LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	Effect of dealumination on the acidity of zeolite Y and the yield of glycerol mono stea (GMS)						
Jumlah Penulis	:	4 orang (Didi Dwi Angg Buchori)	oro, Herawati Oktavianty, Setia Budi Sasongko, Luqman					
Status Pengusul	:	penulis ke-3						
Identitas Jurnal Ilmiah		 a. Nama Jurnal b. Nomor ISSN c. Vol, No., Bln Thn d. Penerbit e. DOI artikel (jika ada) f. Alamat web jurnal 	 Chemosphere 0045-6535 Volume 257, October 2020, 127012 Elsevier Ltd. <u>https://doi.org/10.1016/j.chemosphere.2020.127012</u> <u>https://www.sciencedirect.com/science/article/pii/S00456535</u>0312054 					
		Alamat Artikel	main-1.pdf					
		g. Terindex	: Scopus, Q1					
Kategori Publikasi Jurnal IIn (beri √pada kategori yang te	niah pat)	: √ Jurnal Ilmia Jurnal Ilmia Jurnal Ilmia	h Internasional h Nasional Terakreditasi h Nasional Tidak Terakreditasi					

Hasil Penilaian Peer Review :

	Nilai R			
Komponen Yang Dinilai	Reviewer I	Reviewer II	Nilai Rata-rata	
a. Kelengkapan unsur isi jurnal (10%)	3,50	4,00	3,75	
b. Ruang lingkup dan kedalaman pembahasan (30%)	11,50	11,20	11,35	
 Kecukupan dan kemutahiran data/informasi dan metodologi (30%) 	11,50	11,20	11,35	
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	11,50	12,00	11,75	
Total = (100%)	38,00	38,40	38,20	
Nilai Pengusul = (40% x 38,20)/3 = 5,09				

Reviewer 2

Prof. Tutuk Djoko Kusworo, S.T., M.Eng., Ph.D. NIP. 197306211997021001 Unit Kerja : Dept. Teknik Kimia FT UNDIP Semarang, 10 Agustus 2020

Reviewer 1

Prof. Dr Ir. Budiyono, M.Si. NIP. 199602201991021001 Unit Ferja : Dept. Teknik Kimia FT UNDIP

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

Judul Jurnal Ilmiah (Artikel)	: Effect of dealumi (GMS)	nation on the acid	ity of zeolite Y ar	id the yield of gly	cerol mono stear	ate			
Jumlah Penulis Status Pengusul Identitas Jurnal Ilmiah Kategori Publikasi Jurnal Ilmia (beri √pada kategori yang tepa	 4 orang (Didi Dwi Anggoro, Herawati Oktavianty, Setia Budi Sasongko, Luqman Buchori) penulis ke-3 a. Nama Jurnal : Chemosphere b. Nomor ISSN : 0045-6535 c. Vol, No., Bln Thn : Volume) 257, October 2020, 127012 d. Penerbit : Elsevier Ltd e. DOI artikel (jika ada) : https://doi.org/10.1016/j.chemosphere.2020.127012 f. Alamat web jurnal : https://www.sciencedirect.com/science/article/pii/S004565352 d. Jurnal Ilmiah Internasional Jurnal Ilmiah Internasional Jurnal Ilmiah Nasional Terakreditasi 								
Hasil Penilaian Peer Review :	L Ju	nar rinnan Nasion	al I Idak Terakred	litasi					
Komponen Yang Dinila	Nilai M Internasional	laksimal Jurnal Nasional Terakreditasi	llmiah Nasional Tidak Terakreditasi	Nilai Akhir Yang Diperoleh					
a Kelengkanan unsur isi	iumal (100()				•				
b. Ruang lingkup dan ked	Jumai (10%)	4,00			3.5	1			
pembahasan (30%)	araman	12,00			11]			
c. Kecukupan dan kemuta	ahiran	12.00							
data/informasi dan met	odologi (30%)	,			11.5				
d. Kelengkapan unsur dan	n kualitas	12,00			11 /7	L			
1000000000000000000000000000000000000					", 5/ 3	\square			
Nilai Pengusul = (40% v 2	28,00 1/4 - = =	40,00			(38	ノ			
 Catatan Penilaian artikel oleh Reviewer: 1. <u>Kesesuaian dan kelengkapan unsur isi jur pal:</u> 4. Minul and the minute of the second and the many of the second and the second an									

Semarang, Juni 2020 Reviewer 19

•

Prof. Da Ir. Budiyono, MSi NIP. 190602201991021001 Unit Kerja : Dept. Teknik Kimia FT UNDIP

.

LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	Effect of dealumination on the acidity of zeolite Y and the yield of glycerol mono stearate (GMS)										
Jumlah Penulis	:	4 oras Bucho	ng (Didi ri)	i Dv	vi Anggo	ro, H	erawati	Oktavianty	, Setia	Budi	Sasongko), Luqman
Status Pengusul	:	penuli	s ke-3									
Identitas Jurnal Ilmiah	al Ilmiah : a. Nama Jurnal					: Chemosphere						
		b. N	omor IS	SN	: 0045-6535							
		c. V	ol, No., 1	Bln 🛾	Thn : Volume) 257, October 2020, 127012							
		d. P	enerbit			: E	ilsevier	Ltd				
		e. D	OI artike	el (jil	ka ada)	: <u>h</u>	ttps://do	oi.org/10.101	6/j.chei	mosphe	ere.2020.1	<u>27012</u>
		f. A	lamat we	eb ju	rnal	: <u>h</u>	ttps://wv	ww.sciencedire	ect.com/s	cience/	article/pii/S	<u> </u>
		A.1			i	<u>0</u>	312054		:	11 -2 0	50045652	20212054
		А	Alamat Artikel			: <u>n</u>	ups://uo	<u>c-pak.unuip.ac</u>	-30043033.	50045055520512054-		
		g. T	erindex			: <u>s</u>	copus.	<u></u>				
		8					,	X -				
Kategori Publikasi Jurnal Iln	1iah		: 🔽	Jun	nal Ilmiah	Inter	nasional	E				
(beri √pada kategori vang te	pat)			Jun	nal Ilmiah	Nasio	onal Tei	rakreditasi				
				Jun	nal Ilmiah	Nasio	onal Tid	lak Terakred	itasi			
						Nilai	Maksi	mal Jurnal I	llmiah			
							1	Nasional	Nas	ional		
Котролел				Interna	siona	l Tei	akreditasi	Tidak		INHA	Nilai Aknir	
Yang Din	ilai						-		Terak	redita	si p:-	ang
					4(Г		Dib	erolen
							1		L			
a. Kelengkapan unsur	isi j	urnal (1	0%)		4,00							4
b. Ruang lingkup dan kedalaman pembahasan (30%)				12,	00					1	1,2	
c. Kecukupan dan kemutahiran				12,00						1	1,2	
data/informasi dan metodologi (30%)												
d. Kelengkapan unsur dan kualitas			12,00							12		
terbitan/jurnal (30%	5)											
Total = (100%)				40,	00					3	8,4	
Nilai Pengusul = (40% :	ĸ	38,4)/3 =	-5,12								
Catatan Panilaian Artikal	Joh	Review	ver.]
a. Kelengkanan unsur isi a	rtik	el (10%	6) Artike	el ini	memiliki	บทรม	vang l	engkan (Abs	tract. In	troduci	tion. Meth	od.

- a. Kelengkapan unsur isi artikel (10%) Artikel ini memiliki unsur yang lengkap (Abstract, Introduction, Method, Results & Discussion, Conclusion, References). State of the art dan tujuan dinyatakan dengan jelas. Penulisan daftar pustaka dan *in-text citation* konsisten dan sesuai dengan petunjuk penulisan. Hasil cek plagiarisme dengan Turnitin menunjukkan kesamaan sebesar 5%. → (nilai = 10 %)
- b. Ruang lingkup dan kedalaman pembahasan (30%) Hasil penelitian dibahas dengan baik, Hal ini terlihat dari metode pembahasannya yang telah mengelaborate hasil yang didapatkan dengan beberapa peneliti terdahulu. Beberapa faktor yang berpengaruh juga dibahas dihubungkan dengan proses optimasi dengan menggunakan response surface methodology yang dikombinasikan dengan central composite design. Di samping itu pembahasan juga dilakukan secara berurutan pada faktor-faktor yang diteliti. → (nilai = 28 %)
- c. Kecukupan dan kemutakhiran data /informasi dan metodologi (30%) Referensi yang dicitasi dalam artikel ini ada 11, dengan 16 (82 %) diantaranya adalah baru (10 tahun terakhir). Hal ini menunjukan adanya kecukupan data yang digunakan untuk menunjang penulisan artikel ini. Metode penelitian yang berupa pengembangan model ditulis dengan ringkas dan jelas. → (nilai = 28 %)

d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)

Jurnal CHEMOSPHERE merupakan jurnal internasional bereputasi (Q1) dengan Penerbit Elsevier. Jurnal ini memiliki ISSN (0045-6535), url, scope, dan informasi terbitan yang jelas. Jurnal ini terindeks pada Scopus dengan SJR (2019) = 1,53. Editoril board terdiri dari pakar-pakar dari beberapa negara. Author Guideline dan mekanisme pengiriman artikel jelas. Penulisan di tiap artikel konsisten. Penulis berasal dari beberapa negara. Jadi semua unsur kualitas jurnal ini terpenuhi. \rightarrow (nilai = 30 %)

Semarang, Agustus 2020 Reviewer 2

•

Prof. Dr. Tutuk Djoko Kusworo, ST, M.Eng. NIP. 197306211997021001 Unit Kerja : Dept. Teknik Kimia FT UNDIP





Journals & Books

Q ⑦

Register

Sign in Brought to you by: Universitas Diponegoro

Selected articles from this journal and other medical research on Novel Coronavirus (2019-nCoV) and related viruses are now available for free on ScienceDirect - start exploring directly or visit the Elsevier Novel Coronavirus Information Center



Looking for an author or a specific volume/issue? Use advanced search

Articles

Articles in press Latest published Top cited Most popular Recently viewed by you

Review article
Full text acc Removal of gaseous pollutants by using 3DOM-based catalysts: A review Yuan-zhen Liu, ... Wei-guo Pan In Press, Journal Pre-proof, Available online 11 August 2020

😃 Download PDF

Research article
Full text access Organophosphate ester flame retardants have antiandrogenic potential and affect other endocrine related endpoints in vitro and in silico Anna Kjerstine Rosenmai, ... Anne Marie Vinggaard In Press, Journal Pre-proof, Available online 10 August 2020

😃 Download PDF

Research article
Full text access Air pollution and cause-specific mortality: a comparative study of urban and rural areas in China Shuang Zhao, ... Robert Beazley In Press, Journal Pre-proof, Available online 11 August 2020 😃 Download PDF

Research article
Full text access Stepwise treatment of undiluted raw piggery wastewater, using three microalgal species adapted to high ammonia Sang-Ah Lee, ... Chi-Yong Ahn In Press, Journal Pre-proof, Available online 10 August 2020 😃 Download PDF

Research article • Full text access Peroxidation and Photoperoxidation of Pantoprazole in Aqueous Solution Using Silver Molybdate as Catalyst Daniela G. Della Rocca, ... Regina F.P.M. Moreira In Press, Journal Pre-proof, Available online 11 August 2020 😃 Download PDF

Research article • Full text access Imidacloprid-Mediated Stress on non-Bt and Bt Cotton, Aphid and Ladybug Interaction: Approaches Based on Fluorescence, Dark Respiration and Plant Electrophysiology and Insect Behaviour Jéssica K.S. Pachú, ... Wesley A.C. Godoy In Press, Journal Pre-proof, Available online 10 August 2020

😃 Download PDF

Review article • Full text access Environmental Transformation of Graphene Oxide in the Aquatic Environment Yingcan Zhao, ... Wenchao Liao In Press, Journal Pre-proof, Available online 10 August 2020 😃 Download PDF

Research article Full text access Modeling the transport of CO2, N2, and their binary mixtures through highly permeable silicalite-1 membranes using Maxwell–Stefan equations Muhammad Tawalbeh, ... F. Handan Tezel In Press, Journal Pre-proof, Available online 10 August 2020 😃 Download PDF

> More articles in press

Article collections

The 9th International Symposium on Flame Retardants, Montreal, 2019 Edited by Magali Houde, Jonathan Verreault, Serge Moore 6 August 2020

Mercury and its Compounds in the Food Webs Edited by Jerzy Falandysz, Alwyn Fernandes, Ivan Širić 28 July 2020

Air pollution in developing countries Edited by Hongliang Zhang, Xinlei Ge, Sri Kota 19 July 2020

Bio-chemical process for air

pollution control Edited by Can Wang, Marc Deshusses, Christian Kennes, Jian Meng Chen 19 July 2020

> View all article collections > View all issues

About the journal

CHEMOSPHERE EDITORIAL BOARD

Co-Editors-in-Chief

lacob de Boer

VU University. Inst. for Environmental Studies (IVM). De Boelelaan 1087. 1081 HV. Amsterdam. Netherlands

Shane Snyder University of Arizona, 1133 E. James E. Rogers Way, Harshbarger 108. Tucson. 85721-0011. Arizona.

USA

Special Issue Editor

Derek Muir

Environment Canada, National Water Research Institute (NWRI), 867 Lakeshore Road, Burlington, L7R 4A6, Ontario, Canada

Associate Editors

Petra Krystek

Environmental Chemistry VU University, Institute for Environmental Studies (IVM) Amsterdam

James Lazorchak Toxicology and Risk Assessment National Exposure Research Laboratory. Cincinnati, Ohio, USA

Martine Leermakers Environmental Chemistry Vrije Universiteit Brussel (VUB), Bruxelles, Belgium

Frederic Leusch Toxicology and Risk Assessment Water Quality and Diagnostics Griffith University, Southport, Queensland, Australia

Yongmei Li Tongji University, Shanghai, China

Yu Liu Treatment and Remediation Nanyang Technological University, Singapore, Singapore

Tsair-Fuh Lin Treatment and Remediation National Cheng Kung University, Tainan, Taiwan, ROC

Grzegorz Lisak Treatment and remediation, Nanyang Technological University, Singapore, Singapore Lena Q. Ma

University of Florida, Kunming, United States

Keith Maruya Environmental Chemistry Southern California Coastal Water Research Project, Costa Mesa, California, USA

Editorial Board

J. Lu (China)

N. HanTran (Singapore) T. Harner (Canada) J. Hermens (Netherlands) **R. Hoogenboom** (Netherlands) G. Hua (USA) T. Iguchi (Japan) G. Imfeld (France) B. Jenssen (Norway) S. Jobling (UK) **R. Kallenborn** (Norway) S. Kaserzon (Australia) **J. Khim** (South Korea) **N. Kramer** (Netherlands) J. Kukkonen (Finland) M. Lamoree (Netherlands) **P.E.G. Leonards** (Netherlands) D. Lestan (Slovenia) H.-B Li (China) X. Li (Canada) Y. Li (China) H. Liang (China) **G. Lindström** (Sweden)

Z. Luo (China) L. Ma (China) J.E. McLain (U.S.A.) X.-Z. Meng (China) H.-B. Moon (South Korea) J. Müller (Australia) J. Niu (China) P. Noophan (Thailand) **Y.S. Ok** (South Korea) B. Pan (China) **G.G. Rimkus** (Germany) J. Rivera (Spain) **P. Roccaro** (Italy) **S. Safe** (U.S.A.) S.-I Sakai (Japan) S.G. Segura (USA) R. Sciarrillo (Italy) V.K. Sharma (USA) L. Shen (China) R. Sierra-Alvarez (U.S.A.) A. Stasinakis (Greece)

Adalberto Noyola

Treatment and Remediation Instituto de ingenieria UNAM Mexico DF. MEXICO

Patryk Oleszczuk Environmental Chemistry University of Maria Skłodowska-Curie in Lublin Lublin, Poland

Willie Peijnenburg Toxicology and Risk Assessment RIVM - National Institute for Public Health and the Environment, BA Bilthoven, The Netherlands

Myrto Petreas Environmental Chemistry California Environmental Protection Agency, Berkeley, California, USA

Andreas Sjödin Environmental Chemistry Centers for Disease Control and Prevention (CDC), Atlanta, Georgia, USA

David Volz **Environmental Chemistry** University of California at Riverside, Riverside, California, USA

Yeomin Yoon Environmental Chemistry University of South Carolina, Columbia, South Carolina, USA

Chang-Ping Yu Treatment and Remediation National Taiwan University, Taipei, Taiwan

Xiangru Zhang Treatment and Remediation Hong Kong University of Science and Technology, Department of Civil and Environmental Engineering, Hong Kong, China

> W. Tirler (Italy) J.P. Torres (Brazil) H.N. Tran (Taiwan) D.C.W. Tsang (Hong Kong) S. van Leeuwen (Netherlands) S. van Leeuwen (USA) K. Vorkamp (Denmark) H. Wang (China) J. Wang (North Carolina) J. Wang (USA) **Q. Wang** (Australia) Z. Wang (China) Z. Wei (Denmark) J. Weiss (Sweden) L. Xie (China) Y. Yang (U.S.A.) Z. Yang (Canada) **X. Yu** (China) **M. Zaffar** (Pakistan) H. Zhang (China) M. Zheng (China) B. Zhou (China)

Enric Brillas

Treatment and Remediation University of Barcelona, Barcelona, Spain

Xinde Cao

Environmental Chemistry Shanghai Jiao Tong University, Shanghai, China

Teresa Cutright

Treatment and Remediation University of Akron, Akron, USA

Ralf Ebinghaus

Environmental Chemistry Helmholtz-Zentrum Geesthacht, Geesthacht, Germany

Tamara Galloway Toxicology and Risk Assessment University of Exeter, Exeter, England, UK

Andreas Gies Toxicology and Risk Assessment Federal Environment Agency, Berlin, Germany

Jianying Hu Treatment and Remediation Peking University, Beijing, China

Jun Huang Environmental Chemistry Tsinghua University, Beijing, China

Hyunook Kim

Treatment and Remediation University of Seoul, Dongdaemun-Gu, Seoul, South Korea

Klaus Kümmerer Environmental Chemistry Leuphana Universität Lüneburg, Lüneburg, Germany

J. Albaigés (Spain) M. Augustyniak (Poland) T. Bond (UK) M. Asami (Japan) G. Becher (Norway) H. Bouwman (South Africa) **G. Cagnetta** (*China*) H. Choi (South Korea) B. Chu (U.S.A.) S. Corsolini (Italy) R.A. Hauser-Davis (Brazil) S. Ding (China) C. de Wit (Sweden) S. Echigo (Japan) L. Fernandez (U.S.A.) H. Fiedler (Sweden) C. Gaus (Australia) **Y. Gao** (*China*) **P. Gao** (U.S.A.) G.Q. Govantes (Mexico) I. Han (China) J. Han (Hong Kong)

Chemosphere | Vol 257, October 2020 | ScienceDirect.com by Elsevier

...

Chemosphere

Supports open access

Latest issue All issues

Search in this journal

Volume 257 October 2020

Previous vol/issue

Next vol/issue >

Receive an update when the latest issues in this journal are published

Sign in to set up alerts

Full text access Editorial Board Article 127665

🕁 Download PDF

Environmental Chemistry

Research article Full text access

Inhibition of polychlorinated dibenzo-p-dioxins and dibenzofurans by phosphorus-containing compounds in model fly ash

Chemosphere | Vol 257, October 2020 | ScienceDirect.com by Elsevier

	I						L.,		
(n	P	m	\cap	5	n	n	P	re
\sim		\sim		\sim	\sim	r		\sim	· ~

Supports open access

Latest issue All issues •••

Mercury fractionation in tropical soils: A critical point of view

Isabela C.F. Vasques, Fernando B. Egreja Filho, Everton G. Morais, Francielle R.D. Lima, ... João José Marques Article 127114

▲ Download PDF Article preview ∨

Research article Full text access

Assessing the chromium mobility in ashes through SiO₂–Al₂O₃–Fe₂O₃–CaO system: The role of composition Zhe Yang, Changxiang Wang, Yumei Li, Sen Yang, ... Yilian Li Article 127112

🗠 Download PDF 🛛 Article preview 🗸

Research article Full text access First dataset of ²³⁶U and ²³³U around the Greenland coast: A 5-year snapshot (2012–2016) Jixin Qiao, Karin Hain, Peter Steier Article 127185

🗠 Download PDF 🛛 Article preview 🗸

Research article Full text access

Assessing the remobilization and fraction of cadmium and lead in sediment of the Jialing River by sequential extraction and diffusive gradients in films (DGT) technique Tuo Zhang, Lijuan Li, Fei Xu, Xiangyu Chen, ... Yunxiang Li Article 127181

```
\checkmark Download PDF Article preview \checkmark
```

Research article Full text access

Maternal and embryonic trace element concentrations and stable isotope fractionation in the smalleye

smooth-hound (Mustelus higmani)

Juliana de Souza-Araujo, Ryan Andrades, Marcelo de Oliveira Lima, Nigel E. Hussey, Tommaso Giarrizzo Article 127183

▲ Download PDF Article preview ∨

Research article Full text access

Deep learning for predicting the occurrence of cardiopulmonary diseases in Nanjing, China Ce Wang, Yi Qi, Guangcan Zhu Article 127176

 \bigstar Download PDF Article preview \checkmark

Research article Full text access

Effect of dealumination on the acidity of zeolite Y and the yield of glycerol mono stearate (GMS) Didi Dwi Anggoro, Herawati Oktavianty, <mark>Setia Budi Sasongko,</mark> Luqman Buchori Article 127012

🗠 Download PDF 🛛 Article preview 🗸

Research article Full text access

The Influence of fluoride on chronic kidney disease of uncertain aetiology (CKDu) in Sri Lanka Shanika Nanayakkara, S.T.M.L.D. Senevirathna, Kouji H. Harada, Rohana Chandrajith, ... Akio Koizumi Article 127186

🕁 Download PDF 🛛 Article preview 🤝

Current status and future prospects of micropollutants in water : monitoring, removal and risk, edited by Jeong-Eun Oh, Yeomin Yoon and Kyung-Duk Zoh

Research article Full text access Chitosan-MnO₂ nanocomposite for effective removal of Cr (VI) from aqueous solution Van-Phuc Dinh, Minh-Doan Nguyen, Quang Hung Nguyen, Thi-Thanh-Thao Do, ... L.V. Tan Article 127147

▲ Download PDF Article preview ∨

Research article Full text access In situ chemical oxidation of contaminated groundwater using a sulfidized nanoscale zerovalent iron– persulfate system: Insights from a box-type study Manoj P. Rayaroth, Dasom Oh, Chung-Seop Lee, Yu-Gyeong Kang, Yoon-Seok Chang Article 127117

🗠 Download PDF 🛛 Article preview 🗸

Retraction Notice

Erratum Full text access

Retraction notice to "Carbaryl waste-water treatment by *Rhodopseudomonas sphaeroides*" [Chemosphere 233 (October 2019) 597–602] Pan Wu, Zhaobo Chen, Ying Zhang, Yanling Wang, ... Ning Li Article 127394

业 Download PDF



Chemosphere 257 (2020) 127012

Contents lists available at ScienceDirect

Chemosphere

journal homepage: www.elsevier.com/locate/chemosphere

Effect of dealumination on the acidity of zeolite Y and the yield of glycerol mono stearate (GMS)



霐

Chemosphere

Didi Dwi Anggoro ^{a, *}, Herawati Oktavianty ^b, <mark>Setia Budi Sasongko</mark> ^a, Luqman Buchori ^a

^a Chemical Engineering Department, Diponegoro University, Semarang, Indonesia
^b Agricultural Produt Technology Department, INSTIPER, Yogyakarta, Indonesia

HIGHLIGHTS

• The catalytic dealumination process can change the strength of zeolite Y catalyst acid.

• Dealumination variables such as acid concentration, temperature and time of dealumination affect the surface acidity of Zeolite Y.

• The strength of the catalyst acid can increase the yield of Glycerol Monostearate.

• Statistica software can be used to determine the optimum conditions of dealumination zeolite.

ARTICLE INFO

Article history: Received 5 February 2020 Received in revised form 19 April 2020 Accepted 7 May 2020 Available online 12 May 2020

Handling Editor: Veeriah (Jega) Jegatheesan

Keywords: Glycerol Glycerol monostearate Dealumination Acidity Zeolite Y

ABSTRACT

Research on the production of Glycerol Monostearate from glycerol using dealuminated Zeolite Y catalysts has been carried out. Optimization of the dealumination process is conducted using the help of statistical software 10, where the variables used are acid concentration (5-7 M), temperature of dealumination $(55-70 \,^{\circ}\text{C})$ and time of dealumination $(2-6 \,\text{h})$. The acidity characterization test of dealuminated Zeolite Y using ammonia and pyridine solution. Glycerol Monostearate yield was obtained by GC-MS test that was carried out on 2 samples zeolite Y catalyst with the highest value of total and surface acidity of zeolite Y which produced 2.18% and 4% yield of Glycerol Monostearate. The two samples showed that the greater the acidity, the GMS yield was also greater. Compared to previous studies it was found that ZSM-5 catalyst has a higher acidity value than zeolite Y so that the yield of Glycerol Monostearate is higher with the use of ZSM-5 than Zeolite Y.

© 2020 Published by Elsevier Ltd.

1. Introduction

Increase in population growth causing increase in fuel consumption too, especially fossil fuels. Biodiesel is a renewable alternative energy that can be used to replace fossil fuels that are low in pollution. This has caused a massive increase in biodiesel production. This biodiesel manufacturing process produces two main results, namely methylester and glycerol. Glycerol, in other words propane-1,2,3-triol at room temperature in the form of liquid has a clear color like water, thick, hygroscopic with a sweet taste. One of the glycerol derivatives is glycerol monostearate and

* Corresponding author.Tel.: +62247460058/Fax: +622476480675.

E-mail addresses: dididwianggoro@lecturer.undip.ac.id (D.D. Anggoro), hera. oktavianty@gmail.com (H. Oktavianty), sbudisas@gmail.com (S.B. Sasongko), luqman.buchori@gmail.com (L. Buchori).

has uses as an emulsifier in the food, pharmaceutical, and cosmetics industries. Glycerol monostearate is produced from the esterification process which reacts glycerol with stearic acid.

In the glycerol monostearate production used catalyst that serves to speed up the reaction and increase the yield of glycerol monostearate. The catalyst is a chemical that can increase the rate of reaction and is involved in chemical reactions even though the substance does not react. Catalysts can be divided into 3 parts, homogeneous catalysts, heterogeneous catalysts, enzyme catalysts (Istadi, 2011). One type of catalyst used in the manufacture of glycerol monostearate is zeolite.

The resulting synthetic zeolite catalyst sometimes does not meet specifications to be used as a catalyst in accelerating the reaction rate. Therefore, the catalyst characterization process is needed to change the properties of the catalyst in accordance with the required specifications (Wang et al., 2015). One of the catalyst



Chemosphere 257 (2020) 127168

Contents lists available at ScienceDirect

Chemosphere

journal homepage: www.elsevier.com/locate/chemosphere

Inhibition of polychlorinated dibenzo-p-dioxins and dibenzofurans by phosphorus-containing compounds in model fly ash



霐

Chemosphere

Pei-Yue Wang ^a, Shuai-Xi Xu ^b, Zhi-Liang Chen ^c, Tong Chen ^a, ^{*}, Xiao-Qing Lin ^a, Yun-Feng Ma ^a, Meng-Mei Zhang ^d, Xiao-Dong Li ^a

^a State Key Laboratory of Clean Energy Utilization, Institute for Thermal Power Engineering, Zhejiang University, China

^b Nanchang Institute of Technology, China

^c Department of Civil and Environmental Engineering, Vanderbilt University, Nashville, TN, 37215, USA

^d Department of Environmental Engineering, Graduate School of Engineering, Kyoto University, Kyoto, 6158510, Japan

HIGHLIGHTS

• The activity of the N/P inhibitors on the PCDD/Fs is dominated by NH₄⁺.

• $[PO_4]^{3-}$ ion alone cannot act as an effective inhibitor.

• Stabilizing metal catalysts might be the main inhibition mechanism of CaHPO₄.

A R T I C L E I N F O

Article history: Received 16 March 2020 Received in revised form 18 May 2020 Accepted 20 May 2020 Available online 25 May 2020

Handling Editor: Grzegorz Lisak

Keywords: PCDD/Fs NH₄H₂PO₄ K₂HPO₄ CaHPO₄

ABSTRACT

Waste incineration is a preferred method in China to dispose the municipal solid waste, but controlling the production of highly toxic polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans effectively during incineration is both challenging and imperative. In this study, the suppression of PCDD/ Fs by various phosphorus-containing compounds was explored, and the mechanisms responsible for the inhibition were studied in detail. The experiments took place in a lab-scale vertical tubular reactor at 350 °C under a simulated flue gas (12 vol% O₂ in N₂ flow), and both the off-gases and residues were collected for PCDD/Fs analysis. The scanning electron microscopy and energy-dispersive X-ray spectroscopy were used to characterize the reaction residues. The experimental results revealed that NH₄H₂PO₄ and (NH₄)₂·HPO₄ showed the highest inhibitory effect (57.2% and 57.3%, respectively) on the PCDD/Fs formation, followed by CaHPO₄ with inhibition efficiency of 39.1%. In contrast, KH₂PO₄ and NH₄H₂PO₄ barely inhibited the generation of the PCDD/Fs. The inhibitory effect of NH₄H₂PO₄ and (NH₄)₂·HPO₄ was similar to that of nitrogen-based inhibitors. At the same time, it was proven that the inhibitory activity of CaHPO₄ might be due to the reaction of it with Cu²⁺ forming stable compounds. © 2020 Elsevier Ltd. All rights reserved.

1. Introduction

Due to the fast economic development in China, the amount of municipal solid waste (MSW) is proliferating, reaching 228 million tons as of 2018 (China, 2019). Landfill, composting, and incineration are widely applied in MSW disposal, among which incineration is considered as the most promising technique due to the higher energy recovery and mass/volume reduction (Phua et al., 2019). Over the last decade, the share of waste incineration has increased

* Corresponding author. E-mail address: chentong@zju.edu.cn (T. Chen).

https://doi.org/10.1016/j.chemosphere.2020.127168 0045-6535/© 2020 Elsevier Ltd. All rights reserved. rapidly and has reached 45.1 wt% by the end of 2018 (China, 2019). However, highly toxic polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/Fs) are readily generated during this process (Yin et al., 2018). Various technologies have been applied to reduce the generation and emission of PCDD/Fs (Mckay, 2002), of which chemical inhibition at the post-combustion zone is a promising method with low-cost and good feasibility (Goldfarb, 1989; Soler et al., 2018; Ma et al., 2019).

Traditional inhibitors are usually divided into four categories based on their chemical composition: i) alkaline substances, e.g., CaO, Ca(OH)₂, NaOH (Qian et al., 2005; Zhang and Buekens, 2016), ii) sulfur-based inhibitors, such us S, Na₂S, SO₃, etc. (Gullett et al., 1992; Tuppurainen et al., 1998; Chang et al., 2006), iii) nitrogen-



Chemosphere 257 (2020) 127114

Contents lists available at ScienceDirect

Chemosphere

journal homepage: www.elsevier.com/locate/chemosphere

Mercury fractionation in tropical soils: A critical point of view

Isabela C.F. Vasques ^a, Fernando B. Egreja Filho ^b, Everton G. Morais ^c, Francielle R.D. Lima ^c, Jakeline R. Oliveira ^c, Polyana Pereira ^c, Luiz Roberto G. Guilherme ^c, João José Marques ^{c, *}

^a Soils Department, Universidade Federal de Viçosa, Peter Henry Rolfs Avenue, Viçosa, 36570-000, <mark>Brazil</mark>

^b Chemistry Department, Universidade Federal de Minas Gerais, Presidente Antônio Carlos Avenue, Belo Horizonte, 31270-901, Brazil

^c Soil Science Department, Universidade Federal de Lavras, Doutor Silvio Menicucci Avenue, Lavras, 37200-900, Brazil

HIGHLIGHTS

- The proposed sequential extraction is not specific for Hg species.
- Liming and organic matter and clay contents did not alter Hg fractionation.
- Aqua regia digestion at room temperature is not suitable for residual Hg assessment.

ARTICLE INFO

Article history: Received 16 March 2020 Received in revised form 15 May 2020 Accepted 16 May 2020 Available online 20 May 2020

Handling Editor: Martine Leermakers

Keywords: Model compounds Sequential chemical extraction Single chemical extraction

G R A P H I C A L A B S T R A C T



ABSTRACT

Problems related to specificity and re-precipitation of metals in sequential chemical extractions can impair their routine use. In order to test the efficiency of a sequential chemical procedure, model compounds composed by soil components commonly found in tropical soils such as goethite, Algoethite, ferrihydrite, hematite, bauxite, and humic acid were incubated with either $Hg(NO_3)_2$ or $HgSO_4$ and submitted to chemical extraction. The procedure aims to assess: (i) water soluble Hg; (ii) bioaccessible Hg at pH near human stomach; (iii) Hg associated with organic matter; (iv) reduced Hg; (v) Hg associated with Fe, Al, and Mn oxides; and, (vi) residual Hg. This procedure was also tested via single and sequential extractions using the surface and subsurface samples of two tropical soils, i.e., a Rhodic Acrudox and a Typic Hapludox, with and without lime application. Soil samples were submitted to an adsorption experiment with HgCl₂ and a high adsorption percentage was observed. The majority of Hg at both single and sequential procedure was extracted by an acetic acid solution (pH = 2). Liming, soil depth, and soil type were not determinative on Hg extractability. The sequential extraction applied showed a lack specificity of Hg fractions, confirmed by the model components.

© 2020 Elsevier Ltd. All rights reserved.

1. Introduction

Mercury is a toxic element and its toxicity is related to its form in the environment, being its most toxic species the organic ones, such as methylmercury (Du et al., 2014). An important concern regarding Hg contamination is the capability of Hg to be volatilized

* Corresponding author. E-mail address: jmarques@ufla.br (J.J. Marques).

https://doi.org/10.1016/j.chemosphere.2020.127114 0045-6535/© 2020 Elsevier Ltd. All rights reserved.





Themosphere