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

Judul Jurnal Ilmiah (Artikel) : Analysis of Crout, Lu, Cholesky Decomposition, and QR Factorization: A Case Study On The Relationship Between Abiotic (Carbon and Nitrogen) and Biotic (Macrobenthos Diversity) Factors

Nama/Jumlah Penulis : **Widowati**, S. P. Putro, Suhartana, D. Anggraeni/ 4 orang

Status Pengusul : penulis ke- 1

Identitas Jurnal Ilmiah :
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	Reviewer I	Reviewer II	
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b. Ruang lingkup dan kedalaman pembahasan (30%)	5,76	4.33	5.05
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	5,88	4.33	5.11
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	5,28	4.83	5.06
Total = (100%)	18,92	15.49	17.22
Nilai Pengusul =	**11,35**	**9.29**	**10.33**

Semarang, April 2020

Reviewer 2

Prof. Dr. St. Budi Waluya, M.Si
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Reviewer 1

Prof. Dr. Basuki Widodo, M.Sc
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a. Kelengkapan unsur isi jurnal (10%)	2,00			2,00
b. Ruang lingkup dan kedalaman pembahasan (30%)	6,00			5,76
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	6,00			5,88
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	6,00			5,28
Total = (100%)	20,00			18,92
Nilai Pengusul = 60% x 18,92 = 11,35				

Catatan Penilaian artikel oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi prosiding :**

Penulisan artikel baik dan mengikuti standard penulisan artikel di Waste Technology an International journal, yaitu abstract, Introduction, Methodology, Result and Discussion (IMRaD), Conclusion dan Acknowledgement. Artikel ini didukung dengan referensi yang sesuai.

2. **Ruang lingkup dan kedalaman pembahasan:**

Lingkup bahasan dari artikel ini adalah bidang matematika terapan, khususnya pada bidang Aljabar Linier Terapan. Dalam artikel ini dibahas dengan baik tentang hubungan karbon dan nitrogen dengan keanekaragaman makrobentos melalui model regresi, terutama tentang cara menentukan parameter dari persamaan regresi linier berganda. Relevansi hasil terkait faktor abiotik (karbon dan nitrogen) berpengaruh positif pada keanekaragaman makrobentos, karena sumber karbon dan nitrogen sebagai sumber makanan mereka

3. **Kecukupan dan kemutakhiran data/informasi dan metodologi :**

Informasi yang disajikan relatif baru dan hasil yang diperoleh memuat substansi aplikasi yang penting. Sumber gagasan penulis untuk artikel ini banyak, komprehensif dan update, yang lebih sepuluh tahun terakhir hanya 3 paper dari 11 sumber yang dirujuk.

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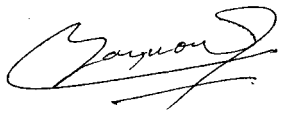
Artikel memenuhi standard penulisan dan isi untuk artikel di Waste Technology an International journal.

Surabaya, 18 April 2020
Reviewer 1



Prof. Dr. Basuki Widodo, M.Sc
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b. Ruang lingkup dan kedalaman pembahasan (30%)	6,00			4.33
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	6,00			4.33
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	6,00			4.83
Total = (100%)	20,00			15.49
Nilai Pengusul = 60% x15.49=9.29				

Catatan Penilaian artikel oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi prosiding:**

Kesesuaian dan kelengkapan unsur isi cukup baik. Artikel tersusun dalam kaidah penuliasan karta ilmiah. Terdiri atas 4 bagian: Introduction, Materials and methods, Results and Discussions, Conclusion. Didukung 11 referensi yang Sebagian besar berupa jurnal.

2. **Ruang lingkup dan kedalaman pembahasan:**

Ruang lingkup dan kedalaman pembahasan cukup baik. Pembahasan hasil kurang detail dalam menunjukkan nilai kebaharuan. Pembahasan mengenai mathematically relationship carbon and nitrogen with macrobenthos diversity through regression models. Termasuk dalam lingkup Matematika Terapan yang sesuai dengan bidang keilmuan pengusul.

3. **Kecukupan dan kemutakhiran data/informasi dan metodologi :**

Kecukupan dan kemutakhiran data/informasi cukup baik. Terdapat 11 referensi yang sebagian besar berupa jurnal (3 diantara referensi lebih dari 10 tahun). Metodologi cara penyelesaian masalah sudah cukup baik.

4. **Kelengkapan unsur dan kualitas terbitan:**

Kelengkapan unsur dan kualitas terbitan cukup baik. Artikel diterbitakan dalam Waste Technology Journal Vol. 2(2)2014:56-62, Penerbit Diponegoro University. Terindeks al di DOAJ, Copernicus. Hasil Turnitin similarity index=6%. Beberapa editorial kurang konsisten dan cermat.

Semarang, April 2020
Reviewer 1

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Analysis of Crout, Lu, Cholesky Decomposition, and QR Factorization: A Case Study On The Relationship Between Abiotic (Carbon and Nitrogen) and Biotic …

W Widowati, SP Putro, S Suhartana… - Waste Technology …, 2014 - eprints.undip.ac.id

Many real world problems can be represented by a system of linear equations, such as in the field of ecology, ie, the relationship of carbon and nitrogen with macrobenthos diversity. There are many methods to solve linear equations system, then it is necessary to do an analysis of which method is the best so that the user can choose the most efficient method. The methods that will be analyzed are LU, Crout, Cholesky decomposition, and QR factorization. From the calculation of arithmetic operations obtained Cholesky decomposition …

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Vol 2, No 2 (2014)

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Liquid and Gaseous Fuels from Waste Plastics by Sequential Pyrolysis and Catalytic Reforming Processes over Indonesian Natural Zeolite Catalysts

Mochamad Syamsiro[1*], Shuo Cheng[4], Wu Hu[4], Harwin Saptoadi[2], Nosal Nugroho Pratama[2], Wega Trisunaryanti[3], Kunio Yoshikawa[4]

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Abstract - *In this study, the performance of several differently treated natural zeolites in a sequential pyrolysis and catalytic reforming of plastic materials i.e. polypropylene (PP) and polystyrene (PS) were investigated. The experiments were carried out on two stage reactor using semi-batch system. The samples were degraded at 500°C in the pyrolysis reactor and then reformed at 450°C in the catalytic reformer. The results show that the mordenite-type natural zeolites could be used as efficient catalysts for the conversion of PP and PS into liquid and gaseous fuel. The treatment of natural zeolites in HCl solution showed an increase of the surface area and the Si/Al ratio while nickel impregnation increased the activity of catalyst. As a result, liquid product was reduced while gaseous product was increased. For PP, the fraction of gasoline (C_5-C_{12}) increased in the presence of catalysts. Natural zeolite catalysts could also be used to decrease the heavy oil fraction (>C_{20}). The gaseous products were found that propene was dominated in all conditions. For PS, propane and propene were the main components of gases in the presence of nickel impregnated natural zeolite catalyst. Propene was dominated in pyrolysis over natural zeolite catalyst. The high quality of gaseous product can be used as a fuel either for driving gas engines or for dual-fuel diesel engine.*

Keywords *– Pyrolysis, Catalytic reformer, Waste plastics, Fuels, Natural zeolites.*

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1. Introduction

Economic development in the era of globalization led to an increase in plastic consumption resulting in rapid increase of waste plastic generation in the world. There are several main approaches for recycling waste plastics, i.e. material recycling, feedstock or chemical recycling and energy recovery. Though various kinds of techniques have been proposed for the conversion of waste plastics, it is generally accepted that material recycling is not a long-term solution to the present problem. Thus, feedstock recycling and energy recovery are more attractive ones [1]. Waste plastics are one of the most promising resources for oil production because of its high calorific value and due to the increasing availability in local communities. Unlike paper and wood, plastics do not absorb much moisture and the water content of plastics is far lower than the water content of biomass [2].

Feedstock recycling is one of the valorization strategy to recycle waste plastics via pyrolysis which involves thermochemical decomposition of organic and synthetic materials at elevated temperatures in the absence of oxygen to produce fuels. The process is usually conducted at temperatures between 500-800°C [3]. These pyrolytic products can be divided into liquid fraction, gas fraction and solid residues [4]. The low thermal conductivity and high viscosity of plastics are the major problems for the cracking reactor design. Therefore, the reactor design becomes important parameter in feedstock recycling of plastics. Several reactor systems have been developed and used such as batch/semi batch [5], fixed bed, fluidized bed,

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Study of Biogas Production Rate from Water Hyacinth by Hydrothermal Pretreatment with Buffalo Dung as a Starter

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Abstract- *In this paper, the effects of hydrothermal pretreatment on biogas enhancement production rates from water hyacinth mixed with buffalo dung was investigated.The focus of the experiment was on thetime of hydrothermal pretreatment and the ratio of water hyacinth with buffalo dung. The hydrothermal pretreatedsubstrates were characterized by TDS, BOD and pH.The hydrothermal pretreatment of 60 minutes with the ratio of water hyacinth to buffalo dung 1:2 showed the highest biogas production rateat 7889 ml/day. However, the highest methane composition was 52.82% which resulted on the hydrothermal treatment of 30 minutes with equal ratio of water hyacinth and buffalo dung. Thus, the optimum of methane yield obtained at hydrothermal pretreatment for 30 minutes with equal ratio of water hyacinth to buffalo dung is 2856 ml/day.The hydrothermal pretreatment increases the rate production of biogas 102% and the methane yield51% relative to untreated water hyacinth.The ratio of water hyacinth and buffalo dung has a great impact on biogas productionrateand compositions for hydrothermal pretreated substrates.*

Keywords *– Biogas;Hydrothermal pretreatment;Water hyacinth; Buffalo dung.*

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1. Introduction

In the last few decades research on biomasshas become the trending topic due to the depletion of fossil fuel and its environmental issues. As a tropical country, Indonesia has a big opportunity to develop the biomass based fuel originate from waste agricultural cellulose as well as nonagricultural cellulose. Twocommon routes to exploit biomass for energy purpose are thermal and fermentation processes.The anaerobic digestion for producing biogas is one of the promise and simple way to harvest the renewable energy. The first generation process generates biogas from livestock dung. Next, second generation of biogas generated from cellulose plant also attracted since its abundant availability and low-cost raw materials.

One of water plant that becomes a problem on river is water hyacinth due to its fasted growing which implicate to theeutrophication. On the other hand, the major component of water hyacinth is cellulose which is the basic substrate for fermentation. Thus, water hyacinth has a high potency as a raw material for biogas fermentation due to its cellulose high content[1]. However, water hyacinth containslignin which is a disadvantage of using water hyacinth in the biogas production.Pretreatment throughphysical and chemical routes are reported effectively breakdown the lignin [2,3,4].

According to Mosier et al. [5] pretreatment by steaming, the addition of lime and hydrothermal are some of the methods that can improve significantly the action of hydrolysis enzyme.The main effect is to dissolve hemicellulose and lignin structural which increases the probability of accessing the cellulose by hydrolysis enzyme.Walch et al. [6] showed that hydrothermal treatment can be applied to remove hemicellulose from lignocellulose material through combination of dissolution and auto hydrolysis effects on the temperature of 120 ^{o}C to 200^{o}C.The hydrothermal pretreatmentmake the differences in the size of the raw materials used in the fermentation process become homogeneous[7]. This led to the exposed of the surface area and causes the cellulose more accessible to enzymes.

According to Ferrer[8] hydrothermal pretreatment at a temperature of 80^{o}C for 30 minutes rises the water hyacinth hydrolysis process by triggering dissolution of water hyacinth from 4 to 10-12%. It hasshown that the pretreatment by boiling and steaming make the