Ignoring these zones in restoration programs may result in poor growth and reduced restoration success. Blue carbon assessment indicates that vegetation carbon stocks increase with forest density, especially at sapling, pole, and tree stages. Soil organic carbon is also influenced by forest density and soil depth, with restored former fishpond areas showing strong potential to increase soil carbon storage. Based on these findings, the presentation proposes different restoration strategies for different site conditions. Undisturbed mangrove ecosystems should be protected through natural regeneration, while disturbed ecosystems can be restored through assisted natural regeneration and selective enrichment planting. Abandoned aquaculture ponds require intensive restoration involving hydrological rehabilitation, substrate modification, and high-density planting. Active aquaculture ponds can adopt integrated planting models such as komplangan, empang parit, embankment, and line planting systems. Overall, mangrove restoration is not merely the act of planting trees, but a comprehensive process of restoring wetland ecosystem functions. Successful restoration requires appropriate site selection, species compatibility, hydrological understanding, ecological assessment, expert planning, and consideration of socioeconomic and climate change factors.

Keywords: Keywords: Adaptive Silviculture; Mangrove Restoration; Biodiversity; Blue Carbon; Geospatial Modeling.

ABSTRACT

CONFERENCE

KEYNOTE SPEAKER 6
Power Electronics for Renewable Energy Application

Krismadinata

Department of Electrical Engineering, Faculty of Engineering, Padang State University

Abstract

This presentation provides a comprehensive overview of the critical role of power electronics as the backbone of modern renewable energy systems. It begins by highlighting the global energy transition from fossil fuels to clean and sustainable sources, emphasizing how power electronics enable efficient energy conversion, control, and integration into the power grid. Various power electronic topologies—such as rectifiers, choppers, inverters, voltage regulators, and cycloconverters—are presented along with their applications in solar photovoltaic (PV), wind energy, fuel cells, micro-hydro, and microturbine systems, focusing on conversion efficiency, grid synchronization, and MPPT algorithms for optimal energy harvesting. The presentation also showcases technological innovations, including wide-bandgap devices (SiC/GaN), multilevel inverters, photovoltaic simulators, and real-time monitoring systems, supported by rich visuals and research implementation photos. Furthermore, it discusses the testing of Electronic Load Controllers (ELC) on self-excited induction generators in pico-hydro power plants, demonstrating significant improvements in voltage regulation. The final section explores challenges and future directions, including cost reduction, enhanced reliability, large-scale battery integration, smart grid control, and AI-based optimization. Overall, the material underscores that advancements in power electronics are essential to achieving efficient, resilient, and sustainable next-generation energy systems.

ABSTRACT

WORKSHOP

KEYNOTE SPEAKER 1

Inland Blue Forest and Circular Solutions: A Case Study of the Paringin Post-Mining Landscape.

Didik Triwibowo

Faculty of Forestry and Tropical Environment, Mulawarman University

Abstract

Post-mining landscapes are often perceived as degraded areas with limited ecological and socio-economic value. However, with appropriate reclamation, ecological restoration, and community-based management, these landscapes can be transformed into productive environmental assets. This presentation introduces the concept of an "Inland Blue Forest" as an extension of the conventional blue forest concept, which is commonly associated with coastal and marine ecosystems such as mangroves, seagrasses, and tidal marshes. In the context of post-mining areas, inland aquatic ecosystems such as pit lakes, wetlands, and riparian zones can emulate several ecological functions of coastal blue forests, including carbon storage, hydrological buffering, biodiversity support, and ecosystem service provision. Using the Paringin post-mining landscape of PT Adaro Indonesia as a case study, this presentation explains how a former open-pit mining area can be repurposed into an integrated ecological system. The Paringin Pit Lake, which entered the mine closure stage in 2022, demonstrates important characteristics for supporting inland blue forest development. The area has hydrological connectivity with downstream ecosystems, relatively stable land cover in its catchment area, good water quality, and a catchment-to-lake ratio of 6.4:1, which supports sustainable water inflow. Morphometric and ecological data from 2021–2023 indicate that the lake has a maximum depth of approximately 14 meters, stable water volume, moderate sedimentation rates, and oligotrophic to mesotrophic conditions that support aquatic biodiversity. The presentation further highlights the role of riparian vegetation, particularly Ficus species, as keystone species in stabilizing lake margins, absorbing carbon dioxide, and providing food sources for birds, bats, and primates. The Paringin landscape contains approximately 410 Ficus trees across the pit lake and surrounding areas, with an estimated current carbon storage of around 178.4 tons of CO_2 and a projected 10-year potential of 220–260 tons of CO_2. In addition, fish diversity and heavy metal analysis indicate that the pit lake supports a functioning aquatic ecosystem and has potential for safe community-based utilization. The circular solutions framework presented emphasizes three key principles: eliminating waste and pollution, circulating products and materials, and regenerating nature. By linking upstream catchment areas, pit lakes, riparian vegetation, downstream ecosystem services, and community livelihoods, the Paringin post-mining landscape illustrates how mine closure can become an opportunity for conservation, education, and economic development. Overall, the presentation concludes that inland blue forest development requires strong collaboration among mining companies, academics, communities, and other stakeholders to ensure long-term ecological restoration and sustainable post-mining transformation.

Keywords: Keywords: Seaweed; Pyrolysis; Kinetics; Iso-conversional method; High heating rate thermo-balance; Wire-mesh reactor.

ABSTRACT

WORKSHOP

KEYNOTE SPEAKER 2
Habitat loss affects animal survival: Lessons from Australia for Kalimantan

Emeritus Professor Tim Roberts AM

School of Environmental & Life Sciences, University of Newcastle, Australia

Abstract

Habitat loss is the single greatest threat to biodiversity worldwide. In both Australia and Kalimantan extensive ecosystem transformations have occurred due to colonization, agricultural expansion, and economic modernization. Australia's experience since European settlement in 1778 provides an unusually long record of how large-scale land-use change affects endemic fauna, while Kalimantan's experience—accelerated in the last 50 years through transmigration policies and palm oil expansion—offers a contemporary parallel. By comparing these regions, valuable lessons can be drawn for the future of biodiversity conservation in Kalimantan. This seminar traces the trajectory of endemic animal populations, focusing on species loss, fragmentation, and resilience. It compares Australia's two-century history of clearing, grazing, and invasive introductions with Kalimantan's more recent but rapid forest-to-plantation conversion. Finally, it highlights lessons learned and policy implications for balancing human development with ecological integrity.

ABSTRACT

WORKSHOP

KEYNOTE SPEAKER 3
Decomposition kinetics and product distribution of a very fast pyrolysis of algal biomass

Guozhao Ji*

Key Laboratory of Industrial Ecology and Environmental Engineering, School of Environmental Science & Technology, Dalian University of Technology, Dalian 116024, China

Abstract

Converting algal biomass to clean energy via a thermochemical pathway is an emerging technique for tackling environment and energy issues. Traditional kinetic studies on biomass pyrolysis employ a thermogravimetric analyzer (TGA) which heats the biomass sample at a rate of 0 ~ 2 K s−1, so TGA could only replicate the thermal behavior of the biomass sample in a fixed bed reactor. However, biomass samples can be heated at a rate over ~102 K s−1 in industrial reactors, including fluidized beds, spouted beds, or rotary kilns due to the direct contact between biomass samples and the solid heat carriers, thus TGA is incapable to reproduce these thermal behaviors. In view of the limitation of TGA in fast heating cases, this study has developed a fast-heating thermo-balance consisting of wire-mesh and wireless power supply technique to investigate the kinetics of fast pyrolysis. Seaweed is fast-growing and can be considered a promising feedstock for biofuel production. Therefore, this study selected seaweed as representative biomass waste and compared the pyrolysis behaviors under both slow and fast pyrolysis conditions. A key finding was the TGA-derived kinetic parameters were unable to describe the pyrolysis rate under fast pyrolysis conditions with significant overestimation. When compared to slow pyrolysis, fast pyrolysis can increase bio-oil yield by about 3–17%, but the N- and S-containing compounds in the bio-oil increase by about 1.1% and 0.15% respectively at a final temperature of 700°C. Fast pyrolysis produced about 16–53% more CO2 than slow pyrolysis above a final temperature of 500 °C. The polarity of compounds in biochar was reduced with increasing temperature and the presence of CaO was only found in biochar at a high temperature of 700 °C. The specific surface area of biochar was higher under fast heating pyrolysis (5.534–7.469 m2 g−1) than that under slow heating pyrolysis (4.076–6.414 m2 g−1).

Keywords: Seaweed; Pyrolysis; Kinetics; Iso-conversional method; High heating rate thermo-balance; Wire-mesh reactor.

ABSTRACT

WORKSHOP

KEYNOTE SPEAKER 4
Lessons learned from restoration of peatlands in the global north

Chriss Lenhart

Department at the University of Minnesota, USA

Abstract

Peatlands are globally important for their ecological and cultural values and role in countering climate change impacts. Many of the peatlands in the US and northern boreal region of North American and Europe were lost to drainage for agriculture, forestry, or peat moss harvest. In northern Europe, restoration has been ongoing for decades while in Minnesota, within the north central USA, restoration of peatlands is relatively new, in the past 10-20 years. Wetland restoration, defined more widely, goes back to the mid-20th Century in the USA. What has worked well in peatland restoration? Water levels are readily re-established in drained peatlands by water control structures, as was the case with the Sax-Zim bog in northern Minnesota, USA. However, water flow-paths and biogeochemical processes altered by re-routing of flows, peat subsidence, and changes to peat properties aren't as easily restored. It is especially difficult to reestablish suitable conditions in groundwater-fed fens compared to raised bogs. The Cold Spring fen restoration in central Minnesota illustrates some of these successes and challenges. As a climate change mitigation practice, carbon dioxide emissions are reduced by peatland rewetting, but methane often increases in newly restored peatlands. Plant community restoration is typically considered a secondary goal to hydrologic and carbon balance goals. However, the moss layer transfer technique developed in Canada to reestablish Sphagnum moss where peat moss was harvested has been successful. On the other hand, plant community re-establishment in formerly ditched peatlands in North America and northern Europe often results in grass or sedge-dominated communities that are unlike the pre-impact plant community. Culturally, local, and indigenous groups are extremely important for the protection of extant peatlands in the US, Canada, and northern Europe. Many of these areas were less degraded by ditching or extraction. More traditional lifestyles help maintain the ecological functionality of the peatland areas. While the climate and peat properties are different in Indonesia than peatlands in the global north, many of the hydrologic principles, greenhouse gas exchanges and restoration techniques are similar. It is important to apply lessons learned from other regions as the need for peatland protection and restoration grows stronger with increasing climate and land-use changes.

ABSTRACT

Paper ID: 103 | Oral Presenter

CFLOOD DISASTER RISK ASSESSMENT IN WETLAND AREAS

Authors: Rusmaniah, Deasy Arisanty, Ersis Warmansyah Abbas, Parida Angriani[1]

Abstract

Flood disasters often occur, causing significant material losses and having significant social and environmental impacts. It is necessary to conduct a study on flood disaster risk and mitigation strategies involving the community, which is very important to reduce the impact of flood disasters in flood-prone areas. Flood risk in an area is determined by a combination of hazard and vulnerability. The purpose of this study is to analyze flood disaster risk in the Sungai Tabuk District. The research method used is qualitative, employing data collection techniques such as observation, interviews, and documentation. The results of the study show that flood disasters are a significant threat influenced by various factors, including the tendency of communities to settle near rivers, slope gradients, land use, and unpredictable rainfall patterns. Community vulnerability is caused by high population density and inadequate infrastructure, increasing the risk of loss of life and property damage, especially for vulnerable groups such as children, the elderly, and women. The economic impact of flooding, particularly on the agricultural sector, is also significant, disrupting economic activity and reducing community income. The community's capacity to cope with disasters is still not optimal, due to a lack of knowledge and skills in the use of early detection technology, as well as a lack of coordination in evacuation training. Although there are regulations prohibiting littering, community compliance is still low, exacerbated by a lack of waste management facilities. On the positive side, the community has demonstrated good adaptability, with initiatives in decision-making and the formation of volunteer groups such as Karang Taruna. Based on these findings, it is recommended to develop an integrated information technology-based flood early warning system involving community participation to enhance preparedness and reduce losses caused by floods.

Keywords: Disaster Risk, Flood Disaster, Wetlands.

ABSTRACT

Paper ID: 104 | Oral Presenter

Synthesis of a Biosorbent from Gayo Coffee Husk Waste for Methylene Blue Dye Adsorption

Authors: Shopiah[1], M. Hasyim[1,2], C M Rosnelly[1], S Muchtar[1,2)]

Affiliation:
[1] Department of Chemical Engineering, Syiah Kuala University, Banda Aceh, 23111, Indonesia
[2] Research Center of Environmental and Natural Resources, Syiah Kuala University, Banda Aceh, 23111, Indonesia

Abstract

This research explores the potential use of Gayo coffee husk waste as an eco friendly biosorbent for removing the synthetic dye Methylene Blue (MB) from wastewater. MB is known for its resistance to natural degradation and its harmful impact on aquatic ecosystems. Coffee husk, rich in lignocellulosic compounds, was selected due to its abundance in Aceh and its underutilized potential.The study involved producing activated carbon from coffee husk through a carbonization process at 350°C, followed by chemical activation using hydrochloric acid (HCl) 0,1 M and physical activation through heating at 700°C using N2 gas. Characterization was conducted using standardized Indonesian methods (SNI), Fourier-transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and X-ray diffraction (XRD) to examine functional groups, pore morphology, and crystalline properties.Adsorption experiments were performed using various parameters: adsorbent mass (0.2, 0.4, and 0.6 grams), pH levels (6, 7, and 8), contact times (10 to 60 minutes), and MB concentrations (5, 10, and 15 ppm). The data were analyzed using Langmuir, Freundlich, and Temkin isotherm models, along with pseudo-first-order and pseudo-second-order kinetic models.Results showed that the activated carbon produced met national standards and achieved the highest adsorption capacity of 0.417 mg/g under optimal conditions: pH 7, 0.6 grams of adsorbent, and 5 ppm MB concentration. The Langmuir isotherm model best described the adsorption behavior (R^2 = 0.989), particularly under chemical activation, while the adsorption kinetics followed the pseudo-second-order model (R^2 = 0.998).This research offers a sustainable solution for water pollution caused by MB and demonstrates how agricultural waste can be transformed into a high-value, eco-friendly material.

Keywords: Gayo coffee husk, Activated Carbon, Methylene Blue, Adsorption, Watewater Treatment.

ABSTRACT

Paper ID: 106 | Oral Presenter

Climate-Responsive Vector Control: Evidence Synthesis for Timing, Targeting, and Cost-Effectiveness against Ae. aegypti/albopictus

Authors: Muhammad Pahruddin[1, a)], Syamsul Arifin[2, b)], Muhammad Ahsar[3, c)], Musafaah[4, d)]

Affiliation:
[1]Doctoral Student in Environmental Science, University of Lambung Mangkurat, Banjarmasin, Indonesia
[2]Department of Public Health Science, Faculty of Medicine, University of Lambung Mangkurat, Banjarmasin, Indonesia
[3]Department of Mathematics, Faculty of Mathematics and Natural Sciences, University of Lambung Mangkurat, Banjarmasin, Indonesia
[4]Department of Public Health Science, Faculty of Medicine, University of Lambung Mangkurat, Banjarmasin, Indonesia

Abstract

Dengue transmission is strongly influenced by climatic variability and microenvironmental heterogeneity that shape Aedes mosquito ecology. This systematic review synthesizes global evidence on climate-responsive vector control, focusing on when to act, where to target, and how to optimize cost-effectiveness. A structured search of 299 records yielded 71 eligible studies across tropical and subtropical regions, encompassing empirical, quasi-experimental, and modeling designs. The review assessed intervention timing relative to temperature, rainfall, and humidity anomalies; identified high-yield container classes and microclimatic drivers; and evaluated entomological, epidemiological, and economic outcomes. Findings demonstrate that pre-seasonal and anomaly-triggered interventions deliver consistently superior reductions in larval and adult indices compared to static schedules. High-productivity habitats including tires, drums, and shaded domestic containers account for most vector emergence, highlighting opportunities for precision targeting. Integrated vector management combining larval control, waste coordination, and community engagement achieved the most favorable cost-effectiveness ratios across contexts. However, data gaps persist in linking entomological indices to incidence, incorporating microclimate metrics, and standardizing economic reporting. The synthesis reinforces the theoretical framework that coupling climate intelligence with adaptive operational design enhances both efficiency and resilience of dengue prevention. Strengthening forecast-based systems and harmonizing evaluation protocols are essential next steps for advancing climate-responsive vector control.

Keywords: climate-responsive vector control; Aedes aegypti; intervention timing; cost-effectiveness; dengue prevention

ABSTRACT

Paper ID: 107 | Oral Presenter

Application Innovation for Ship Paint Requirement Calculation: An Effective Step for Maritime Construction Efficiency

Authors: Zulfaidah Ariany[1, a)], M Sawal Baital[2, b)], Dafa' Nabilal Fikri[3, c)], Fitria Herawati[2, d)]

Afiliation:
[1]Department of Industrial Technology, Vocational College, Universitas Diponegoro, Semarang, 50275
[2]Department of Industrial Technology, Ship Construction Engineering Technology, Sekolah Vokasi, Universitas Diponegoro, Semarang, 50275
[3]Student of Ship Construction Engineering Technology, Sekolah Vokasi, Universitas Diponegoro, Semarang, 50275

Abstract

Corrosion is one of the main problems in the maritime industry, especially on the hulls of ships made from steel materials. The corrosion process causes significant damage to ship structures and involves considerable repair costs. Therefore, it is crucial to effectively protect ship steel materials so that the corrosion rate can be controlled and the occurrence of corrosion can be prevented. One standard protection method is painting. The amount of paint needed must also be calculated to ensure cost efficiency. A simple application for calculating paint requirements was developed in this study. It calculates and analyzes the estimated paint needs for new ship construction. The paint requirements for the flat bottom, vertical side, and topside areas in constructing a new vessel are calculated. The ship's corrosion rate is calculated along lanes K, A, B, C, and D based on plate thickness data from ultrasonic tests in 2023 and 2024. The case study is based on a ship with an LPP of 101.96 m. The total amount of paint required is 2,733 liters. Furthermore, the average corrosion rate obtained is 0.00020 mm/year for the portside and 0.00022 mm/year for the starboard. The highest corrosion rate in lane B is in the portside area, with a 0.00027 mm/year value. Meanwhile, the lowest corrosion rates are found in lanes A and E of the portside area, with a 0.00016 mm/year value. The application is currently in a simple format and can be further enhanced with more comprehensive features in line with technological advancements.

Keywords: Corrosion, Corrosion Rate, New Ship, Paint Requirements, Painting.

ABSTRACT

Paper ID: 108| Oral Presenter

Exploring the Energy and Thermal Efficiency of Sustainable Local Materials: The Basis for the Application of Bioclimatic Architecture in Banjarmasin

Authors: Farah Hafizha[1]

Afiliation:
[1]Prodi Teknik Arsitektur, Universitas Nahdlatul Ulama Kalimantan Selatan, Banjarmasin, Indonesia

Abstract

The increasing energy needs of buildings in Banjarmasin are driving energy conservation efforts. On the other hand, climate change also emphasizes the urgency of developing sustainable architecture in Banjarmasin. As a humid tropical climate, Banjarmasin City requires the implementation of bioclimatic architectural strategies to improve energy efficiency and thermal comfort in buildings. One feasible solution, and one that is urgently needed in this research, is the use of local materials with thermal and ecological characteristics that can serve as the basis for implementing bioclimatic architectural designs in Banjarmasin. This study aims to explore and test the thermal efficiency of sustainable local materials as a basis for implementing bioclimatic architectural design in Banjarmasin. Using a mixed-method approach, it combines observations of vernacular architecture, climate analysis, laboratory testing of materials (thermal conductivity, density, heat capacity) and energy efficiency simulations were carried out using EnergyPlus or CFD software, with model validation using the RMSE and MBE statistical methods. The results of this study are expected to produce a basic concept for bioclimatic architectural design based on local materials, which can improve energy efficiency, support green economy strategies, and contribute to the achievement of the SDGs (Goals 7, 11, and 13). Bioclimatic architecture is an innovative design approach that integrates local climate conditions, cultural practices, and sustainable materials to create energy-efficient and environmentally friendly buildings. It promotes energy independence by reducing the energy requirements for the production and transportation of building materials, as well as reducing dependence on artificial cooling systems.

Keywords: Local Wisdom; Bioclimatic Architecture; Sustainable Materials; Energy Efficiency; Thermal Materials.

ABSTRACT

Paper ID: 109 | Oral Presenter

Effect Of Egg Shell Powder And Ash Bamboo Stem Powder On Clay Soil Stabilization

Authors: Asri Nurdiana[1, a)], Erwin Naufal Adrian Tundjungseto[1, b)], Aldito Surya Putra[1, c)], Fardzanela Suwarto[1, d)]

Afiliation:
1Civil Infrastructure Engineering and Architecture, Diponegoro University, Semarang, Indonesia [a)]nurdianaasri@lecturer.undip.ac.id, [b)]erwinnaufaladrian@gmail.com, [c)]alditosurya20@gmail.com, [d)]fardzanela@lecturer.undip.ac.id

Abstract

Clay soil with low bearing capacity can cause structural damage, thus requiring stabilization to enhance its strength. This study aims to improve soil stability and bearing capacity using eggshell powder (ESP) and bamboo ash (BA) as stabilizing agents, due to the high calcium content in ESP and silica content in BA. Laboratory tests conducted include the Standard Proctor, Direct Shear Test (DST), and Unconfined Compression Test (UCT). A quantitative method was employed using soft soil samples from the coastal area of Semarang City. The mixtures consisted of 12% ESP and BA at 5%, 10%, and 15% by soil weight. The results showed that the addition of ESP and BA reduced the void ratio and optimum water content, while increasing dry unit weight, cohesion, and unconfined compressive strength. The best performance was achieved with 12% ESP and 15% BA, which increased the dry unit weight from 1.39 g/cm³ to 1.43 g/cm³, reduced the void ratio from 0.79 to 0.65, raised cohesion from 1.43 kPa to 8.14 kPa, and improved unconfined compressive strength from 11.58 kN/m² to 20.16 kN/m².

ABSTRACT

Paper ID: 111 | Oral Presenter

Optimization of Eco-Enzyme Soap Formula Based on Aloe Vera (Aloe vera L.) with the Addition of Matricaria chamomilla L. Using the Cold Process Method

Authors: Fahmi Arifan[1], Khansa Praningdita Sulistyo[2], Galuh Syahrila[3)]

Afiliation:
Departement of Industrial Chemical Engineering Technology, Diponegoro University, Prof. Soedarto SH Street, Kampus UNDIP Tembalang, Semarang, Indonesia 50275

Abstract

The growing demand for natural and environmentally friendly skincare products has driven innovation in eco-enzyme–based soap formulations. This study aimed to optimize the formulation of eco-enzyme soap with the addition of Aloe vera (Aloe vera L.) and Matricaria chamomilla L. (chamomile) using the cold process method to preserve heat-sensitive bioactive components. Variations of eco-enzyme concentrations (5%, 10%, 15%) and chamomile extract concentrations (1%, 2%, 3%) were tested across 13 samples. Evaluations included pH testing (SNI 3532:2016), water content, free fatty acids, organoleptic assessment, and foam stability, with data analyzed using Response Surface Methodology (RSM). The results showed that the soap pH ranged from 8 to 10, water content from 3.6% to 6.2%, and free fatty acids from 0.41% to 0.78%, all within the safe limit (<1%). The highest foam stability was found in samples V1 and V2 at 88%, while the lowest was in V13 at 76%. Organoleptic testing yielded the highest average score for texture (4.4), followed by color (4.0) and aroma (3.8). RSM analysis showed an R^2 value of 93.78%, with the predicted optimal formulation consisting of 5.606 drops of eco enzyme and 5 drops of chamomile extract, producing a foam stability of 98.79%. This combination offers additional benefits such as natural antibacterial properties, skin moisturization, and support for environmental sustainability.

Keywords: eco-enzyme, Aloe vera, chamomile, cold process, soap formulation, RSM.

ABSTRACT

Paper ID: 112 | Oral Presenter

Effectiveness of Regeneration and Reactivation of Oil Palm Fiber-Based Bioadsorbent in Improving the Chemical Quality of Used Cooking Oil

Authors: Adzani Ghani Ilmannafian[1,a)],M. Indra Darmawan[2,b)], Mariatul Kiptiah[3,c)], Firda Adelia[4,d)], M. Bari Sukarya[5,e)], and Alya Rahma[6,f)]

Afiliation:
[1,2,3,4,5,6] Politeknik Negeri tanah Laut, Jalan Ahmad Yani Km.06, Desa Panggung, Kecamatan Pelaihari, Kabupaten Tanah Laut, Kalimantan Selatan 70815, Indonesia.

Abstract

The repeated use of cooking oil has negative impacts on both health and the environment. During the frying process, hydrolysis and oxidation reactions occur, leading to an increase in free fatty acid (FFA) content, acid value, and peroxide value. The increase in these parameters not only reduces the quality of the oil but also potentially causes rancid odor, accelerates fat deterioration, and generates free radicals that may trigger degenerative diseases. From an environmental perspective, the improper disposal of used cooking oil can contaminate soil and water due to its resistance to natural degradation. One of the possible solutions is the purification of used cooking oil using a bioadsorbent derived from oil palm fiber. This study aims to evaluate the effectiveness of regeneration and reactivation of oil palm fiber-based bioadsorbents in improving the quality of used cooking oil. The process was carried out using variations of bioadsorbent concentrations (7%, 9%, and 11%) and three purification cycles. The bioadsorbents were prepared through grinding, soaking, filtering, and drying processes, followed by characterization according to the Indonesian National Standard (SNI) No. 06-3730:1995 for technical activated carbon. Purification was conducted by mixing the oil with bioadsorbents according to the formulation, followed by regeneration and reactivation to assess the durability of the adsorbent. Oil quality analysis was performed based on SNI No. 7709:2019, including FFA, acid value, and peroxide value. The results indicated that the use of oil palm fiber-based bioadsorbents was effective in improving the quality of used cooking oil by reducing FFA content, acid value, and peroxide value. The FFA level decreased from 0.88% to 0.39% (7%), 0.38% (9%), and 0.32% (11%); the acid value declined from 0.98 mg KOH/g to 0.44 (7%), 0.38 (9%), and 0.38 (11%); while the peroxide value decreased from 11.67 meq/kg to 9.67 (7%), 9.00 (9%), and 6.33 (11%). These improvements demonstrate that repeated purification using regenerated and reactivated bioadsorbents can bring the quality of used cooking oil closer to the SNI 7709:2019 standard. A bioadsorbent concentration of 11% with three purification cycles was proven to be the most effective in reducing all three quality parameters. These findings emphasize that bioadsorbents derived from biomass, such as oil palm fiber, hold great potential as an effective, environmentally friendly, and economical technology for the purification of used cooking oil.

Keywords: Bioadsorbent, fiber, used cooking oil, chemical quality, purification.

ABSTRACT

Paper ID: 113 | Oral Presenter

Spatial Impact of IKN Development Process on LULC Dynamics and Its Environmental Parameters (2019-2024)

Authors: Rosalina Kumalawati[1, a)], Wisnu Putra Danarto[1, b)], Astinana Yuliarti[2, c)], Inu Kencana Hadi[3, d)], Jany Tri Raharjo[4, e)], Rijanta[5, f)], Erlis Saputra[5, g)], Ari Susanti[5, h)], Puput Wahyu Budiman[6, i)], Rahmat Aris Pratomo[7, j)], Ghinia Anastasia Muhtar[1, k)], Yogi Prasakti[8, l)], Rahma Ayu Dwiratih[1, m)], Dea Eka Paskipra Dewi[1, n)]

Afiliation:
[1]*Department of Geography, Lambung Mangkurat University, Faculty of Social and Political Sciences, Jl. H. Hassan Basry, Banjarmasin, Indonesia*
[2]*Department of Communication Science, Lambung Mangkurat University, Faculty of Social and Political Sciences, Jl. H. Hassan Basry, Banjarmasin, Indonesia*
[3]*Department of Regional Planning, Nahdlatul Ulama University, Kalimantan Selatan, Indonesia*
[4]*Peatland and Mangrove Restoration Agency of Republic of Indonesia, Indonesia*
[5]*Gadjah Mada University, Faculty of Geography, Jl. Bulaksumur, Yogyakarta, Indonesia*
[6]*Gadjah Mada University, Faculty of Forestry, Jl. Agro, Bulaksumur, Yogyakarta, Indonesia*
[7]*Regional Research and Innovation Agency, Kalimantan Timur, Indonesia 8Civil Engineering Department, Institut Teknologi Kalimantan, Balikpapan, Indonesia*

Abstract

The development of Ibu Kota Nusantara (IKN) in Kalimantan Timur represents one of the most significant policy-driven urban transformations in recent national history. This study provides a comprehensive spatial-temporal assessment of the spatial impacts during the critical initial development phase (2019-2024), integrating land use classification with remote sensing indices to quantify changes in vegetation health, urbanization intensity, and thermal conditions. Using Sentinel-2A, we analyzed land use changes, the Normalized Difference Vegetation Index (NDVI), and Land Surface Temperature (LST) at the IKN construction site. Our findings reveal accelerated environmental transformations closely linked to policy milestones. Built-up areas expanded by 7.9% (a 2.7-fold increase), primarily converting forest cover (-4.1%) and agricultural land (-8.8%). The most rapid changes occurred within 12-24 months following the enactment of the 2022 IKN Law, demonstrating strong policy-impact correlations. Vegetation health deterioration preceded visible land use changes, with high-NDVI areas declining by 13.9%, serving as an early warning indicator of ecosystem stress. Urban heat island effects intensified significantly, with hot areas (35.1-37°C) expanding by 8.5% while cool areas diminished by 18.2%. Notably, LST lags behind vegetation loss by 6-12 months, indicating persistent thermal impacts beyond initial construction phases. The study demonstrates that policy-driven urbanization follows distinct temporal patterns compared to organic urban growth, with environmental impacts compressed into shorter timeframes. Our results highlight the critical need for proactive environmental safeguards synchronized with development initiatives rather than reactive measures.

Keywords: IKN Development; LULC dynamics; Environmental impact; Policy-driven development.

ABSTRACT

Paper ID: 114 | Oral Presenter

Molecular Docking Study of Plastic-Derived Endocrine Disrupting Chemicals on the Potential for Insulin Resistance in Children

Authors: Niarsari Anugrahing Putri[1,a)], Adelia Anggraini Utama[1,b)], Indra Widjaja Himawan[1,c)], Iskandar[2,d)], Eko Suhartono[3,e)]

Afiliation:
[1]Department of Child Health Ulin General Hospital/Faculty of Medicine and Health Sciences University of Lambung Mangkurat, Banjarmasin, Indonesia
[2]Public Health Study Program, Undergraduate Program, Faculty of Medicine and Health Sciences University of Lambung Mangkurat, Banjarmasin, Indonesia.
[3]Department of Medical Chemistry/ Biochemistry, Faculty of Medicine and Health Sciences, University of Lambung Mangkurat, Banjarmasin, Indonesia.

Abstract

Insulin resistance is an emerging global health problem in children and underlies various metabolic disorders, including type 2 diabetes mellitus (DM) and dyslipidaemia. This disease is the result of multifactorial interactions, including environmental factors. Some known environmental factors involved include exposure to plastic-derived endocrine-disrupting chemicals (EDCs) such as bisphenol A (BPA), phthalates, and per- and polyfluoroalkyl substances (PFAS). Nevertheless, the molecular mechanisms underlying exposure to these substances remain unclear. Currently, one of the most widely used methods for studying molecular mechanisms is in silico analysis, particularly through molecular docking. Therefore, this study aims to analyse the molecular mechanism of BPA, DEHP, and PFAS in inducing insulin resistance in silico using molecular docking. To investigate this mechanism, an in-silico analysis was conducted by assessing the interactions between three key metabolic components involved in glucose metabolism: peroxisome proliferator-activated receptor gamma (PPARγ), glucokinase (GCK), and estrogen receptor beta (ERβ), in the presence of BPA, DEHP, and PFAS. Protein structures were obtained from the Protein Data Bank, and ligands were retrieved from PubChem, optimized, and visualized using UCSF Chimera. Docking simulations were performed using SwissDock. The analysis results yielded several parameters, including hydrogen bonds, hydrophobic contacts, key binding residues, Gibbs free energy (ΔG), and dissociation constants (Kd). The results of this study indicate that EDCs form stable interactions with their targets, with BPA exhibiting the highest binding affinity, followed by phthalates and PFAS. Negative ΔG values suggest spontaneous interactions, while Kd values indicate biologically relevant binding. These results indicate that plastic derived EDCs, particularly BPA, may disrupt adipocyte differentiation, glucose sensing, and hormonal regulation, increasing the risk of insulin resistance in children. The findings provide a molecular basis for understanding EDC mediated metabolic disruption and highlight the importance of reducing childhood exposure to plastic-associated chemicals.

ABSTRACT

Paper ID: 115 | Oral Presenter

A Geospatial Approach-Based Model for Assessing the Settlement Carrying Capacity in the National Capital City

Authors: Rosalina Kumalawati [1], Inu Kencana Hadi [2], Astinana Yuliarti [1], Wisnu Putra Danarto [1], Jany Tri Raharjo [3], Rijanta [4], Erlis Saputra [4], Ari Susanti [5], Puput Wahyu Budiman [6], Rahmat Aris Pratomo [7], Ghinia Anastasia Muhtar [1], Yogi Prasakti [1], Rahma Ayu Dwiratih [1], Dea Eka Paskipra Dewi [1)]

Afiliation:
[1]Faculty of Social Science, Lambung Mangkurat University
[2]Urban and Regional Planning Department, Nahdlatul Ulama Kalimantan Selatan University
[3]Peatland and Mangrove Restoration Agency of Republic of Indonesia
[4]Gadjah Mada University, Faculty of Geography
[5]Gadjah Mada University, Faculty of Forestry
[6]Badan Penelitian dan Pengembangan Daerah Provinsi Kalimantan Timur
[7]Urban and Regional Planning Department, Teknologi Kalimantan Institute

Abstract

The relocation of the Indonesian Capital City from Jakarta to Penajam Paser Utara and Kutai Kartanegara Regencies, East Kalimantan has an impact on increasing the population. This increase in population is directly proportional to the increase in the need for housing, as well as the need for agricultural land. This study aims to analyze the "A Geospatial Approach-Based Model for Assessing the Settlement Carrying Capacity in the National Capital City". This study uses quantitative methods, spatial and statistics analysis. Spatial and statistical analysis to determine the carrying capacity of residential land through spatial mapping data processing based on geographic information systems (GIS) with the Building Coverage method and Regulation of the Minister of Public Housing Number 11 of 2008. The results of the study showed that the average building coverage in the core location of the IKN was 1% of the total land area suitable for settlements. The results showed that the settlement carrying capacity class was >1, namely the carrying capacity of residential land is still very high at this time. This finding is the basis for utilizing land that must pay attention to targeted spatial planning and is based on the principle of a compact city to prevent the spread of uncontrolled settlements (urban sprawl) and maintain long term spatial efficiency.

Keywords: Geospatial Approach, Assessing, Settlement, Carrying Capacity, IKN.

ABSTRACT

Paper ID: 116 | Oral Presenter

ENTREPRENEURIAL LEADERSHIP STYLE ANALYSIS OF THE REGENT OF TANAH BUMBU IN INCREASING THE REGIONAL REVENUE AND EXPENDITURE BUDGET (APBD) IN 2024

Authors: Muhammad Akram Sadli[1)], Deasy Arisanty[2)]

Afiliation:
[1]Doctoral Program in Development Studies, Lambung Mangkurat University, Indonesia.

Abstract

This study aims to analyze the entrepreneurial leadership style of the Regent of Tanah Bumbu, Zairullah Azhar, in encouraging regional working units (SKPDs) to increase the Regional Revenue and Expenditure Budget (APBD) in 2024. Methodology – This research employs a qualitative method with a case study design. Data were collected through in-depth interviews, participatory observation, and documentation, followed by triangulation analysis. Findings – Zairullah Azhar's entrepreneurial leadership style employs a cultural strategy through spiritual approaches, role modeling, and emotional connections, which create values and foster a bureaucratic work ethic that is adaptive, innovative, and responsive. Consequently, Tanah Bumbu achieved the highest APBD in South Kalimantan in 2024. Originality – This study contributes to the literature on entrepreneurial leadership in the public sector and provides a strategic leadership model for organizational behavior transformation, organizational culture development, enhancement of bureaucratic work ethic, and regional fiscal capacity improvement.

Keywords: Entrepreneurial Leadership, Spiritual Approach, role modelling, emotional connection, value..

ABSTRACT

Paper ID: 117 | Oral Presenter

A new insight of molecular mechanism of heavy metals neurotoxicity: In silico analysis of heavy metals on tyrosine hydroxylase

Authors: Iskandar[1,2,a)*], Eko Suhartono[3,b)], Rizmi Yunita[4,c)], Didik Dwi Sanyoto[5,d)], Ari Yunanto[6,e)], Sunardi[7,f)], Noor Arida Fauzana[8,g)], Isna Syauqiah[9,h)]

Afiliation:
[1]*Environmental Science, Doctoral Study Program, Post Graduate Program, Universitas Lambung Mangkurat, Banjarmasin, 70123, South Kalimantan, Indonesia*
[2]*Public Health Study Program, Undergraduate Program, Faculty of Medicine and Health Sciences, Universitas Lambung Mangkurat, Banjarbaru, 70714, South Kalimantan, Indonesia*
[3]*Department of Chemistry/Biochemistry and Biomolecular, Faculty of Medicine and Health Sciences, Universitas Lambung Mangkurat, Banjarbaru, 70714, South Kalimantan, Indonesia*
[4]*Department of Aquatic Resources Management, Faculty of Fisheries and Marine Sciences, Universitas Lambung Mangkurat, Banjarbaru, 70714, South Kalimantan, Indonesia*
[5]*Department of Biomedic Anatomy, Faculty of Medicine and Heath Sciences, Universitas Lambung Mangkurat, Banjarmasin, 70232, South Kalimantan, Indonesia*
[6]*Department of Neonatology, Paediatrics Education Study Program, Faculty of Medicine and Health Sciences, Universitas Lambung Mangkurat, Banjarmasin, 70232, South Kalimantan, Indonesia*
[7]*Chemistry Study Program, Faculty of Mathematics and Natural Sciences, Universitas Lambung Mangkurat, Banjarbaru, 70714, South Kalimantan, Indonesia*
[8]*Department of Aquaculture. Faculty of Fisheries and Marine Sciences, Universitas Lambung Mangkurat, Banjarbaru, 70714, South Kalimantan Indonesia*
[9]*Department of Chemical Engineering, Faculty of Engineering, Universitas Lambung Mangkurat Banjarbaru, South Kalimantan, Indonesia*

Abstract

Some heavy metals are known to be neurotoxic and increase the risk of developmental disorders of the nervous system. Until now, the mechanism is still unclear. However, one of the known effects is that it can influence the synthesis of neurotransmitters, such as dopamine. Therefore, this study attempts to examine the mechanism of heavy metals on tyrosine hydroxylase, an enzyme involved in the dopamine synthesis pathway in silico. This research was conducted in silico using molecular docking techniques with the help of the free web-based application Metal Ion Binding (MIB)-2 and docking server, as well as visualization with Chimera 1.16 software. The research process results are evident in the analysis results, which include binding energy scores, the location of amino acid residue bindings, binding distances, and binding visualizations. The comparison of parameters between Zinc (Sn) as a cofactor and other metals, including lead (Pb), mercury (Hg), cadmium (Cd), and nickel (Ni), was conducted descriptively, further highlighting the thoroughness of the study. The analysis results show that Pb has the highest binding energy score compared to Hg, Cd, and Ni. This indicates that Pb can potentially substitute Zn as a cofactor for tyrosine hydroxylase. This substitution will result in a decrease in the activity of the enzyme, which ultimately leads to a reduction in dopamine levels. In conclusion, the results of this study demonstrate the neurotoxicity effects of heavy metals, mainly Pb, one of which is through the substitution of Zn as a cofactor of the tyrosine hydroxylase enzyme, resulting in a decrease in dopamine levels.

Keywords: Dopamine; Heavy Metal; In Silico; Neurotoxicity; Tyrosine Hydroxylase..

ABSTRACT

Paper ID: 118 | Oral Presenter

Harnessing Light and Catalysts for Sustainable Fuel from Fatty Acid Waste

Authors: Wibawa Hendra Saputera[1, 2, 3, a)], Aprinanda Nafla Aulia Hanifah[1, b)], Siska Mutiara[1, c)], Sabila Rahmania[1, d)], Astri Nur Istyamia[4, e)], Carolus Borromeus Rasrendra[1, 2, f)], and Dwiwahju Sasongko[1, 3, g)]

Afiliation:
[1]*Department of Chemical Engineering, Institut Teknologi Bandung, Ganesha Street No. 10, Bandung, 40132, Indonesia*
[2]*Center for Catalysis and Reaction Engineering Institut Teknologi Bandung, Indonesia*
[3]*Research Center for New and Renewable Energy Institut Teknologi Bandung, Indonesia*
[4]*Department of Bioenergy Engineering and Chemurgy, Institut Teknologi Bandung, Kabupaten Sumedang, 45363, Indonesia*

Abstract

Photocatalytic decarboxylation of fatty acids offers a sustainable route to produce biohydrocarbons, particularly alkanes in the diesel range. This method operates under ambient conditions and utilizes fatty acid-rich by-products from the oil, fat, and pulp industries, presenting a greener alternative to conventional thermocatalysis. In this study, titanium dioxide (TiO_2)-based photocatalysts were synthesized and doped with platinum (Pt) to enhance activity under visible light. The catalysts were characterized using XRD, UV-Vis DRS, nitrogen adsorption–desorption isotherms, SEM, and HRTEM to determine their structural, morphological, and optical properties. Based on the characterization results, both pristine TiO_2 and Pt/TiO_2 were predominantly composed of the anatase phase. The presence of Pt was confirmed by noticeable changes in the band gap, surface area, particle morphology, and surface texture, as revealed by UV–Vis DRS, BET, SEM, and TEM analyses, respectively. The photocatalytic activity tests of TiO_2 and Pt/TiO_2, analyzed using Gas Chromatography–Mass Spectrometry (GC–MS), showed that the main product obtained was n-heptadecane, with n-pentadecane detected as a secondary product derived from stearic acid, indicating a successful decarboxylation of the fatty acid. The incorporation of Pt led to an increase in the yield of both heptadecane and pentadecane under illumination with Xenon lamps at both 300 W and 500 W. Furthermore, increasing the light intensity from 300 W to 500 W also enhanced the overall yields of n heptadecane and n-pentadecane.

ABSTRACT

Paper ID: 119 | Oral Presenter

Air Pollution, Vascular Injury, and Cognitive Decline: Biomarker Evidence for Climate and Air Quality Policy

Authors: Zulfikar Ali As[1, a)], Eko Suhartono[2, b)], Didik Dwi Sanyoto[3, c)], Rizqi Puteri Mahyudin[4, d)]

Afiliation:
[1]*Doctoral Student in Environmental Science, University of Lambung Mangkurat, Banjarmasin, Indonesia*
[2]*Department of Medical Chemistry/Biochemistry, University of Lambung Mangkurat, Banjarmasin, Indonesia*
[3]*Faculty of Medicine and Health Science, University of Lambung Mangkurat, Banjarmasin, Indonesia*
[4]*Department of Environmental Engineering, Faculty of Engineering, University of Lambung Mangkurat, Banjarmasin, Indonesia*

Abstract

Air pollution is a major global health challenge, with fine particulate matter ($PM_{2.5}$), nitrogen dioxide (NO_2), and ozone (O_3) linked to oxidative stress, inflammation, vascular injury, and cognitive decline. Biomarkers such as circulating endothelial cells (CEC), malondialdehyde (MDA), interleukin-6 (IL-6), tumor necrosis factor-alpha (TNF-α), and peroxidase activity provide sensitive indicators of these processes and highlight their policy relevance. Systematic review was conducted using Scopus, PubMed, and Semantic Scholar (2015–2025). Searches focused on air pollutants, biomarker outcomes, and human-based studies. From 269 records, 84 studies met eligibility criteria and were grouped into five clusters: (1) systemic inflammation and oxidative stress, (2) neurocognitive and neurovascular effects, (3) cardiometabolic and respiratory pathways, (4) vulnerable populations and life-course exposure, and (5) integrative and translational approaches. Most studies confirmed elevated cytokines (IL-6, TNF-α), oxidative stress markers (MDA), and reduced antioxidant defenses under pollutant exposure. Neurocognitive studies showed $PM_{2.5}$ disrupted endothelial integrity and neurotrophic signaling, while cardiometabolic and respiratory studies linked air pollution to hypertension, atherosclerosis, and impaired lung function. Research on vulnerable populations and translational applications was limited. Findings demonstrate that inflammation and oxidative stress mediate air pollution's health burden, with implications for climate resilience. Communities chronically exposed to pollution also face reduced adaptive capacity to climate stressors. Embedding biomarker evidence into ecosystem strategies—such as mangrove conservation, waste management, and clean energy transitions—offers co-benefits for reducing emissions and protecting health. Biomarker insights strengthen the case for integrating air quality and climate policies, positioning health as a pillar of sustainable development.

Keywords: Air Pollution, Biomarkers, Oxidative Stress, Cognitive Decline, Climate Policy .

ABSTRACT

Paper ID: 120 | Oral Presenter

Natural Lighting Optimization Through Spatial Relayouting in Block C of Kampung Susun Akuarium to Enhance Energy Efficiency : A Simulation Study Using Dialux Evo

Authors: Previari U. Pramesti[1], Muhammad Ismail Hasan[1*], Zahra Salsabila J.P. [1], Carissa Dewi Sipta[1], Ratih Widiatuti [1]

Afiliation:
[1] Vocational College, Universitas Diponegoro, Semarang, Indonesia

Abstract

This study aims to optimize natural lighting through a relayout strategy in Block C of Kampung Susun Akuarium in order to enhance energy efficiency. The primary issue lies in the low levels of natural light illuminance, uneven daylight distribution, and a high dependency on artificial lighting. The method employed involves simulation using DIALux Evo software, with an analytical approach based on two representative time points: 09:00 and 13:00 Western Indonesian Time (WIB) on the equinox date. The findings indicate that all spaces experienced improvements in both illuminance levels and daylight factors following the relayout intervention. Furthermore, energy consumption has the potential to be reduced from an initial 161 kWh/month per unit to 139 kWh/month per unit. Consequently, energy savings can be optimized up to 41.65%. The study concludes that spatial reconfiguration that takes into account orientation and openings can serve as an effective solution in supporting the principles of energy-efficient and sustainable architecture.

Keywords: Natural Lighting, Relayout, Energy Efficiency, DIALux Evo Simulation.

ABSTRACT

Paper ID: 121 | Oral Presenter

Bifunctional Shelter Design : A Design For During And Post Disaster/Outbreak

Authors: Previari U. Pramesti[1], Edy Darmawan[2*], Riza Susanti[3], Nafisa Ayu Safina[1], Sandya Zahrannisa[1]

Afiliation:
[1] Vocational College, Universitas Diponegoro, Semarang, Indonesia
[2] Department of Architecture, Universitas Diponegoro, Semarang, Indonesia
[3] Faculty of Build Environtment, Universiti Malaya, Kuala Lumpur, Malaysia

Abstract

Disasters and recent unprecedented outbreaks taught us preparation, handling, and mitigation to reduce the impact on society. Well-handled refugees and quarantined inpatients in an emergency area significantly reduce the worse impact on the people and that area's condition itself. However, the handling and mitigation should not stop after the disaster or outbreak, but sometimes it requires a sustainability program in the recovery system, particularly in the economic section. This study aims to generate a model of a shelter for refugees during post-disaster handling or outbreak as a quarantine shelter. The model challenge is to produce an affordable shelter with rapid assembly, movable, good durability material, and liveable. Furthermore, this shelter design is reusable for economic activities such as vend pod to respond to the sustainability programme, particularly in the economy. This study is expectedly to contribute to a design outcome that is applicable and replicable easily for better well-being during and after post disaster or pandemic.

Keywords: bifunctional building; shelter; disaster; outbreak

ABSTRACT

Paper ID: 122 | Oral Presenter

The Influence of Financial Literacy and the Use of Social Commerce on Business Sustainability (A Study of MSMEs in Sudimampir Market, Banjarmasin City)

Authors: Erna Rusnani[1, a)] and Ahmad Rifani[2, b)]

Afiliation:
[1,2] Universitas Lambung Mangkurat, Indonesia

Abstract

This study aims to empirically test and analyze the influence of financial literacy and the use of social commerce on business sustainability. The study was conducted on 40 MSMEs in the clothing trade sector at Sudimampir Market, Banjarmasin City, who use social commerce platforms in their business operations. The method used in this study was a quantitative approach with an explanatory research type. The sampling technique was purposive sampling. Primary data were collected through questionnaires using a Likert scale and analyzed using a Structural Equation Modeling (SEM) approach based on Partial Least Square (PLS) using SmartPLS 4.0 software. The results of the analysis indicate that financial literacy has a positive and significant influence on business sustainability. Similarly, the use of social commerce has a significant effect on business sustainability. This study makes an important contribution to the development of digital entrepreneurship literature and provides practical implications for MSMEs in increasing competitiveness and business sustainability in the digital economy era.

Keywords: Financial Literacy, Social Commerce, Business Sustainability, MSMEs. .

ABSTRACT

Paper ID: 124 | Oral Presenter

Structural Feasibility and Cost Comparison of Petung Bamboo versus Steel Reinforcement in Concrete Columns

Authors: Fasikhullisan [1, a)] and Muhammad Ismail Hasan [2, b,)]

Afiliation:
[1] *Jurusan Teknik Sipil, Fakultas Teknik, Universitas Islam Sultan Agung Jalan Raya Kaligawe Km 4, Terboyo Kulon, Genuk, Kota Semarang, Jawa Tengah 501121*
[2] *Jurusan Sipil dan Perencanaan, Fakultas Vokasi, Universitas Diponegoro Jl. Gubernur Mochtar, Tembalang, Kec. Tembalang, Kota Semarang, Jawa Tengah 502752*

Abstract

This paper presents a field-based investigation on the long-term structural performance and cost comparison of Petung bamboo (Dendrocalamus asper) versus steel reinforcement in concrete columns. The study was conducted on a 14-year-old residential building located in Jlumpang Village, Bancak District, Semarang Regency, Central Java, Indonesia. Each column measures 3.5 m in height with a 15×15 cm cross-section, reinforced with four Petung bamboo bars as longitudinal reinforcement and steel ties spaced at 15–20 cm intervals. The bamboo was soaked in water for four weeks before installation. After 14 years of service, the structure remains stable with no visible cracks or deterioration, demonstrating the long-term feasibility of bamboo reinforcement for single-story buildings. A cost analysis reveals approximately 35–40% material savings and reduced embodied energy compared to steel-reinforced columns. This research provides empirical validation of bamboo as a sustainable and durable structural reinforcement material in tropical regions.

Keywords: Petung bamboo, concrete columns, cost analysis, field study, sustainable construction. .

ABSTRACT

Paper ID: 125 | Oral Presenter

Development of a Rapid Test Kit for Formalin Detection using Butterfly Pea Flower Extract

Authors: Nanda Raudhatil Jannah[1], Syiffa Fauzia[2*], Aska Choirunisa[1], Yosi Aristiawan[2], Putri Ramadhani[2], Andreas Andreas[2]

Afiliation:
[1]Pharmacy Department, Faculty of Sciences and Technology, Muhammadiyah Bandung University, Bandung, West Java, Indonesia, 40614, nandaraudhatil@umbandung.ac.id,
[2]Research Center for Molecular Chemistry, National Research and Innovation Agency of Indonesia, Jakarta, Indonesia, 10340,

Abstract

Formalin is commonly used as preservative and disinfectant for various application. Unfortunately, this substance is often misused as food preservative such noodle inducing some chronic diseases and environmental pollution. The present research has developed paper-based detection kit for identifying formalin in food product. The detection kit was fabricated based reaction of anthocyanins with formalin. The anthocyanin itself was extracted from Butterfly Pea Flower (Clitoria ternatea L.) optimizing the co-pigmentation and immersing time. The optimum ratio of extracted anthocyanins to Gallic acid was 1:25 with immersion time 40 minutes. This condition provided color change from blue to purple. The result indicated that the two noodle samples contained formalin in the concentration range of 2-4 % and 4-6 % compared to colour chart standard of paper-based test kit. It can be concluded that the extracted anthocyanin deposition on paper-based test had prosperously allowed visual observation formalin in samples.

Keywords: Anthocyanin, Butterfly Pea Flower, Co-pigmentation, Formalin, Paper Kit Test. .

ABSTRACT

Paper ID: 126 | Oral Presenter

A Floristic Study of the Curiak Island Mangrove Ecosystem: Preliminary Inventory

Authors: Agustina Ambar Pertiwi[1*], Amalia Rezeki[2], Zainudin[3], Ferry F. Hoesain[4], Syarifuddin Kadir[5], Krisdianto[6], Anni Nurliani[7]

Afiliation:
[1]Environmental Science Doctoral Program, Postgraduate, Lambung Mangkurat University, Banjarmasin, 70123, Indonesia
[2]Biology Education Department, FKIP Lambung Mangkurat University, Banjarmasin, 70123, Indonesia
[3,4]Sahabat Bekantan Indonesia, Jl. Sultan Adam, Banjarmasin, 70123, Indonesia
[5]Forestry Department, Faculty of Forestry, Lambung Mangkurat University, Banjarbaru, 70714, Indonesia
[6,7]Biology Department, FMIPA Lambung Mangkurat University, Banjarbaru, 70714, Indonesia

Abstract

The mangrove ecosystem of Curiak Island is a natural habitat of proboscis monkeys (Nasalis larvatus) outside of the conservation area. The mangrove ecosystem of Curiak Island was formed from the sedimentation of the Barito river, South Kalimantan Province. The geomorphological conditions of Curiak Island, which is located in the Barito river delta, make this ecosystem ecologically influenced by river tides, salinity, nutrient content in sediment, and other environmental factors. This condition affects the diversity of plants in the ecosystem. This study aims to identify plant species in the mangrove ecosystem of Curiak Island. This research is a field research with a plot method to collect data. The study population is all plants found in the mangrove ecosystem of Curiak Island. The research sample is a plant found in a sample plot measuring 10x10m as many as 35 plots consisting of 27 plots of the edge zone and 8 plots of the middle zone. The distance between the sample plots is 10 m. The research data was analyzed descriptively and exploratively. The results of the study found 27 species of plants classified into 18 orders and 25 families, namely Premna serratifolia, Barringtonia asiatica, Hibiscus tiliaceus, Ficus microcarpa, Mimosa diplotricha, Sonneratia caseolaris, Ludwigia octovalvis, Melastoma malabathricum, Terminalia catappa, Gluta renghas, Dysoxylum parasiticum, Loranthus sp., Cayratia trifolia, Arcangelisia flava, Acanthus ilicifolius, Pistia stratiotes, Calocasia esculenta, Nypa fructicans, Donax canniformis, Cyperus sp., Scirpus sp., Eichornia crassipes, Crinum asiaticum, Hanguana malayana, Acrostichum aureum, Stenochlaena palustris, and Salvinia natans.

Keywords: diversity, ecosystem, inventory, mangroves, proboscis monkey. .

ABSTRACT

Paper ID: 127 | Oral Presenter

Design of an Automated Water Treatment System (WTP) for YAP Tank Based on Programmable Logic Controllers (PLCs)

Authors: Lisa Yihaa Roodhiyah[1], Ari Bawono[2], Irwan S. Hutapea[3]

Afiliation:
[1,2,3]Automation Engineering Technology, Vocational School, Universitas Diponegoro, Jl. Gubernur Mochtar, Tembalang, Kota Semarang 50275, Indonesia

Abstract

The Water Treatment Plant (WTP) plays a crucial role in supplying clean water for both internal needs and the surrounding community. One of the essential units in the water treatment process is the Bak YAP, which performs filtration, coagulation, flocculation, and sedimentation. In many water treatment plants, the WTP control system is still operated manually by operators through direct coordination between workstations, such as managing centrifugal pumps, mixing chemicals, and opening and closing valves. This manual process often causes issues like system inefficiency, water wastage due to delayed valve closure, and repeated chemical dosing. Therefore, automation is necessary for specific processes within the WTP. Previous research has demonstrated that control systems such as programmable logic controllers (PLCs) have been successfully implemented in water treatment and have proven effective in managing the water treatment system inlet. In this study, a comprehensive design and simulation of automation for the water treatment system was performed using PLC controllers integrated with Supervisory Control and Data Acquisition (SCADA) to enhance the monitoring and process control of Bak YAP. The automated processes include opening and closing water inlet and outlet valves, mixing chemicals, and operating pumps. The system utilizes water level sensors, Total Dissolved Solids (TDS) measurements, and flow meters to automatically control valves, pumps, and chemical dosing based on real-time conditions. The results indicate that the system can operate efficiently and effectively address system inefficiencies while monitoring the condition of Bak YAP in real time.

Keywords: PLCs, water treatment plant, SCADA, Bak YAP, automation..

ABSTRACT

Paper ID: 128 | Oral Presenter

The Influence of Safety Climate on Safety Behavior in Power-Plant Construction Projects in Indonesia

Authors: Denny Setiawan

Afiliation:
Doctoral Student in Management Science, Faculty of Business & Economics, Lambung Mangkurat University, Banjarmasin, South Borneo, Indonesia

Abstract

Introduction: The construction sector carries a high risk of occupational accidents and diseases. In this context, safety climate workers' shared perceptions of the priority, commitment, and practices of safety act as the bridge between policy and day-to-day safe behavior. Methods: A cross sectional survey of 291 workers on a power-plant construction project in Indonesia measured six safety-climate dimensions (communication & procedures, work pressure, management commitment, relationships, training, safety rules) and safety behavior (compliance and participation). Multiple linear regression was applied after verifying classical assumptions. Results: The model was significant ($R^2 = 0.320$; $F = 22.319$; $p < 0.001$). Two dimensions showed positive, significant effects on safety behavior: management commitment ($\beta = 0.204$; $p = 0.002$) and relationships ($\beta = 0.396$; $p < 0.001$). Communication & procedures, work pressure, training, and safety rules were not significant at $\alpha = 0.05$. Discussion: Findings highlight two primary levers for behavior change: visible safety leadership from management (role-modeling, field presence, swift follow-up) and high-quality working relationships (trust, fairness, support). Implications: Priorities include scheduling safety walks, brief on-shift coaching, non-punitive behavior-based safety audits, and integrating heat/smoke and other environmental risks into planning. Conclusion: Safety climate significantly predicts safety behavior in high-risk construction. Strengthening management commitment and workplace relationships offers a practical pathway to embed ISO 45001/SMK3 requirements into everyday safe work practices.

Keywords: safety climate; safety behavior; construction; ISO 45001; SMK3..

ABSTRACT

Paper ID: 129 | Oral Presenter

Comparative Long-Term Performance of Ultrafiltration and Pervaporation Membranes for Raw Peat Water Treatment

Authors: Muthia Elma[1], Najma Nur Alifa[2], Enggar Nastiti Wijayaningrum[3], Aulia Rahmah[4], Rhafiq Abdul Ghani[5], Evia Salma Zaurida[6], Arun Dwi Nugroho[7], Amelia Azizah[8], Septa Putri Wulandari[9]

Afiliation:
[1,2,3,8,9] Department of Chemical Engineering, Engineering Faculty, Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia
[3] Kalimantan Institute of Technology, Balikpapan, East Kalimantan, Indonesia
[5,6,7] Materials and Membranes Research Group (M2ReG), Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia

Abstract

Access to safe drinking water remains a critical challenge worldwide, particularly in regions with abundant but contaminated surface waer (NOM), exhibits low pH, and has high turbidity, making it difficult to treat using conventional methods. Membrane technology offers a promising alternative, but long-term operation is often limited by fouling. This study compared the extended operational performance of two configurations for raw peatter such as the peatlands of Indonesia. Peat water contains high concentrations of natural organic matt water treatment: a hollow fiber ultrafiltration (UF) membrane and a tubular ceramic membrane employing pervaporation (PV). The systems were evaluated based on permeate flux stability and backwashing requirements during 300 hours of continuous operation. Parallel setups were constructed using raw peat water from South Kalimantan, Indonesia. The UF system used a polymeric hollow fiber module, while the PV system employed a synthesized tubular alumina membrane. Both were operated for 300 hours with continuous monitoring of flux decline and backwashing events triggered by a defined threshold. The tubular pervaporation membrane demonstrated superior stability, maintaining relatively consistent flux after an initial conditioning period and requiring fewer backwashing interventions compared to UF. Quantitative differences in flux decline and backwashing frequency will be presented in detail. These results underline the potential of tubular PV membranes as a durable alternative for treating challenging raw peat water.

Keywords: backwashing, longterm performance, peat water treatment, pervaporation ultrafiltration..

ABSTRACT

Paper ID: 130 | Oral Presenter

Effect of Air Gap Variation on the Morphology and Performance of PVDF–TiO_2/SBE Hollow Fiber Membranes for Peat Water Purification

Authors: Muthia Elma[1], Arun Dwi Nugroho[2], Aulia Rahma[3], Rhafiq Abdul Ghani[2], Evia Salma Zaurida[2]

Afiliation:
[1]Chemical Engineering Department, Engineering Faculty, Lambung Mangkurat University, Banjarbaru 70714, Indonesia
[2]Materials and Membranes Research Group (M2ReG), Banjarbaru 70714, Indonesia
[3]Safety Engineering Departement, Kalimantan Institute of Technology, Balikpapan, Indonesia

Abstract

The abundant peat water in South Kalimantan is limited as a clean water source due to its acidic nature, high organic content, and excessive total dissolved solids (TDS) and conductivity. This study developed hollow fiber membranes based on polyvinylidene fluoride (PVDF) incorporating titanium dioxide (TiO_2) and spent bleaching earth (SBE) as additives, fabricated by wet spinning with air gap distances of 0, 2.5, and 5 cm. Characterization included FTIR, SEM, and water contact angle, while performance was tested through direct contact membrane distillation (DCMD) at feed temperatures of 60–80 °C. Air gap variation strongly affected morphology, surface properties, and performance. The 0 cm air gap membrane exhibited uniform pores, a water contact angle of 88°, and achieved the highest flux of 13.8 kg/m²·h for distilled water and 12.7 kg/m²·h for peat water at 80 °C. Despite some fluctuations, rejection of TDS, conductivity, and UV254 remained consistently high (>99%), with permeate pH reaching neutral (7.0–7.4). Larger air gaps generated bigger but non-uniform pores, increasing resistance and reducing vapor transport stability. Overall, the PVDF–TiO_2–SBE hollow fiber membrane fabricated with a 0 cm air gap showed the most favorable performance for peat water treatment and holds strong potential as an effective and sustainable clean water solution in peatland regions.

Keywords: Peat water, Air gap, Polyvinylindene fluoride, Membrane Distillation, Hollow Fiber..

ABSTRACT

Paper ID: 131| Oral Presenter

Deconvolution of Hydrophylicity Modification in PVDF Hollow Fiber Membrane Using P123-Coating For Pervaporation Application

Authors: Evia Salma Zaurida[1], Muthia Elma[2], Mahmud[3] , Zahratunnisa[4], Arun Dwi Nugroho[5], Aulia Rahma[6], Rhafiq Abdul Ghani[7]

Afiliation:
[2] Chemical Engineering Department, Engineering Faculty, Lambung Mangkurat University, Banjarbaru 70714, Indonesia
[3] Enviromental Engineering Departement, Engineering Faculty, Lambung Mangkurat University, Banjarbaru 70714, Indonesia
[1,4,5,7] Materials and Membranes Research Group (M2ReG), Banjarbaru 70714, Indonesia
[6] Safety Engineering Departement, Kalimantan Institute of Technology, Balikpapan, Indonesia

Abstract

The inherent hydrophobicity of polyvinylidene fluoride (PVDF) hollow fiber membranes poses significant challenges in several aqueous-based separation processes, leading to issues such as fouling and reduced permeability. This study investigates the hydrophilic functional groups in PVDF membrane modification using Pluronic P123 as a surface coating to improve membrane hydrophilicity characteristics. The hollow fiber PVDF membranes were prepared via the wet spinning method with various additives, such as Titanium dioxide and Polyethylene glycol. Furthermore, the membrane was coated with Pluronic P123 solution using the dip-coating method. Membrane characterization was conducted using Fourier-transform infrared (FTIR) spectroscopy, with deconvolution techniques applied to analyze functional group changes. In addition, the membrane performance was tested using a pervaporation process with varying feed temperatures to evaluate flux and rejection efficiency. The results confirmed the successful integration of P123, increasing the hydrophilicity of the membrane characterised by the presence of more dominant hydrophilic functional groups in the membrane, namely C-O-C, C-O, and β-phase functional groups. With the deconvolution area of each group of 2.03, 0.25 and 7.98. The membrane performance results also showed that the highest flux value was obtained at 6.55 kg-m^{-2}-h^{-1} for pure water and 5.85 kg-m^{-2}-h^{-1} for peat water at 60°C. The membrane also showed high rejection performance with a total dissolved solids (TDS) rejection efficiency of 97.32% and turbidity of 92.67%.

Keywords: PVDF, hollow fiber membrane, P123, FTIR, deconvolution

ABSTRACT

Paper ID: 132| Oral Presenter

Characteristics of Nanofibers Based on Kelakai Extract (Stenochlaena palustris) and Butterfly Pea Flower (Clitoria ternatea) as Smart Coatings

Authors: Muthia Elma[1], Amelia Kartika[2], Eka Maulida[3], Arana Aleyda Ramadina[4], Aulia Rahmah[5], Rhafiq Abdul Ghani[6], Evia Salma Zaurida[7], Arun Dwi Nugroho[8]

Afiliation:
[1,2,3,4] Department of Chemical Engineering, Engineering Faculty, Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia
[5] Kalimantan Institute of Technology, Balikpapan, East Kalimantan, Indonesia
[6,7,8] Materials and Membranes Research Group (M2ReG), Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia

Abstract

Nanofibers are defined as ultra-fine structured materials composed of fibers with diameters on the nanometer scale. These materials possess a high surface area, good porosity, and controllable morphology, which enables their interaction with bioactive compounds and the surrounding environment. The superior characteristics of nanofibers over conventional materials are evident in their ability to provide enhanced barrier properties, reduced water vapor permeability, and the capacity to regulate the release of active compounds. Furthermore, the adaptability of their composition facilitates the integration of nanofibers with natural materials, thereby fostering the advancement of sustainable smart packaging materials. In this study, nanofibers were fabricated using an electrospinning method based on polyvinyl alcohol (PVA) and pullulan (PUL) enriched with extracts from Stenochlaena palustris and Clitoria ternatea. The electrospinning method was selected due to its ability to produce fibers with uniform size distribution, adequate continuity, and controllable thickness, rendering it suitable for utilization in thin coating systems. Phytochemical testing demonstrated that kelakai extract exhibited considerable antioxidant activity, with an IC50 value of 32.73 ppm. In contrast, butterfly pea flower extract was found to contain substantial levels of anthocyanins, with a concentration of 54.93 milligrams per liter. The combination of these two extracts offers dual potential, namely bioactive protection from oxidation and color-change-based indicator function. Consequently, the resulting nanofibers possess considerable potential for development as a sustainable protective coating. This coating would not only provide protection against quality degradation, but it would also possess the capability to monitor product freshness in real time.

Keywords: Butterfly Pea Flower Extract, Kelakai Extract, Nanofiber, Smart Coating.

ABSTRACT

Paper ID: 133 | Oral Presenter

Development of Hollow Fiber PVDF Membranes Incorporating Regenerated SBE for Enhanced Peatwater Treatment

Authors: Muthia Elma[1], Rhafiq Abdul Ghani[2], Jessie Catherina[3], Chachay Talia Lalin[4], Zahratunnisa[5], Arun Dwi Nugroho[6], Aulia Rahma[7], Evia Salma Zaurida[8]

Afiliation:
[1,3,4] Chemical Engineering Department, Engineering Faculty, Lambung Mangkurat University, Banjarbaru 70714, Indonesia
[2,5,8] Materials and Membranes Research Group (M2ReG), Banjarbaru 70714, Indonesia
[7] Safety Engineering Departement, Kalimantan Institute of Technology, Balikpapan, Indonesia

Abstract

Spent bleaching earth (SBE) is a waste product from the crude palm oil (CPO) processing industry. This material contains components such as silica, alumina, and other inorganic minerals. The combination of its physical and chemical properties gives SBE significant potential as an additive in membrane fabrication. This study investigates the effect of incorporating SBE into polyvinylidene fluoride (PVDF) hollow fiber membranes for the treatment of peat water. The modified membranes aim to reduce the color and organic matter content of peat water, offering an efficient and sustainable solution for clean water provision in tropical regions rich in peat water resources. Hollow fiber membranes were fabricated using PVDF polymer, DMAc solvent, and varying SBE additive concentrations of 0%, 2.5%, and 5% (w/w). The membrane dope solution was prepared by heating at 80°C with continuous stirring at 600 rpm until homogeneous. The membranes were then fabricated using the wet spinning method, with a dope solution flow rate of 2 mL/min and a bore fluid flow rate of 1 mL/min. The membranes were characterized and applied to peat water treatment through an ultrafiltration process. The SBE-modified membrane (5% wt) exhibited improved porosity and hydrophilicity, with values of 76.29% and 83.51°, respectively. Additionally, the membrane flux increased ~2 times, achieving a maximum flux of 16.81 $kg \cdot m^{-2} \cdot h^{-1}$ for the 5%-SBE membrane. However, the turbidity and color rejection of peat water were less effective, with values of 85.98% and 44.37%, respectively.

Keywords: spent bleaching earth, hollow fiber membrane, ultrafiltration, peat water

ABSTRACT

Paper ID: 134 | Oral Presenter

Effect of Stearic Acid-Modified Peat Clay as an Additive on the Characteristics of PVDF Membranes

Authors: Muthia Elma[1], Siti Rahmah[2], Rizka Maulida Sari[3], Awali Sir Kautsar Harivram[4], Zahratunnisa[5], Rhafiq Abdul Ghani[6], Evia Salma Zaurida[7], Arun Dwi Nugroho[8], Aulia Rahma[9]

Afiliation:
[1,2,3,4] Department of Chemical Engineering, Engineering Faculty, Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia
[5,6,7,8] Materials and Membranes Research Group (M2ReG), Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia
[9] Kalimantan Institute of Technology, Balikpapan, East Kalimantan, Indonesia

Abstract

Membrane technology offers energy-efficient separation with high product purity and versatile applications. Polyvinylidene fluoride (PVDF) hollow-fiber membranes are favored for their chemical resistance, thermal stability, and intrinsic hydrophobicity, yet their porosity and surface characteristics often require enhancement. This study evaluates stearic-acid-modified peat clay from South Kalimantan as a natural additive in PVDF/DMAc dope solutions at 0%, 5%, and 10% (w/w). Hollow fibers were produced by wet spinning followed by stepwise coagulation. Membranes were characterized by FTIR, water contact angle (WCA) measurements, and porosity analysis. Results indicate that adding modified peat clay markedly altered surface wettability: the control (0%) exhibited a WCA of 87.85° (transitional wetting), 5% produced 101.05° linked to uniform particle dispersion and increased micro-roughness (Cassie–Baxter effect), and 10% reached 107.20° although agglomeration reduced modification efficiency. FTIR confirmed a shift in PVDF crystalline phases from α to β with higher additive loading. The findings demonstrate that stearic-acid-modified peat clay is a promising, sustainable additive to tune surface hydrophobicity and structural properties of PVDF hollow-fiber membranes.

Keywords: Hollow fiber membrane, hydrophobicity, peat clay, PVDF, stearic acid modification.

ABSTRACT

Paper ID: 135 | Oral Presenter

Design of an Automated Water Treatment System (WTP) for YAP tank (Bak YAP) Based on Programmable Logic Controllers (PLCs)

Authors: Lisa Yihaa Roodhiyah[1,a)], Ari Bawono Putranto[2,b)], Irwan S. Hutapea[3,c)], Nadiv Dvavinsena Ramadhani[4,d)]

Afiliation:
[1,2,3,4]Automation Engineering Technology, Vocational School, Universitas Diponegoro, Jl. Gubernur Mochtar, Tembalang, Kota Semarang 50275, Indonesia

Abstract

The Water Treatment Plant (WTP) plays a crucial role in supplying clean water for both internal needs and the surrounding community. One of the essential units in the water treatment process is the Bak YAP, which performs filtration, coagulation, flocculation, and sedimentation. In many water treatment plants, the WTP control system is still operated manually by operators through direct coordination between workstations, such as managing centrifugal pumps, mixing chemicals, and opening and closing valves. This manual process often causes issues like system inefficiency, water wastage due to delayed valve closure, and repeated chemical dosing. Therefore, automation is necessary for specific processes within the WTP. Previous research has demonstrated that control systems such as programmable logic controllers (PLCs) have been successfully implemented in water treatment and have proven effective in managing the water treatment system inlet. In this study, a comprehensive design and simulation of automation for the water treatment system was performed using PLC controllers integrated with Supervisory Control and Data Acquisition (SCADA) to enhance the monitoring and process control of Bak YAP. The automated processes include opening and closing water inlet and outlet valves, mixing chemicals, and operating pumps. The system utilizes water level sensors, Total Dissolved Solids (TDS) measurements, and flow meters to automatically control valves, pumps, and chemical dosing based on real-time conditions. The results indicate that the system can operate efficiently and effectively address system inefficiencies while monitoring the condition of Bak YAP in real time.

Keywords: PLCs, Water Treatment Plant, SCADA, Bak YAP, Automation.

ABSTRACT

Paper ID: 136 | Oral Presenter

Comparative Application of Organic Silica Membrane for Wetland Saline Water and Barito River Water in Membrane Distillation

Authors: Muthia Elma[1], Sitti Nor Aisyah[2], Siti Zakirah[3], Awali Sir Kautsar Harivram[4], Evia Salma Zaurida[5], Rhafiq Abdul Ghani[6], Aulia Rahma[7], Arun Dwi Nugroho[8)]

Afiliation:
[1,2,3,4] Department of Chemical Engineering, Engineering Faculty, Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia
[5,6,8] Materials and Membranes Research Group (M2ReG), Lambung Mangkurat University, Banjarbaru, South Kalimantan, Indonesia
[7] Kalimantan Institute of Technology, Balikpapan, East Kalimantan, Indonesia

Abstract

Wetland and river water are vital sources for communities in South Kalimantan, but they are difficult to use due to high salinity, organic contaminants, and suspended solids. Membrane distillation (MD) is a potential solution for treating these complex waters. In this study, we modified a multi-channel alumina tubular membrane through the sol-gel method using tetraethylorthosilicate (TEOS) as the precursor and citric acid as the catalyst. The inner coating technique was combined with rapid thermal processing (200 °C for one hour, four cycles). Characterization was carried out using FTIR, SEM, and TGA. FTIR spectra revealed strong absorption peaks at 1080 cm^{-1} (Si–O–Si), 950 cm^{-1} (Si–OH), and 800 cm^{-1} (Si–C), confirming successful organosilica deposition. TGA analysis showed major weight loss (32%) up to 200 °C due to the evaporation of bound water and the decomposition of organics, followed by stable mass retention (68%) up to 600 °C. This indicates the xerogel's good thermal stability. Performance evaluation using dynamic membrane distillation (DCMD) at 70–90 °C showed that the flux increased from 180 to 428 kg/m^2.jam for deionized water and from 162 to 255 kg/m^2.jam for wetland saline water. Salt rejection was consistently above 95%. These results demonstrate that the modified alumina tubular membrane is chemically and thermally stable, has a stable flux, and rejects contaminants effectively. This makes it a promising technology for water treatment in tropical regions with complex raw water sources, such as wetlands and rivers.

Keywords: membrane distillation, organosilica membrane, deionized water, wetland saline water, tubular alumina..

ABSTRACT

Paper ID: 137 | Oral Presenter

The Inclusivity of A Prefabricated Modular System As An Alternative Development for Adaptive Design: A Solution for School Building in Coastal Area

Authors: Muhammad Ismail Hasan[1, a)], Riana Arum Kusuma[2, b)], Hanna Sabrina Razan[2, c)] and Resza Riskiyanto[2, d)]

Afiliation:
[1]Vocational College, Universitas Diponegoro, 50275, Semarang, Indonesia 2Universitas Diponegoro, 50275, Semarang, Indonesia

Abstract

This article demonstrates a technical study of the development of a Special School design (Sekolah Luar. Biasa) based on modular system that aims to support inclusive education as a top priority in educational development in Indonesia, especially for children with special needs. This research was conducted by developing a prefabricated modular system as an alternative adaptive SLB design, by adapting RUSPIN (Instant Panel System House) technology to answer the challenge of the availability of fast and effective SLB facilities. The research method includes an analysis of space requirements based on applicable regulatory standards, as well as a technical study of the RUSPIN system through observation and consultation with related parties until design development. The results of the study indicate that the RUSPIN prefabricated modular system can be developed as a form of technical adaptation to meet the needs of SLB space. This system offers a fast, efficient, and economical construction solution so that it can be developed to meet accessibility standards for students with special needs. Although it has several limitations in technical terms, such as the types of modules available and the connection system between panels, this prefabricated modular system has great potential to facilitate the provision of inclusive infrastructure. This research is expected to be a reference in the development of inclusive architectural designs based on modular systems.

ABSTRACT

Paper ID: 138 | Oral Presenter

An IoT-Enabled Low-Cost Weather Station for Temperature and Climate Monitoring

Authors: Ahmad Ridlo Hanifudin Tahier[1, a)*], Farhan Aditya Ardan[1,b)], Firda Amanda Fitri[1,c)], Rizal Nadhif Pratista[1,d)], Ramadhani Yuans Darmawan[1,e)]

Afiliation:
[1]Department of Automation Engineering, Diponegoro University, Semarang, Indonesia

Abstract

This study presents the design and implementation of a low-cost ESP32-based Weather Monitoring System integrated with the Firebase Realtime Database for real-time weather observation. The system uses a BME280 sensor to measure temperature, humidity, and atmospheric pressure, a JL-FS2 anemometer to record wind speed, and a rain drop sensor to detect rainfall intensity. Data collected from the sensors are processed by the ESP32 microcontroller and transmitted via Wi-Fi to Firebase, enabling remote data storage and access. In addition, a web-based dashboard deployed on Vercel App was developed to visualize the data retrieved from Firebase, providing users with real-time weather information through a clear and interactive interface. The prototype was tested outdoors, and the results confirmed that the system could reliably capture weather parameters. Observations showed temperature values ranging from 31–33 °C, humidity levels between 52–80%, wind speeds up to 32.58 m/s, atmospheric pressure within 986–988 hPa, and a stable rain sensor voltage of 3.3 V, indicating no rainfall during testing. The integration of Firebase and the Vercel dashboard ensures that weather data can be accessed anytime and anywhere. The system's main advantages are simultaneous monitoring of multiple parameters, cloud-based storage, and accessible visualization. Despite some limitations, such as hardcoded authentication credentials and the absence of a retry mechanism during transmission failures, the system demonstrates the potential of IoT-based solutions for efficient and reliable weather monitoring.

Keywords: Low-Cost Weather Station, ESP32, JL-FS2, IoT Weather Station.

ABSTRACT

Paper ID: 139 | Oral Presenter

Toll Tariff Increases and Their Influence on Traffic Flow: A Case Study of the Pemalang–Batang Toll Road

Authors: Asri Nurdiana[1], Muh Bahrul Ulum Al Karimi[2], Anita Lestari Condro Winarsih[3], Yulian Fundra Kurnianto[4])

Afiliation:
[1 2 3]Department of Civil and Planning Vocational College Diponegoro University, Semarang 50275
[4]Pemalang Batang Toll Road, Jalan Tol Pemalang-Batang KM 343A, Candiareng, Warungasem, Batang 51252

Abstract

This study investigates the effect of toll tariff increases on traffic volume with a case focus on the Pemalang–Batang Toll Road in Indonesia. The research seeks to explore how pricing adjustments influence travel behavior and vehicle flow patterns among different categories of users. Data on traffic volumes were obtained both prior to and following the tariff changes and analyzed using descriptive and comparative methods to observe variations in traffic distribution. Results show that tariff increases lead to a decline in the number of vehicles utilizing the toll road. However, the analysis also reveals that while traffic volume decreases immediately after the adjustment, the extent of this reduction tends to lessen over time. This pattern suggests an adaptive response from road users, whereby traffic volumes gradually recover as the new tariff becomes accepted as the norm. The study enhances the understanding of economic and behavioral aspects of toll road usage and offers valuable implications for policymakers and toll operators in developing balanced and sustainable tariff policies.

Keywords: Toll Tariff Adjustment, Traffic Volume, Vehicle Flow, Travel Behavior, Pemalang–Batang Toll Road.

ABSTRACT

Paper ID: 140 | Oral Presenter

Green and Community-Based Human Resource Management in the Development of Swamp Buffalo Ecotourism in Tanah Laut Regency

Authors: Mutia Nurani[1], Rini Rahmawati[2], Ahmad Yunani[3]

Afiliation:
[1] Faculty of Economics and Business, Universitas Lambung Mangkurat, Banjarmasin, Indonesia
[2] Faculty of Economics and Business, Universitas Lambung Mangkurat, Banjarmasin, Indonesia

Abstract

Swamp buffalo ecotourism in Tanah Laut Regency offers distinctive potential as a wetland-based tourism destination; however, it still faces major challenges related to sustainability and community participation. Introduction: This study addresses the need for an integrated management framework that enhances both environmental sustainability and local community empowerment. Methods: A conceptual approach is employed by adopting the framework of Green and Community-Based Human Resource Management (HRM). Supporting analyses include SWOT to identify strengths and weaknesses, as well as the pentahelix model to explore collaborative governance. Results: The findings highlight that integrating Green HRM with community-based practices can strengthen the capacity of local human resources, improve economic well-being, preserve wetland ecosystems, and reinforce the cultural identity of swamp buffalo. Discussion: The study emphasizes that the proposed framework provides not only a practical strategy for ecotourism development but also a policy roadmap to guide multi-stakeholder collaboration. By aligning local data with policy design, the model contributes to the long-term sustainability and competitiveness of swamp buffalo ecotourism in Tanah Laut.

Keywords: Ecotourism; Swamp Buffalo; Green HRM; Community-Based Tourism; Tanah Laut.

ABSTRACT

Paper ID: 141 | Oral Presenter

Bridging Upstream–Downstream Ecology: Climate Change Education and Mangrove Conservation in Banua Anam through Systematic Literature Review

Authors: Rizal Fahmi[1], Akhmad Saufie[2], Dhella Yunita[3], Syakrani[4]

Afiliation:
[1]Fakultas Ilmu Sosial dan Ilmu Politik, rfahmi2233@gmail.com
[2]Fakultas Ilmu Sosial dan Ilmu Politik, akhmadsaufie317@gmail.com
[3]Fakultas Ilmu Sosial dan Ilmu Politik, dhelladhell05@gmail.com
[4]Fakultas Ilmu Sosial dan Ilmu Politik, syakrani@ulm.ac.id

Abstract

Mangroves play an important role in climate change mitigation through blue carbon storage, coastal protection, and providing habitats for biodiversity, but these ecosystems face serious pressure from land conversion, sedimentation, pollution, and low public awareness. This study focuses on the upstream-downstream gap in mangrove conservation in South Kalimantan, specifically how activities in the upstream watershed trigger damage in coastal areas, exacerbated by a lack of social integration, knowledge, and governance. To address these issues, this study formulates an integrated climate education framework based on three pillars, namely digital visual media to visualize cross-regional impacts, contextual teaching and learning (CTL) rooted in local experiences, and public campaigns that foster a narrative of shared responsibility. The research location is in the Banua Anam region (Hulu Sungai Utara, Hulu Sungai Selatan, Hulu Sungai Tengah, Tapin, Tabalong, and Balangan districts), which is an important point of interaction between upstream and downstream ecosystems and is vulnerable to the impacts of climate change. The research method uses a Systematic Literature Review (SLR) approach to comprehensively examine various previous studies, thereby obtaining an in-depth analysis of the relationship between mangroves, climate change, and environmental education. Thus, this study is expected to not only enrich academic knowledge, but also produce a sustainable education model that can bridge the ecological and socio-cultural gap between upstream and downstream areas in order to strengthen the environmental and social resilience of the Banua Anam community.

Keywords: Mangrove, Climate Change, Banua Anam, Upstream-Downstream, Coastal Areas.

ABSTRACT

Paper ID: 142 | Oral Presenter

From Education to Action: A Local Digital Media Marketing Framework for Mangrove Ecotourism in South Kalimantan

Authors: Rahmat Hidayatullah[1,a)] dan M. Riza Firdaus[2,b)]

Afiliation:
[1] Doctoral Student in Management Science, Faculty of Economics and Business, Lambung Mangkurat University, Banjarmasin, Indonesia
[2] Doctoral Student in Management Science, Faculty of Economics and Business, Lambung Mangkurat University, Banjarmasin, Indonesia

Abstract

Mangrove campaigns often stall at the awareness stage. Converting knowledge into real action (visits, donations, volunteering, planting) remains low because messages lack sharp focus, evidence is less credible, and the path to action is full of friction. Purpose: This conceptual paper proposes a "From Education to Action" framework for mangrove ecotourism in South Kalimantan, linking digital communications, community engagement, and simple call-to-action (CTA) pathways to enable the public to transition from knowledge to action. Theoretical foundations: The framework builds on IMC/digital marketing, the engagement, destination brand loyalty pathway, ease of action constructs, perceived behavioral control (TPB), and facilitating conditions (UTAUT2). Local evidence from mangrove campaigns and participation in Indonesia grounds the operational context. Proposed framework: Four message levers, (i) clarity (one message one CTA), (ii) local identity fit, (iii) evidence and impact transparency, and (iv) ease of action (PBC+FC), increase community engagement (mediator), which builds trust and perceived value, strengthens destination brand resonance, and lifts prosocial intention and behavior. Method: Integrative literature review and synthesis of mangrove campaign practices; the testing agenda includes validated scales (PBC, FC, trust, value, resonance), A/B experiments on message, evidence,CTA, and conversion metrics (scan to signup, completion, attendance, donations, and 30–60 day repeat actions). Contributions: (a) an operational model combining IMC, engagement, PBC/FC for conservation issues; (b) a ready to use list of tactics and KPIs for destination managers, public/CSR marketers, and local media; (c) an empirical research roadmap to validate construct effects in the South Kalimantan mangrove context.

Keywords: mangrove, ecotourism, digital marketing, community engagement, local digital media.

ABSTRACT

Paper ID: 143 | Oral Presenter

Silvofishery and Mangrove Ecosystem Management: Enhancing Biodiversity, Carbon Sequestration, and Community Benefits in Wetland Areas

Authors: Maya Amalia[1,5], Noerkomari[2,5], Untung Bijaksana[3,5], Adela Ayu Ningtias[4,5], Nursyiva Sya'ziah[4,5])

Afiliation:
[1]*Engineering Faculty Lambung Mangkurat University, Banjarbaru Indonesia 70714*
[2]*Mathemathic and Science Faculty Lambung Mangkurat University, Banjarbaru Indonesia 70714*
[3]*Fisheries and Marine Faculty, Lambung Mangkurat University, Indonesia, 70714*
[4]*Graduate Program, Lambung Mangkurat University, Indonesia, 70714*
[5]*Academic Support Unit for Wetland Environment, Lambung Mangkurat University, Indonesia, 70714*

Abstract

The Wetland Environment Academic Support Unit has the task of protecting and managing the wetland environment for education, research, and community service programs. Several programs are carried out to support the realization of ULM's vision and mission, including silvofishery, which combines aquaculture as milkfish with mangrove ecosystems, environmental restoration, biodiversity conservation, nature tourism, and non-timber forest products, with the aim of providing economic and social benefits and improving environmental quality through partnerships, research, and community empowerment. The vegetation in the area managed by the Berkah Wasaka Mandiri ULM Cooperative is dominated by Rhizophora mucronata at all growth stages (seedlings, saplings, and trees). The results of the ecological index analysis show moderate diversity (H' 1.79–2.15), high evenness (E 0.72-0.89), and low dominance (C 0.14–0.27), reflecting a stable ecosystem with good natural regeneration. Analysis of carbon potential in mangrove areas shows a carbon absorption and storage capacity of around 3.4 thousand tons of CO_2eq per year or a total of around 68.1 thousand tons of CO_2eq in 20 years, with the largest contribution coming from mangrove ecosystems and silvofishery areas. This potential confirms that mangrove forests not only function as protectors of coastal ecosystems, but also as significant carbon sinks. Integration with the silvofishery system strengthens the dual function of the area, namely providing economic benefits from milkfish farming and non-timber forest products while increasing blue carbon stocks that contribute to climate change mitigation.

Keywords: Forest Management, Wetlands, Mangroves, Silvofishery, Carbon Potential.

ABSTRACT

Paper ID: 144 | Oral Presenter

Effectiveness of Regeneration and Reactivation of Oil Palm Fiber-Based Bioadsorbent in Improving the Chemical Quality of Used Cooking Oil

Authors: Adzani Ghani Ilmannafian[1,a)],M. Indra Darmawan[2,b)], Mariatul Kiptiah[3,c)], Firda Adelia[4,d)], M. Bari Sukarya[5,e)], and Alya Rahma[6,f)]

Afiliation:
[1,2,3,4,5,6] Politeknik Negeri tanah Laut, Jalan Ahmad Yani Km.06, Desa Panggung, Kecamatan Pelaihari, Kabupaten Tanah Laut, Kalimantan Selatan 70815, Indonesia.

Abstract

The repeated use of cooking oil has negative impacts on both health and the environment. During the frying process, hydrolysis and oxidation reactions occur, leading to an increase in free fatty acid (FFA) content, acid value, and peroxide value. The increase in these parameters not only reduces the quality of the oil but also potentially causes rancid odor, accelerates fat deterioration, and generates free radicals that may trigger degenerative diseases. From an environmental perspective, the improper disposal of used cooking oil can contaminate soil and water due to its resistance to natural degradation. One of the possible solutions is the purification of used cooking oil using a bioadsorbent derived from oil palm fiber. This study aims to evaluate the effectiveness of regeneration and reactivation of oil palm fiber-based bioadsorbents in improving the quality of used cooking oil. The process was carried out using variations of bioadsorbent concentrations (7%, 9%, and 11%) and three purification cycles. The bioadsorbents were prepared through grinding, soaking, filtering, and drying processes, followed by characterization according to the Indonesian National Standard (SNI) No. 06-3730:1995 for technical activated carbon. Purification was conducted by mixing the oil with bioadsorbents according to the formulation, followed by regeneration and reactivation to assess the durability of the adsorbent. Oil quality analysis was performed based on SNI No. 7709:2019, including FFA, acid value, and peroxide value. The results indicated that the use of oil palm fiber-based bioadsorbents was effective in improving the quality of used cooking oil by reducing FFA content, acid value, and peroxide value. The FFA level decreased from 0.88% to 0.39% (7%), 0.38% (9%), and 0.32% (11%); the acid value declined from 0.98 mg KOH/g to 0.44 (7%), 0.38 (9%), and 0.38 (11%); while the peroxide value decreased from 11.67 meq/kg to 9.67 (7%), 9.00 (9%), and 6.33 (11%). These improvements demonstrate that repeated purification using regenerated and reactivated bioadsorbents can bring the quality of used cooking oil closer to the SNI 7709:2019 standard. A bioadsorbent concentration of 11% with three purification cycles was proven to be the most effective in reducing all three quality parameters. These findings emphasize that bioadsorbents derived from biomass, such as oil palm fiber, hold great potential as an effective, environmentally friendly, and economical technology for the purification of used cooking oil.

Keywords: Bioadsorbent, fiber, used cooking oil, chemical quality, purification.

ABSTRACT

Paper ID: 145| Oral Presenter

WETLAND INNOVATION AND AREA DESIGN PROGRAM: ULM Mangrove Area Study Center

Authors: Ma'ayisa Afwin Haq[1], Nazhifa Arina Ahyan[2)]

Afiliation:
[1]Lambung Mangkurat University, Brigjen H. Hasan Basri Street, Pangeran, North Banjarmasin District, Banjarmasin City, South Kalimantan

Abstract

Indonesia possesses the world's largest mangrove ecosystem but has suffered severe degradation, threatening biodiversity and coastal community sustainability. South Kalimantan province contains a total mangrove area of 76,874 hectares, with varying degrees of critical condition based on the 2022 National Mangrove Map by the Ministry of Environment and Forestry (KLHK). In response, and aligned with Lambung Mangkurat University's (ULM) vision for wetland environments, a Mangrove Study Center is designed in Tanjung Sungkai, Kotabaru. This study employs a contextual architectural approach based on site observations and ecological analysis to develop design solutions suitable for the wetland and tidal environment. The design features an elevated stilt house typology adapted for wetland and tidal resilience, a facade that reflects mangrove patterns, and functional zoning supporting silvofishery, research, and education. These results demonstrate how a contextual architectural approach can integrate ecological restoration with sustainable community practices. The Mangrove Study Center, conceptualized as the "Mangrove Nexus," serves as a hub for research, conservation, and knowledge exchange. It bridges science, architecture, and environmental preservation, providing ecological and economic benefits for both ULM's academic community and the wider public.

Keywords: Contextual Architecture, Mangrove Conservation, Wetlands, Study Center, Silvofishery.

ABSTRACT

Paper ID: 147 | Oral Presenter

Tailoring Crystallinity and Composition of Hydroxyapatite through Controlled Aging Temperature and Time

Authors: Ahmad Fadli[1*], Agung Prabowo[2], Feblil Huda[3], Dimas Pramita Nugraha[4], Cory Dian Alfarisi[5], Abdul Jawad[6], Yonaldie Ismail[7])

Afiliation:
[1,5]Chemical Engineering Department, Engineering Faculty, Universitas Riau, Pekanbaru, 28293, Riau, Indonesia.
[2]Chemical Engineering Department, Politeknik Negeri Samarinda, Samarinda, 75131, East Kalimantan, Indonesia
[3]Mechanical Engineering Department, Engineering Faculty, Universitas Riau, Pekanbaru, 28293, Riau, Indonesia.
[4]Pharmacology Department, Faculty of Medical, Universitas Riau, Riau, Indonesia

Abstract

Hydroxyapatite (HAp) remains one of the most promising bioceramics for bone-related biomedical applications owing to its superior biocompatibility and osteoinductive capacity. Despite extensive studies, the role of post-synthesis aging conditions on precipitation kinetics and structural refinement of HAp is not fully elucidated. This work systematically examines the influence of aging time and temperature on the physicochemical characteristics of HAp synthesized via wet chemical precipitation. Precursor solutions were reacted at a Ca/P molar ratio of 1.67 in the presence of latex as a porogen, followed by aging at 25, 40, and 60 °C for 2–12 h, drying, and calcination. Structural and compositional features were analyzed using X-ray diffraction (XRD) and scanning electron microscopy coupled with energy-dispersive spectroscopy (SEM-EDS). The precipitation rate increased proportionally with aging temperature and duration (1.96–2.46 g/h). Notably, aging at 60 °C for 12 h yielded HAp with high crystallinity (90.78%), nanoscale crystallites (128.89 nm), and a Ca/P ratio of 1.99, close to stoichiometric hydroxyapatite. These results demonstrate that controlled aging provides an effective pathway to engineer HAp with tailored crystallinity and composition, thereby enhancing its suitability for biomedical implant coatings and bone regeneration scaffolds.

Keywords: Hydroxyapatite, Wet chemical precipitation, Aging temperature and time, Crystallinity and Ca/P ratio, Nanostructured.

ABSTRACT

Paper ID: 149| Oral Presenter

Nonfluorinated Omniphobic Membrane for Seawater Desalination via Direct Contact Membrane Distillation

Authors: Rendy Muhamad Iqbal[a,1], Mohd Hafiz Dzarfan Othman[b,2], Mohd Akmali Mokhter[b,c,3], Deni Shidqi Khaerudini[d,4], Ahmad Fauzi Ismail[b,5], Hamzah Fansuri[e,6])

Afiliation:
[a]*Department of Chemistry, Faculty of Mathematics and Natural Sciences, Universitas Palangka Raya, Palangka Raya 73111, Indonesia*
[b]*Advanced Membrane Technology Research Centre (AMTEC), Faculty of Chemical and Energy Engineering, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia*
[c]*Department of Chemistry, Faculty of Science, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia*
[d]*Research Centre for Conversion and Conservation Energy, National Research and Innovation Agency (BRIN), South Tangerang, Indonesia*
[e]*Department of Chemistry, Faculty of Science and Data Analytics, Institut Teknologi Sepuluh Nopember, Surabaya 60111, Indonesia*

Abstract

Access to clean water is a global challenge, and membrane distillation (MD) has emerged as a promising technology for desalination due to its high separation efficiency and low energy demand. However, conventional hydrophobic membranes often suffer from wetting, fouling, and salt deposition. This study aims to develop omniphobic hollow fiber membranes with enhanced durability and performance for brine desalination. In the first phase, polyvinylidene fluoride (PVDF) membranes were modified using four saturated fatty acids such as lauric, myristic, palmitic, and stearic acids. Fatty acids with carbon chains up to 18 were chosen for their solubility in ethanol and compatibility with PVDF. Among them, the PVDF-stearic acid (P-AS) membrane showed the best performance, with a water flux of 18.4 L/m²·h and nearly 100% salt rejection. In the second phase, zinc oxide (ZnO) nanoparticles were deposited to form re-entrant structures using two methods: dip coating and electroless deposition. The dip-coated membrane with 3 wt% ZnO (PTZ3-AS) exhibited superior coating stability, a water contact angle of 127.2°, and omniphobicity against low-surface-tension liquids. The third phase evaluated long term performance using a 30,000 ppm NaCl solution containing humic acid for 30 hours. The PTZ3-AS membrane achieved a stable flux of 17.14 L/m²·h, which is 86.65% higher than unmodified PVDF, and maintained 99.95% salt rejection with minimal fouling and negligible zinc leaching (0.06 ppm). This work demonstrates a cost effective, environmentally friendly, and non-fluorinated approach for high-performance desalination membranes, reducing production costs by 43.07% compared to fluorinated coatings.

Keywords: omniphobic, nonfluorinated, membrane distillation, desalination.

ABSTRACT

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The Options of Forest Management Policy for Fire Prevention (A Study Case in Indonesia)[1]

Authors: Luthfi Fatah[2]

Afiliation:
[1] *This research was funded by Economy and Environment Program for South East Asia (EEPSEA)*
[2] *Lambung Mangkurat University, Indonesia*

Abstract

Fires when manageable and controllable will be profitable tools that help human being in dealing with their environment. However, when fires are uncontrollable or not managed it could be a potential threat to sustainability. The problems of fire and smoke haze keep coming back year by year. Suspected root cause of the problem is lack in controlling system. The current policy has some policy gaps that are categorized into rule and regulation, method and operational, skill and capacity, compliance and enforcement, and authority mismatch. To fill the gap this research helped to list some alternative policy options for controlling system to improve achievement in forest fire prevention and mitigation. The research assessed the options based on criteria to eliminate weaknesses in the current policy. Methods that were used include literature review, stakeholder consultation, economic valuation, workshop, and focus group discussion. The research contributes to providing information on alternative policy option in forest fire management especially for controlling system that can improve the situation in dealing with forest fire problems. The study result shows that the recommended alternative policy option for improving the effort of land and forest fire prevention and mitigation as well as to fill the gaps of the existing policy options are: improving policy implementation in the field (that requires additional 65% on the top of the existing budget), implementing reward and punishment system (50%), and establishing institutions to do monitoring and recording of stakeholder's obedience and violation (70%). Policy implication of this research result is that the government of Indonesia may need to consolidate internally in order to distribute the same commitment among the government as a whole to address the land and forest fire problem. In particular the central government and the local government down to the local agencies who deal directly with the fire problems need to share the same commitments and understanding that an appropriate response to initial source of land and forest fire needs a timely implementation. That is the first step. The second step is then the government needs to decide which one of the options will be more appropriate to be implemented first. Another option is that the government will implement them all at once, and will mobilize resource to enable this.

ABSTRACT

Paper ID: 157| Oral Presenter

Extraction Of Galactomannan from Palm Kernel Cake

Authors: Aisyah Aisyah[1, b)], Emy Ermalina Rahmah [1, c)], and Awali Sir Kautsar Harivram[1, a)]

Afiliation:
[1]Department of Chemical Engineering, Lambung Mangkurat University, Jl. A. Yani Km. 36, Banjarbaru, Indonesia

Abstract

Galactomannan is a polysaccharide composed of D-galactose and D-mannose. Itis a valuable biopolymer with potential applications in the food and pharmaceutical industries. This study aims to evaluate the effect of solvent type (4% NaOH and water) and precipitating agent (96% ethanol and 99% methanol) on the extraction of galactomannan from palm kernel cake. The process begins with delignification using 4% NaOH, followed by varying the solvent in the extraction process at 50°C with stirring at 400 rpm for 3 hours. The filtrate is then added to a precipitating agent and allowed to stand for 24 hours to form a precipitate, which is subsequently dried for yield calculation. The highest yield was obtained using 4% NaOH (3.47%) compared to water (2.38%), while 96% ethanol proved to be a more effective precipitating agent (3.47%) than 99% methanol (2.35%). FT-IR analysis clearly confirmed the presence of characteristic galactomannan functional groups, including C–O from glycosidic bonds with α and β conformers, O–H, C–H, and aliphatic –C–H groups. SEM-EDX mapping results showed that carbon (C) and oxygen (O) were the dominant elements in the extracted polysaccharide. These findings indicate that the combination of extraction using 4% NaOH and precipitation with 96% ethanol is an efficient method to obtain galactomannan from palm kernel cake, confirming its potential as a sustainable source of functional polysaccharides.

Keywords: palm kernel cake, extraction, galactomannan, sustainable polysaccharide.

ABSTRACT

Paper ID: 158| Oral Presenter

A Floristic Study of the Curiak Island Mangrove Ecosystem: Preliminary Inventory

Authors: Agustina Ambar Pertiwi[1*], Amalia Rezeki[2], Zainudin[3], Ferry F. Hoesain[4], Syarifuddin Kadir[5], Krisdianto[6], Anni Nurliani[7]

Afiliation:
[1]Environmental Science Doctoral Program, Postgraduate, Lambung Mangkurat University, Banjarmasin, 70123, Indonesia
[2]Biology Education Department, FKIP Lambung Mangkurat University, Banjarmasin, 70123, Indonesia
[3,4]Sahabat Bekantan Indonesia, Jl. Sultan Adam, Banjarmasin, 70123, Indonesia
[5]Forestry Department, Faculty of Forestry, Lambung Mangkurat University, Banjarbaru, 70714, Indonesia
[6,7]Biology Department, FMIPA Lambung Mangkurat University, Banjarbaru, 70714, Indonesia

Abstract

The mangrove ecosystem of Curiak Island is a natural habitat of proboscis monkeys (Nasalis larvatus) outside of the conservation area. The mangrove ecosystem of Curiak Island was formed from the sedimentation of the Barito river, South Kalimantan Province. The geomorphological conditions of Curiak Island, which is located in the Barito river delta, make this ecosystem ecologically influenced by river tides, salinity, nutrient content in sediment, and other environmental factors. This condition affects the diversity of plants in the ecosystem. This study aims to identify plant species in the mangrove ecosystem of Curiak Island. This research is a field research with a plot method to collect data. The study population is all plants found in the mangrove ecosystem of Curiak Island. The research sample is a plant found in a sample plot measuring 10x10m as many as 35 plots consisting of 27 plots of the edge zone and 8 plots of the middle zone. The distance between the sample plots is 10 m. The research data was analyzed descriptively and exploratively. The results of the study found 27 species of plants classified into 18 orders and 25 families, namely Premna serratifolia, Barringtonia asiatica, Hibiscus tiliaceus, Ficus microcarpa, Mimosa diplotricha, Sonneratia caseolaris, Ludwigia octovalvis, Melastoma malabathricum, Terminalia catappa, Gluta renghas, Dysoxylum parasiticum, Loranthus sp., Cayratia trifolia, Arcangelisia flava, Acanthus ilicifolius, Pistia stratiotes, Calocasia esculenta, Nypa fructicans, Donax canniformis, Cyperus sp., Scirpus sp., Eichornia crassipes, Crinum asiaticum, Hanguana malayana, Acrostichum aureum, Stenochlaena palustris, and Salvinia natans.

Keywords: proboscis monkey, ecosystem, inventory, diversity, mangroves.

ABSTRACT

Paper ID: 159| Oral Presenter

Computational Discovery and Evaluation of Anti-Salmonella Candidates via Scaffold Hopping of 6-Methylmercaptopurine from Cinnamomum sintoc Oil

Authors: Erwin Prasetya Toepak[1*], Johanna Maria Rotinsulu[2], Siti Unvaresi Misonia Beladona[1], Meiyanti Ratna Kumala Sari[1], Muhammad Irmawan[2]

Afiliation:
[1]Chemistry Department, Universitas Palangka Raya, Kampus UPR Tunjung Nyaho, Jl. Yos Sudarso, Palangka Raya 73111, Indonesia
[2]Forestry Department, Universitas Palangka Raya, Kampus UPR Tunjung Nyaho, Jl. Yos Sudarso, Palangka Raya 73111, Indonesia

Abstract

The 6-Methylmercaptopurine (6-MMP) is a thiopurine scaffold with potential antibacterial activity. The compound originates from the essential oil of Cinnamomum sintoc (Lauraceae), whose bark extracts have shown moderate antibacterial effects and whose oil contains eugenol as a major constituent, providing justification for exploring 6-MMP derivatives. In this study, we computationally generated seven new analogs of 6-methylmercaptopurine as candidate antibacterial compounds. Each analog was docked into the Salmonella typhi target protein (PDB 1I7B) using AutoDock Vina to estimate binding energies. The resulting docking scores were compared with those of the parent 6-methylmercaptopurine and a standard antibiotic reference. All seven analogs showed more negative docking energies to the target than 6-methylmercaptopurine or the reference drug. The top analog had the lowest energy, indicating the strongest predicted binding. These findings suggest the new scaffolds bind more effectively than the original or reference compounds. The enhanced docking scores underscore the promise of the scaffold-hopped leads. Previous scaffold-hopping studies have yielded compounds exceeding the potency of some marketed antibiotics. These findings highlight scaffold hopping's value in expanding antibiotic chemical space. The seven analogs are promising leads warranting further investigation as anti-Salmonella agents.

Keywords: 6-methylmercaptopurine; scaffold hopping; molecular docking; Salmonella typhi; antibacterial discovery.

ABSTRACT

Paper ID: 167 | Oral Presenter

Bridging Upstream–Downstream Ecology: Climate Change Education and Mangrove Conservation in Banua Anam through Systematic Literature Review

Authors: Rizal Fahmi[1], Akhmad Saufie[2], Dhella Yunita[3], Syakrani[4]

Afiliation:
[1]Fakultas Ilmu Sosial dan Ilmu Politik, rfahmi2233@gmail.com
[2]Fakultas Ilmu Sosial dan Ilmu Politik, akhmadsaufie317@gmail.com
[3]Fakultas Ilmu Sosial dan Ilmu Politik, dhelladhell05@gmail.com
[4]Fakultas Ilmu Sosial dan Ilmu Politik, syakrani@ulm.ac.id

Abstract

Mangroves play an important role in climate change mitigation through blue carbon storage, coastal protection, and providing habitats for biodiversity, but these ecosystems face serious pressure from land conversion, sedimentation, pollution, and low public awareness. This study focuses on the upstream-downstream gap in mangrove conservation in South Kalimantan, specifically how activities in the upstream watershed trigger damage in coastal areas, exacerbated by a lack of social integration, knowledge, and governance. To address these issues, this study formulates an integrated climate education framework based on three pillars, namely digital visual media to visualize cross-regional impacts, contextual teaching and learning (CTL) rooted in local experiences, and public campaigns that foster a narrative of shared responsibility. The research location is in the Banua Anam region (Hulu Sungai Utara, Hulu Sungai Selatan, Hulu Sungai Tengah, Tapin, Tabalong, and Balangan districts), which is an important point of interaction between upstream and downstream ecosystems and is vulnerable to the impacts of climate change. The research method uses a Systematic Literature Review (SLR) approach to comprehensively examine various previous studies, thereby obtaining an in-depth analysis of the relationship between mangroves, climate change, and environmental education. Thus, this study is expected to not only enrich academic knowledge, but also produce a sustainable education model that can bridge the ecological and socio-cultural gap between upstream and downstream areas in order to strengthen the environmental and social resilience of the Banua Anam community.

Keywords: Mangrove, Climate Change, Banua Anam, Upstream-Downstream, Coastal Areas.

ABSTRACT

Paper ID: 173 | Oral Presenter

Harnessing Light and Catalysts for Sustainable Fuel from Fatty Acid Waste

Authors: Wibawa Hendra Saputera[1, 2, 3, a)], Aprinanda Nafla Aulia Hanifah[1, b)], Siska Mutiara[1, c)], Sabila Rahmania[1, d)], Astri Nur Istyamia[4, e)], Carolus Borromeus Rasrendra[1, 2, f)], and Dwiwahju Sasongko[1, 3, g)]

Afiliation:
[1]*Department of Chemical Engineering, Institut Teknologi Bandung, Ganesha Street No. 10, Bandung, 40132, Indonesia*
[2]*Center for Catalysis and Reaction Engineering Institut Teknologi Bandung, Indonesia*
[3]*Research Center for New and Renewable Energy Institut Teknologi Bandung, Indonesia*
[4]*Department of Bioenergy Engineering and Chemurgy, Institut Teknologi Bandung, Kabupaten Sumedang, 45363, Indonesia*

Abstract

Photocatalytic decarboxylation of fatty acids offers a sustainable route to produce biohydrocarbons, particularly alkanes in the diesel range. This method operates under ambient conditions and utilizes fatty acid-rich by-products from the oil, fat, and pulp industries, presenting a greener alternative to conventional thermocatalysis. In this study, titanium dioxide (TiO_2)-based photocatalysts were synthesized and doped with platinum (Pt) to enhance activity under visible light. The catalysts were characterized using XRD, UV-Vis DRS, nitrogen adsorption–desorption isotherms, SEM, and HRTEM to determine their structural, morphological, and optical properties. Based on the characterization results, both pristine TiO_2 and Pt/TiO_2 were predominantly composed of the anatase phase. The presence of Pt was confirmed by noticeable changes in the band gap, surface area, particle morphology, and surface texture, as revealed by UV–Vis DRS, BET, SEM, and TEM analyses, respectively. The photocatalytic activity tests of TiO_2 and Pt/TiO_2, analyzed using Gas Chromatography–Mass Spectrometry (GC–MS), showed that the main product obtained was n-heptadecane, with n-pentadecane detected as a secondary product derived from stearic acid, indicating a successful decarboxylation of the fatty acid. The incorporation of Pt led to an increase in the yield of both heptadecane and pentadecane under illumination with Xenon lamps at both 300 W and 500 W. Furthermore, increasing the light intensity from 300 W to 500 W also enhanced the overall yields of n heptadecane and n-pentadecane.

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Finally, the committee hopes that KPRC-ICChEAS 2025 may provide meaningful academic impact, strengthen research collaboration, and contribute to the advancement of knowledge, innovation, and sustainable development. May all support and kindness be rewarded with abundant blessings from Allah SWT.

Banjarmasin, October 2025

The Committee of KPRC-ICChEAS 2025

CONTACT

https://iccheas2025.conference.ulm.ac.id

kuub-iccheas@ulm.ac.id