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

Judul Jurnal Ilmiah (Artikel)	:	Optimzition of the Bi_2O_3/Cu synthesis process using response surface methodology as a tetracycline photodegradation agent		
Nama/ Jumlah Penulis	:	3 Orang		
Status Pengusul	:	~~Penulis pertama~~/ ~~Penulis ke~~ / Penulis Korespondesi **		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal	:	Results in Engineering
		b. Nomor ISSN	:	2590-1230
		c. Vol, No., Bln Thn	:	Vol 16 No 3, Desember 2022 Hal 1-11
		d. Penerbit	:	Elsevier BV
		e. DOI artikel (jika ada)	:	https://doi.org/10.1016/j.rineng.2022.100521
		f. Alamat web jurnal	:	https://www.sciencedirect.com/science/article/pii/S2590123022001918
		Alamat Artikel	:	https://www.sciencedirect.com/science/article/pii/S2590123022001918/pdfft?isDTMRedir=true&download=true
		g. Terindex	:	Scopus (Q1, SJR 0,69)

Kategori Publikasi Jurnal Ilmiah (beri ✓pada kategori yang tepat)	:	√	~~Jurnal Ilmiah Internasional~~/Internasional Bereputasi
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Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Reviewer		Nilai Rata-rata
	Reviewer I	Reviewer II	
a. Kelengkapan unsur isi jurnal (10%)	4,00	4,00	4,00
b. Ruang lingkup dan kedalaman pembahasan (30%)	12,00	11,50	11,75
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	11,90	11,50	11,70
d. Kelengkapan unsur dan kualitas penerbit (30%)	11,90	12,00	11,95
Total = (100%)			39,40
Nilai untuk Pengusul : 40% x 39,4 = 15,76			

Semarang, 8 Maret 2023

Reviewer 1

Prof. Dr. Rahmat Gernowo, M.Si
NIP. 196511231994031003
Unit Kerja: FSM Universitas Diponegoro
Bidang Ilmu: Fisika

Reviewer 2

Prof. Dr. Kusworo Adi, S.Si., M.T.
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Unit Kerja: FSM Universitas Diponegoro
Bidang Ilmu: Fisika

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Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Akhir Yang Diperoleh
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a. Kelengkapan unsur isi jurnal (10%)	4			4,00
b. Ruang lingkup dan kedalaman pembahasan (30%)	12			12,00
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12			11,90
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12			11,90
Total = (100%)	**40**			**39,80**
Nilai Pengusul = 40% x 39,8 = 15,92				

Catatan Penilaian artikel oleh Reviewer :

1. **Kelengkapan unsur isi jurnal:**

Artikel telah ditulis sesuai dengan standar **Results in Engineering, *sebuah jurnal Scopus*** Q1, SJR 0,69
Latar belakang memberikan dasar yang sangat kuat untuk mengemukakan sesuatu yang baru dalam artikel. . Kebaruan dari kajian ini dikemukakan dengan baik dan jelas.

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

Pembahasan dengan menggunakan metoda yang diusulkan dalam artikel cukup komprehensip. Diskusi telah dilakukan dengan para peneliti lain melalui referensi yang disitasi. Sebuah artikel yang menarik.

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

Data dan referensi mutakhir, termasuk referensi dari kajian yang dilakukan oleh peneliti. Metoda standar dibidangnya dan akan bisa direfleksi oleh peneliti lain sebidang.

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

Penerbitan sudah sangat bagus tertata rapi **Results in Engineering, *sebuah jurnal Scopus*** Q1, SJR 0,69), *nilai maksimum 40*

Semarang, 1 Maret 2023
Reviewer 1

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Bidang Ilmu: Fakultas Sains dan Matematika

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
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		Alamat Artikel	:	https://www.sciencedirect.com/science/article/pii/S2590123022001918/pdfft?isDTMRedir=true&download=true
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Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Akhir Yang Diperoleh
	Internasional Bereputasi [√]	Nasional Terakreditasi [ ]	Nasional Tidak Terakreditasi [ ]	
a. Kelengkapan unsur isi jurnal (10%)	4			4,00
b. Ruang lingkup dan kedalaman pembahasan (30%)	12			11,50
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12			11,50
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12			12,00
Total = (100%)	**40**			**39,00**
Nilai Pengusul = 40% x 39,00 = 15,60				

Catatan Penilaian artikel oleh Reviewer :

1. **Kelengkapan unsur isi jurnal:** Penulisan artikel sudah baik dan mengikuti standard penulisan artikel di jurnal, yaitu Abstract, Introduction, Materials and Method, Result and Discussion, Conclusions, Acknowledgement and References. Substansi artikel sesuai bidang ilmu pengusul.
2. **Ruang lingkup dan kedalaman pembahasan:** Lingkup bahasan dari artikel ini adalah bidang fisika. Pembahasan cukup baik yaitu mengkaji kemampuan bahan fotokatalis bismut oksida doping Cu (Bi2O3/Cu) dalam mendegradasi Tetrasiklin. Sintesis material Bi2O3/Cu telah berhasil dilakukan dengan metode presipitasi dengan bantuan gelombang mikro. Proses sintesis dilakukan dengan variasi konsentrasi Cu, daya, dan waktu sintesis. Kedalaman pembahasan baik.
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:** Informasi yang disajikan cukup baru dan hasil yang diperoleh memuat substansi orisinil dengan aspek aplikasi yang penting. Sumber gagasan penulis untuk artikel ini banyak dan komprehensif. Dari 49 referensi yang dipakai terdapat 3 paper yang lebih dari 10 tahun terakhir (out of date). Metodologinya baik dan penulisannya terstruktur.
4. **Kelengkapan unsur dan kualitas terbitan:** Artikel dimuat di Jurnal Results in Engineering, pada Vol 16 No 3, Desember 2022 Hal 1-11. Diterbitkan oleh Elsevier BV. Journal terindeks Scopus (Q1, SJR 0,69).

Semarang, 1 Maret 2023
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Unit Kerja: Fakultas Sains dan Matematika

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Optimization of the Bi_2O_3/Cu synthesis process using response surface methodology as a tetracycline photodegradation agent

Sa'adah, Fatkhiyatus[a]; Sutanto, Heri[b, c] ; Hadiyanto[a]
Save all to author list

[a] Department of Environmental Science, Postgraduate School, Diponegoro University, Semarang, Indonesia
[b] Department of Physics, Faculty of Science and Mathematics, Diponegoro University, Semarang, Indonesia
[c] Smart Materials Research Center (SMARC), Diponegoro University, Semarang, Indonesia

Abstract

This study examined the ability of the photocatalyst material bismuth oxide doped Cu (Bi_2O_3/Cu) in degrading Tetracycline. Bi_2O_3/Cu material synthesis has been successfully carried out by the microwave-assisted precipitation method. The synthesis process was carried out by variations in Cu concentration,

power, and synthesis time. Optimization was carried out on synthesis variations with Response Surface Methodology (RSM) using central composite design (CCD) techniques. The response studied was the value of degradation efficiency (Ef). The best results obtained at R19 with a concentration composition of Cu 6%, power of 600 W and synthesis time of 60 min resulted in a degradation efficiency value against Tetracycline of 61.09%. XRD characterization results show that the material formed was phase α-Bi_2O_3 and Garhadite ($Cu_2H_3NO_6$) with compositions of 71.9% and 28.1%. FWHM values obtained are 0.2636 and 0.2877, respectively. The resulting crystal size was 31.23874 nm. The results of this characterization proven that Cu metal has been successfully doped in Bi_2O_3 material. © 2022 The Authors

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Indexed keywords
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Author keywords
Bismuth oxide; Microwave-precipitation; Photodegradation; Tetracycline

Indexed keywords
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30 Ai, Z., Lee, S.

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Urine: Useless or useful "waste"?

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ABSTRACT

Large volume of urine is continuously released into the environment by both humans and animals, and impacts negatively on the environment and ultimately on humans and animals' health. In this review, the negative impacts associated with the release of urine to the environment is highlighted. Instead of releasing urine into the environment, it has been used for several important applications. Various ways through which these waste discharge have been positively utilized such as in the synthesis of chemicals, evolution of hydrogen, power generation, source of raw materials, fertilizer application, diagnosis and treatment of diseases are comprehensively examined. Particularly, the use of urine in the synthesis of nanomaterials is emphasized. Since stabilization of urine is necessary for its application, several methods of treating and stabilizing urine are discussed. In addition, various analytical techniques used in the detection of substances present in the urine are presented. The aim of the present review is to explore different ways by which urine has been utilized so as to trigger more research findings on the other novel means of utilizing urine.

1. Introduction

Urine is a complex solution generated in the kidney of humans and animals through the metabolism of endogenic wastes, drinks, drugs and foods [1]. The process through which urine is generated in the kidney is known as urinalysis. The composition and properties of urine vary with the source, organism's feeding habits, body size, amount of water consumed, environmental factors [2,3] and the health-condition of the organism that released the urine [4]. It is composed of diverse inorganic compounds such as potassium, phosphorus, nitrogen, and sodium, as well as organic compounds including creatinine, creatine, and uric acid, as major components [5]. The different components in urine are basically influenced by the composition of essential elements in the urine [6].

The composition also varies from country to country. For example, high income earning countries typically have the daily mean concentration of potassium as 2.2–2.7 g K/L, phosphorus as 0.74–2g P/L and nitrogen as 2.2–2.7 g K/L [5,7,8]. Among the components that are obtained from urine, 75–90% of nitrogen excreted are mainly in the form of urea with the remainder being released in form of uric acid, creatinine, and amino acid [7,8]. Urine also contains other ions like Na^{+}, Cu^{2+}, Mg^{2+}, Cl^{-} that are essentially required by plant for growth [9]. Apparently, human urine is preferably desired for use as fertilizer due to trace concentration of heavy metals in urines obtained from animal origin. Stored urine has different pH compared to the fresh urine. This is because under non-sterile environment, stored urine is hydrolyzed into bicarbonate and ammonia. Ammonia and carbon dioxide (from the bicarbonate) are released to the environment while the remaining bicarbonate raise the pH of the urine solution [10]. The physical properties and the composition of urine are summarized in Fig. 1.

Some of the nitrogenous compounds found in urine are amino acids, ammonia, ammonium salts, urea, creatinine and uric acid [11]. Also, transition metals such as Cr, Mn, Fe, Co, Ni, Cu, Zn, Mo, Hg, Sb, Pb and

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Methylene blue dye: Toxicity and potential elimination technology from wastewater

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ABSTRACT

One of the popular cationic dyes that is environmentally persistent, toxic, carcinogenic and mutagenic is methylene blue (MB) dye. It is commonly applied as synthetic dye for dyeing fabrics in clothing and textile industries and also for dyeing papers and leathers. Sequel to the magnitude of industrial usage, a large volume of methylene blue dye containing wastewater is discharged into groundwater and surface water. At doses more than 5 mk/kg, the monoamine oxidate inhibitory characteristics of MB dye can induce fatal serotonin toxicity in human, apart from being a threat to fauna in aquatic ecosystem. Thus, it is highly imperative to eliminate MB dye from wastewaters. A number of different removal strategies have been reported in literature for treating methylene blue dye wastewater. In this state-of-the-art review, about 240 review and/or research published articles on methods for methylene blue dye wastewater decontamination or decontamination strategies were chosen for evaluation. This synthesis also discussed the various toxicities linked to MB dye. The assessment of elimination methods revealed that chemical removal methods (photochemical and non-photochemical) could generate secondary pollutants while biological methods are characterized with sensitivity of enzyme to pH. These drawbacks limit their industrial full-scale applications while adsorption technology was found to offer merits over others. The review comprehensively discussed each of these techniques while gaps and/or areas for future research are highlighted.

1. Introduction

The production of synthetic dyes is on the increase due to their high demand, most especially in the textile and clothing industries. These chemicals (dyes) are massively produced annually in thousands of tons worldwide [1]. Specifically, the annual industrial production of dye compounds is $\sim 7 \times 10^5$ tons [2]. A few examples of synthetic dyes are aniline blue, alcian blue, basic fuchsin, methylene blue, crystal violet, toluidine blue, and congo red. The fall-out associated with the huge production and usage of synthetic dyes lies in the fact that they end up being in the environment post-dyeing and finishing processes [1,3,4]. Synthetic dyes remain in the physical environment since most of them are difficult to biodegrade [5] and are not usually eliminated during the conventional water treatment processes and, as such, persist in the environment due to their high stability to temperature, light, water, and other substances including soap and detergents [6]. Consequently, the so-called 'treated water' apparently becomes a threat to biotic components in the environment [7].

Methylene blue (3,7-bis(dimethylamino) phenothiazine chloride tetra methylthionine chloride) is one of the synthetic dyes that is applied in large amount as colorant for papers, in wool, silk, and cotton [8]. In addition, food, cosmetics and pharmaceuticals industries are not left behind in consuming a large quantity of MB dye for their productions [9]. Although MB has been proven to possess some medicinal effects, but

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