LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : PROSIDING

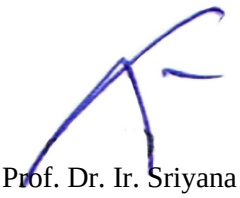
Judul Karya Ilmiah (Artikel)	:	Increasing groundwater replenishment through environmentally friendly parking lot pavement model		
Jumlah Penulis	:	5 orang (**D A Wulandari,** Suripin, D Ulfiana, C W Hermawan, E Grimaldi)		
Status Pengusul	:	penulis ke-1 dan korespondensi		
Identitas Prosiding	:	a. Judul Prosiding	:	IOP Conference Series: Earth and Environmental Science, The 10th Engineering International Conference, Vol 969
		b. ISBN/ ISSN	:	1755-1315 (Online) ; 1755-1307 (Print)
		c. Tahun Terbit / Tempat Pelaksanaan	:	Semarang, 23 September 2021
		d. Penerbit	:	IOP Publishing Ltd
		e. Alamat Repository PT / Web Prosiding	:	https://iopscience.iop.org/article/10.1088/1755-1315/969/1/012021
		f. Terindex	:	SCOPUS (From 2010 to Present)

Kategori Publikasi Artikel (beri ✓pada kategori yang tepat) :
[√] Prosiding Forum Ilmiah Internasional
[ ] Prosiding Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

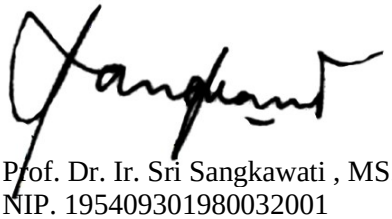
Komponen Yang Dinilai	Nilai Reviewer		Nilai Rata-rata /Nilai Akhir yang diperoleh
	Reviewer I	Reviewer II	
a. Kelengkapan unsur isi artikel (10%)	2,00	3,00	2,50
b. Ruang lingkup dan kedalaman pembahasan (30%)	7,00	7,50	7,25
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	8,00	7,00	7,50
d. Kelengkapan unsur dan kualitas penerbit (30%)	8,00	8,00	8,00
Total (100%)	**25,00**	**25,50**	**25,25**
Nilai pengusul = 60% x 25,25 = 15,15	**15,00**	**15,30**	**15,15**

Reviewer I



Prof. Dr. Ir. Sriyana M.S.
NIP. 196006021986021001
Unit kerja : Departemen Teknik Sipil FT UNDIP

Reviewer II



Prof. Dr. Ir. Sri Sangkawati , MS.
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LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
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Kategori Publikasi Artikel (beri ✓pada kategori yang tepat) : [√] Prosiding Forum Ilmiah Internasional
[ ] Prosiding Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Prosiding		Nilai Akhir Yang Diperoleh
	Internasional [30]	Nasional [ ]	
a. Kelengkapan unsur isi artikel (10%)	3		2
b. Ruang lingkup dan kedalaman pembahasan (30%)	9		7
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9		8
d. Kelengkapan unsur dan kualitas terbitan/artikel (30%)	9		8
Total (100%)	**30.00**		**25**
Nilai Pengusul = 60% x 25 = 15			

Catatan Penilaian artikel oleh Reviewer :

1. **<u>Kesesuaian dan kelengkapan unsur isi artikel :</u>**
   Unsur-unsur isi artikel dalam jurnal tersebut sudah sesuai dan telah dipersiapkan dengan baik dan lengkap. Unsur-unsur tersebut terdiri dari Judul, abstrak, pendahuluan, bahan dan metode, hasil dan pembahasan, kesimpulan, daftar pustaka, dan ucapan terima kasih dimana penulis sebagai penulis pertama dan korespondensi.
2. **<u>Ruang lingkup dan kedalaman pembahasan:</u>**
   Ruang lingkup dalam artikel adalah untuk mengembangkan sistem perkerasan lahan parkir yang ramah lingkungan dan dapat menambah pengisian air tanah dalam berbagai kondisi tanah dasar. Kedalaman pembahasan masih kurang begitu jelas terkait dengan penambah pengisian air tanah terhadap tanah dasar.
3. **<u>Kecukupan dan kemutakhiran data/informasi dan metodologi:</u>**
   Ruang lingkup kajian dideskripsikan dengan lengkap berdasarkan data dan informasi terbaru. Daftar pustaka yang digunakan sebanyak 8 pustaka terbitan 10 tahun terakhir dari 11 pustaka. Secara umum kemutakhiran data dan metodologi yang digunakan relevan dan sesuai dengan prosedur penelitian.
4. **<u>Kelengkapan unsur dan kualitas terbitan:</u>**
   Artikel ini termuat dalam Prosiding IOP Conference Series: Earth and Environmental Science, The 10th Engineering International Conference, Vol, yang diterbitkan oleh IOP Publishing Ltd yang terindeks scopus serta dapat dapat diakses secara online. Hasil uji indikasi plagiasi dengan similarity index turnitin yaitu 10 % (karya original).

Semarang, Maret 2022
Reviewer 1

Prof. Dr. Ir. Sriyana M.S.
NIP. 196006021986021001
Unit Kerja : Departemen Teknik Sipil FT UNDIP

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
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[ ] Prosiding Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Prosiding		Nilai Akhir Yang Diperoleh
	Internasional [ ]	Nasional [30]	
a. Kelengkapan unsur isi artikel (10%)		3	3
b. Ruang lingkup dan kedalaman pembahasan (30%)		9	7,5
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)		9	7
d. Kelengkapan unsur dan kualitas terbitan/artikel (30%)		9	8
Total (100%)		**30.00**	**25,5**
Nilai Pengusul = 60% x 25,5 = 15,3			

Catatan Penilaian artikel oleh Reviewer :

1. **<u>Kesesuaian dan kelengkapan unsur isi artikel :</u>**
   Unsur artikel dalam jurnal lengkap sesuai dengan *instruction for Author* terdiri dari Title, Abstract, Introduction, Material and Methods, Result and Discussion, Conclusion, Reference. Judul sesuai dengan isi artikel. Sebagai penulis pertama.
2. **<u>Ruang lingkup dan kedalaman pembahasan:</u>**
   Lingkup studi adalah uji permeabilitas pada struktur perkerasan tempat parkir menggunakan *paving block*. Hasil uji model ditampilkan dalam gambar cukup jelas, namun tidak ada pembahasan yang berarti.
3. **<u>Kecukupan dan kemutakhiran data/informasi dan metodologi:</u>**
   Rujukan yang digunakan sebelas, dengan rujukan primer penerbitan lima tahun terakhir sekitar 27%. Metode yang digunakan adalah uji fisik di laboratorium dengan deskripsi operasional pemodelan kurang detail.
4. **<u>Kelengkapan unsur dan kualitas terbitan:</u>**
   Artikel diterbitkan dalam prosiding IOP Conference Series. Lay out artikel dalam terbitan baik, namun masih ada istilah dalam bahasa indonesia. Turniti similarity index 10%.

Semarang, 6 April 2022
Reviewer 2

6 April 2022

Prof. Dr. Ir. Sri Sangkawati , MS.
NIP. 195409301980032001
Unit Kerja : Departemen Teknik Sipil FT UNDIP

CERTIFICATE OF PARTICIPATION

Awarded to

DYAH ARI WULANDARI

As

Presenter

Paper Title

INCREASING GROUNDWATER REPLENISHMENT THROUGH ENVIRONMENTALLY FRIENDLY PARKING LOT PAVEMENT MODEL

The 10th Engineering International Conference 2021

Semarang, Indonesia, September 23rd 2021

Dean of Engineering Faculty
Universitas Negeri Semarang

Dr. Nur Qudus, M.T., IPM.

The 10th EIC Chairman

Dr. Prima Astuti Handayani, S. T., M. T.

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Increasing groundwater replenishment through environmentally friendly parking lot pavement model

Wulandari D.A. , Suripin, Ulfiana D., Hermawan C.W., Grimaldi E.

Save all to author list

[a] Civil Engineering Department, Engineering Faculty, Diponegoro University, Semarang, Indonesia

Document type
Conference Paper • *Bronze Open Access*

Source type
Conference Proceedings

ISSN
17551307

DOI
10.1088/1755-1315/969/1/012021

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Abstract

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Abstract

Paving blocks are basically permeable pavements, which can reduce surface runoff by infiltrate rainwater into the ground. So that the installation of paving blocks on parking lots has an environmental function for filling groundwater. However, what is happening in the field today is that paving blocks behave like an impermeable layer. When it rains, it cannot absorb water or only absorbs a little water so that inundations occur. This can be caused by, among other things, the installation of paving blocks or the improper pavement structure. Therefore, it is necessary to develop a model of the parking lot pavement structure that is environmentally friendly, while contributing to groundwater filling, and reducing the surface runoff. The research was conducted by making a physical model of the permeability test. Parking lot pavement structure with arrangement permeable paving block, bedding layer and graded based layer will be placed on a test kit equipped with a control valve. With the system of partly filtration, it will be possible to know the amount of discharge absorbed by the model. So that the parking lot pavement structure

THE 10TH ENGINEERING INTERNATIONAL CONFERENCE

Exploring The Innovation of Green-advanced Research in Applied Sciences, Engineering, and Technologies

CONFERENCE E-BOOKLET

Faculty of Engineering
Universitas Negeri Semarang
2021

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WELCOMING SPEECH

Dear colleagues,

Praises all to Allah for His blessing and mercy that allows us to be here today, 23rd September 2021 attending the Engineering International Conference (EIC) 2021. On behalf of committee, I am delighted to welcome all the participants, distinguished delegates, the experts and academics, from around the world to the 10th EIC this year.

The 10th EIC 2021 organized by Faculty of Engineering Universitas Negeri Semarang (UNNES) is conducted to support conservation and international reputation vision. Similar with our previous conference of EIC 2020, EIC 2021 will be held online via webinar due to the impacts of the Coronavirus Disease (COVID-19) around the world. 110 participants from Qatar, Malaysia, Taiwan, Thailand, and Indonesia are joined in EIC 2021.

As an annual conference in engineering, EIC provides a highly competitive forum for informing and reporting the latest developments of concept and application of green technology. The parallel sessions of the conference can be the place for presenters from the engineering areas to share their research results, exchange new ideas, information, and application related to the theory, design, development, implementation, testing or evaluation in the areas of green technology. The concepts of green technologies, can facilitate the goals of keeping the environment intact and improving it for civilization to survive.

This conference focuses on the goals of green technologies, which are becoming increasingly important for ensuring sustainability, provides a different perspective of green technology in the sectors of energy, materials, production, IT and control, building and construction, as well as waste management and transportation. This conference is expected to bridge the gap between the scientific community and policymakers. The accepted and presented paper after peer reviewed will be published in IOP Conference Series: Earth and Environmental Science (Scopus indexed), Journal of Advanced Research in Fluid Mechanics and Thermal Sciences (Scopus indexed), ASEAN Journal of Chemical Engineering (Scopus indexed), Jurnal Bahan Alam Terbarukan (SINTA 2 indexed), Jurnal Teknik Elektro (SINTA 2 indexed), and ISSN International Conference Proceeding.

I would like to thank to the dean and vice dean of faculty of engineering, the keynote speakers, reviewers, and organizing committee for their hard work.

I also would like to express our gratitude to all publishers, our partners from Faculty of Engineering, Mahasarakham University, sponsors and individuals who have contributed to the events and success of this conference. Finally, welcome to EIC e-conference 2021 and we wish you a fruitful conference.

Warm regards,

Dr. Prima Astuti Handayani, S.T., M.T.

Chair of EIC 2021

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Mechanical Engineering Department
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CONFERENCE SCHEDULE

TIME*	SCHEDULE
08.00 – 08.25	Opening
08.25 – 08.35	Opening Speech by EIC 2021 Chairman **Dr. Prima Astuti Handayani**
08.35 – 08.45	Speech and opening by UNNES Rector **Prof. Dr. Fathur Rokhman, M.Hum.**
08.45 – 09.00	Photo session and announcement.
09.00 – 09.30	**KEYNOTE SPEECH SESSION 1** **Moderator:** Muhammad Faizal Ardhiansyah Arifin, S.T., M.T., Ph.D. **Keynote 1:** **Assoc Prof. ENOMOTO Hiroshi** Faculty of Mechanical Engineering, Institute of Science and Engineering, Kanazawa University
09.30 – 10.00	**Keynote 2:** **Prof. Shu-Shun Liu, Ph.D.** National Yunlin University of Science and Technology
10.00 – 10.30	Question and answer session for keynote speech session 1
10.30 – 11.00	**KEYNOTE SPEECH SESSION 2** **Moderator:** Dr. Widi Astuti, S.T., M.T. **Keynote 1:** **Dr. Junaidah Jai** School of Chemical Engineering, College of Engineering, Universiti Tekologi MARA
11.00 – 11.30	**Keynote 2:** **Prof. Dr. Wara Dyah Pita Rengga, S.T., M.T.** Department of Chemical Engineering, Faculty of Engineering, Universitas Negeri Semarang
11.30 – 12.00	Question and answer session for keynote speech session 2
12.00 – 13.00	Break
13.00 – 16.00	Parallel Session
16.00 – 16.30	Closing and announcement

Note: * Western Indonesian Time (WIB), UTC +7 (Jakarta Time)

Time	ID	Title
		EFLITA YOHANA, MOHAMAD SAID KARTONO TONY SURYO UTOMO, KHOIRI ROZI, ILHAM MILE AL'AZIZ, ALDIAN GHANI RAHMAN, and DIMAZ AJI LAKSONO
15.15 - 15.30	EIC21B020	**DESIGN AND PRODUCTION OF MULTIFUNCTIONAL FOOD OVEN WITH ENERGY-SAVING GAS FUEL** WIRAWAN SUMBODO, KRISWANTO, ANDRI SETIAWAN, JOKO PAMIYANTO, DANANG SUBARKAH HADIKAWURYAN, RAHMAT DONI WIDODO, and JAMARI
15.30 - 15.45	EIC21B021	**PHYSICAL COMPARISON OF PARIJOTO FRUIT FROM HYDROPONIC FARMING WITH PARIJOTO FRUIT FROM NATURAL PLANTATIONS** M ANSORI, MEDDIATI FP, SUS WIDAYANI, KARNOWO, NOER HAYATI L, CHAERUNISSA DE, ANA MARATUL I, and L NATALIA
15.45 - 16.00	EIC21B022	**INCREASING GROUNDWATER REPLENISHMENT THROUGH ENVIRONMENTALLY FRIENDLY PARKING LOT PAVEMENT MODEL** DYAH ARI WULANDARI, SURIPIN, DESYTA ULFIANA, CANDRA WAHYU HERMAWAN, and EVAN GRIMALDI
16.00 - 16.15	EIC21B023	**SENSITIVITY ANALYSIS OF BIOETHANOL SIMULATION FROM MICROALGAE WITH PRESSURE SWING DISTILLATION PROCESS** BAYU TRIWIBOWO, RATNA DEWI KUSUMANINGTYAS, NADYA ALFA CAHAYA IMANI, MUHAMMAD SALMAN ALFARISI, ANWAR HASAN MUJADDID, ISNA RAHMATUL LAILI, and HANIIF PRASETIAWAN

ROOM 4 (R4)
Moderator: Andri Setiyawan, S.Pd., M.Pd.

Time	ID	Title
13.00 - 13.15	EIC21B024	**MODELING OF LIGHTING SYSTEM UTILIZING NATURAL AND ARTIFICIAL LIGHTING USING DIALUX** ARIMAZ HANGGA, ALIM MUANIFATIN NISA, MUCHLISIN APRILIYANTO, MOHAMMAD AFANDI, DEWANGGA PRATAMA,MUHAMMAD ABDUL AZIZ, ANGGIT WIJANARKO, and SUGENG WITRIANTO
13.15 - 13.30	EIC21B025	**PRELIMINARY DESIGN OF MINI OIL REFINERY PLANT** RENANTO HANDOGO, FERY PRASETYO, SANTI PUSPITA SANJAYA, and RENDRA PANCA ANUGRAHA
13.30 - 13.45	EIC21B027	**PVSYST 7.1-BASED SME SOLAR POWER PLANT DESIGN SYSTEM AS AN ALTERNATIVE SOURCE OF ELECTRICAL ENERGY IN REMOTE AREAS WITH NEW AND RENEWABLE ENERGY** JAKA WINDARTA, SUSATYO HANDOKO, TEJO SUKMADI, KHILMI NAFADINANTO, SUNAN MUQTASIDA, and CANDRA HALIM
13.45 - 14.00	EIC21B028	**ZEOLITE CATALYTIC PYROLYSIS OF WASTE TYRE INTO FUEL IN GASOLINE HYDROCARBON RANGE** SUHARTONO, WINA SEPTIYANTI, MINING HARSANTI, SUHARTO, and FEERZET ACHMAD

KEYNOTE SPEAKERS PROFILE

Hiroshi Enomoto (Ph. D. in Engineering)

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Associate Professor
Faculty of Mechanical Engineering, Institute of Science and Engineering
Research center for Sustainable Energy Technology (RSET)
Kanazawa University
e-mail: eno@se.kanazawa-u.ac.jp
Phone: +81-76-234-4730 (direct)

Formal education

- Ph. D. in Aeronautics and Astronautics, The University of Tokyo, Tokyo/Japan, 1996-1998
- M. A. in Aeronautics and Astronautics, The University of Tokyo, Tokyo/Japan, 1994-1996

Work experience

- Assoc. Professor in Kanazawa University, Ishikawa/Japan, 2001-present
- Assistant Professor in Osaka Prefecture University, Osaka/Japan, 1999-2001
- Research fellowship for Young Scientist, Japan Society for the Promotion of Science, 1997-2001

Place and date of birth
Osaka, January 27th, 1970

Nationality
Japanese

Achievement

- Minister Prize of Economic, Trade and Industry, 2005
- FISITA (International Federation of Automotive Engineering Societies) Award, 2005
- Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, 2007
- Young Researcher Encouragement Award, Combustion Society of Japan, 2007

Dr. Shu-Shun Liu

Dr. Shu-Shun Liu received the B.S. degree in civil engineering from National Taiwan University, Taiwan, the M.S. degree in structural engineering from Stanford University, USA, and the Ph.D. degree in construction management from Purdue University, USA. He is currently an Associate Professor with the Department of Civil and Construction Engineering, National Yunlin University of Science and Technology, Taiwan. He is also the Director of Smart Construction Management Consulting Center at YunTech. Prior to his academic career, Dr. Liu worked in both construction and IT industries, as Construction Engineer at Taiwan Formosa Group, Taiwan, and Senior IT Analyst at Oracle Corp., USA. Since 2014, Dr. Liu served as Advisory Consultant and provided customized construction IT services to several construction firms in Taiwan. His research interests include construction IT technology, project scheduling optimization, optimization applications to construction management. He has published over 70 articles in high quality journals, and conferences. His work published in leading SCI/SSCI journals include Automation in Construction, Journal of Construction Engineering and Management, ASCE, Applied Science, and Sustainability.

Dr. Junaidah Jai

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junejai67@yahoo.com
junaidahjai@gmail.com
Phone (Office): 5543 6531/6306
Mobile phone : 013 3726324

Recent Research:

1. Diffusion characteristics of essential oil from encapsulated citrus hystrix essential oil.
2. Biopulping of banana stem using papaya enzymatic extract for pulp and paper.
3. Surface Coating Research Group.
4. Encapsulation of turmeric oil as antimicrobial agent for food coating.
5. Turmeric oil incorporated edible film for food packaging.
6. Molecular interactions and antimicrobial activity of edible chitosan-tapioca starch coatings enriched with curcuma longa.

Publication:

Book / Book chapter

1. Junaidah Jai, Fracture behaviour of alumina reinforced metal matrix composites: Different volume fraction of alumina reinforcement metal matrix composites, VDM Verlag Dr. Müller, German, (2009). ISBN-10: 3836497085 ISBN-13: 978-3836497084
2. Junaidah Jai, Palm oil as Corrosion Inhibitor for Aluminium Car Radiator-Chapter 17, Intech, Croatia, (2014). ISBN: 978-953-51-1223-5

Journal

1. Aqila Zulaikha Nazreen, Junaidah Jai, Sherif Abdulbari Ali, Norasmah Mohamed Manshor, Moisture Adsorption Isotherm Model for Edible Food Film Packaging – A Review, Scientific Research Journal, 17, 2(2020), 221-245.
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Extractive Distillation of Ethanol/Water with 1-Butyl-3-Methylimidazolium Bromide Ionic Liquid as a Separating Agent: Process Simulation

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Abstract. The purification of ethanol has become a recent great interest because ethanol can be used as renewable energy, solvents in many industries, and for medicinal purposes. The separation of ethanol from water is challenging because the azeotropic point has appeared in this binary mixture. The extractive distillation technology is one of the most interesting methods to separate ethanol from water due to the competitiveness of its energy consumption and capital investment costs. Ionic liquid such as 1-butyl-3-methylimidazolium bromide [BMIM] [Br], which is categorized as green solvent, produces a significant salting-out effect in the ethanol-water system. This makes ionic liquid become a promising solvent in ethanol-water separation. In this study, the extractive distillation of ethanol-water system with 1-butyl-3-methylimidazolium bromide as a solvent was simulated. The simulation and sensitivity analysis were performed on Aspen Plus Process Simulator to obtain the optimum configuration. The NRTL thermodynamic model was used in this study. The effects of the number of stages (NS), binary feed stage (BFS), entrainer feed stage (EFS), and reflux ratio (RR) to the ethanol concentration with minimum energy requirements were studied. The most optimum configuration to produce a high concentration of ethanol with less energy are NS 28, BFS 22, EFS 4, and RR 1.5.

CFD Analysis of Damping Characteristics of a Hydraulic Damper through Throttling Velocity Variation

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Abstract. Shock absorbers or hydraulic dampers are a power dissipating device and fluid flow is governed through predefined passages. This fluid flow passages are responsible for variation in the damping or hydraulic characteristics in terms of damping force with respect to velocity. The piston inside the damper has a various orifice or piston valves that cause different flow losses. A Computational Fluid Dynamics (CFD) method is used to validate a previous study and investigate a modified model. The previous study has shown the numerical and experimental damping characteristics of a rear side two-wheeler automobile mono tube damper for different number of orifices in the piston which are two, six and ten orifices opening. CFD analysis is carried out for different number of orifices in the piston to validate the damping characteristics of a shock absorber. The throttling velocities are changing. A total of 48 simulations are done, simulations are compared with the previous numerical and experimental results and have shown agreement. A modified model is proposed and it is damping characteristics are studied.

The Effect of Hydroxyapatite Concentration on the Mechanical Properties and Degradation Rate of Biocomposite for Biomedical Applications

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Abstract. Biocomposite is a material that have potential to heal injured bones and teeth due to their biocompatible, non-toxic, non-inflammation, and bioactive properties which can prevent infections that occurs frequently during surgical processes. Biocomposites made of PLA, PCL, and HA from bovine bone as a substitute for metal materials in medical applications have been widely studied. However, there are limited studies on the biocomposites made of PLA, PCL, and HA from green mussel shells. Therefore, this study aims to produce biocomposites from Polylactic Acid (PLA), Polycaprolactone (PCL), and Hydroxyapatite (HA) from green mussel shells and to determine the effect of HA concentration on the mechanical properties and degradation rate of the resulting biocomposite. 80 ml of chloroform was used to dissolve 16 grams of a PLA/PCL mixture with a composition of 80% and 20%. After 30 minutes, the solution was agitated for 30 minutes with a magnetic stirrer at 50°C and 300 rpm. After obtaining a homogenous solution, hydroxyapatite was added in percentages of 5%, 10%, 15%, and 20% of the total weight of the PLA/PCL mixture. The resulting mixture is poured into a glass mold in accordance with ASTM D790. Three-point bending, density, and biodegradable test were performed to investigate the effect of HA content on the mechanical properties and degradation rate of the biocomposite. The results of this study indicate that the mechanical properties of the biocomposite improved with the HA concentration increases. However, the more HA content used, the faster the biocomposite degrades.

Design and Development of Temporary Immersion Bioreactor System Controlled by Microcontroller

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Abstract. This research aims to develop, design and construct a temporary immersion bioreactor (TIB) controlled by microcontroller. The designed TIB system can control the time for plant feeding and the carbon dioxide concentration via application which makes it convenient to the user for defining the operating times of the system. The constructed TIB consists of 2 sets of the plant tissue culture containers. The TIB system can define the feeding time up to 10 time periods per day and also can set the time to control carbon dioxide concentration up to 4 time periods per day. The system starts to feed the plants at the set times and stop working when reaching the set time periods for plant feeding. For the carbon dioxide concentration control, the system operates during the defined time periods to measure and adjust the carbon dioxide concentration following the set values. The test results of the feeding time control illustrated that the constructed TIB system could set the feeding times conveniently and quickly. Moreover, the system could properly work following the set time periods. For the test results of the carbon dioxide concentration control, it was found that the TIB could control the carbon dioxide concentration in the containers during the set operating time periods. It took about 7, 28, 30, 36 and 21 minutes after the system started working to adjust the carbon dioxide concentration in order to be at the set levels of <750, 1,500, 2,000, 2,500 and 3,000 ppm, respectively. The carbon dioxide concentration control system could properly work with error less than 10%.