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

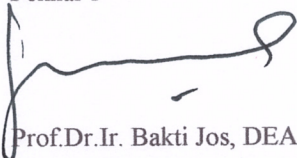
Judul Artikel Ilmiah : Sedimentation Process of TiO₂ Nanoparticles in Aqueous Solution
 Penulis Artikel Ilmiah : **Dessy Ariyanti**, Aprilina Purbasari, Dina Lesdantina, Erwan Adi Saputro, Wei Gao
 Status Pengusul : Penulis utama
 Identitas Jurnal Ilmiah : a. Nama Jurnal : Reaktor
 b. ISSN : p-ISSN 0852-0798, e-ISSN 2407-5973
 c. Nomor/Volume/Hal : 2/22/70-77
 d. Edisi (bulan/tahun) : Agustus 2022
 e. Penerbit : Department of Chemical Engineering – Diponegoro University
 f. Jumlah halaman : 8 halaman
 g. DOI artikel (Jika ada) : <https://doi.org/10.14710/reaktor.22.2.70-77>
 h. Alamat web Jurnal : <https://ejournal.undip.ac.id/index.php/reaktor/article/view/>
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d. Kelengkapan unsur dan kualitas penerbit (30%)	6,50	7,00	6,75
Nilai Total = (100%)	22,00	22,50	22,25
Nilai pengusul = (0,6 x nilai total)	13,2	13,50	13,35

Penilai 1

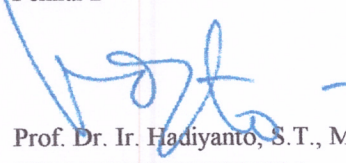


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Semarang,

Penilai 2



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I. Hasil Penilaian Peer Review :

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		25		
a. Kelengkapan dan Kesesuaian unsur isi artikel (10%)		2,5		2,0
b. Ruang lingkup dan kedalaman pembahasan (30%)		7,5		7,0
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)		7,5		6,5
d. Kelengkapan unsur dan kualitas penerbit (30%)		7,5		6,5
Nilai Total = (100%)		25,0		22,0
Nilai pengusul =			60% x 22	13,2

KOMENTAR/ULASAN PEER REVIEW

Kelengkapan dan Kesesuaian Unsur	: Kelengkapan unsur artikel sudah lengkap mulai terdapat abstrak, pendahuluan, metodologi, hasil dan pembahasan, kesimpulan dan referensi. Tingkat plagiasi artikel ini sebesar 12% dan sudah memenuhi syarat (<25%).
Ruang Lingkup dan Kedalaman Pembahasan	: Kedalaman pembahasan sudah baik, 42% dari referensi digunakan dalam pembahasan. Ruang lingkup karya ilmiah sesuai dengan bidang penulis.
Kecukupan & Kemutakhiran Data & Metodologi	: Referensi yang digunakan sudah cukup banyak, dari 19 referensi masih ada 3 referensi yang lebih dari 10 tahun terakhir. Selain itu sudah cukup terupdate. Metodologi penelitian yang disampaikan cukup jelas.
Kelengkapan Unsur dan Kualitas Penerbit	: Terbitan lengkap memuat volume, nomor, tahun dan halaman serta merupakan jurnal nasional terakreditasi Sinta 2 SK No. 30/E/KPT/2018 yang menerbitkan dua edisi setiap tahunnya.

Semarang,
 Penilai 1

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 Bidang Ilmu : Teknik Kimia
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		25		
a. Kelengkapan dan Kesesuaian unsur isi artikel (10%)		2,50		2,0
b. Ruang lingkup dan kedalaman pembahasan (30%)		7,50		6,5
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)		7,50		7,0
d. Kelengkapan unsur dan kualitas penerbit (30%)		7,50		7,0
Nilai Total = (100%)		25,00		22,5
Nilai pengusul =			60% x 22,5	13,5

KOMENTAR/ULASAN PEER REVIEW

Kelengkapan dan Kesesuaian Unsur	: Unsur-unsur sudah terpenuhi mulai dari abstrak, pendahuluan, metodologi, hasil dan pembahasan, kesimpulan dan referensi. Tingkat plagiarisme sebesar 12%
Ruang Lingkup dan Kedalaman Pembahasan	: Ruang lingkup karya ilmiah sesuai dengan bidang penulis dan pembahasan sudah dilakukan dengan cukup baik dengan menggunakan 19 referensi. Dari 19 referensi tersebut dalam pembahasan menggunakan 8 referensi.
Kecukupan & Kemutakhiran Data & Metodologi	: Metode penelitian disampaikan dengan cukup jelas. Rujukan yang digunakan dari 19 referensi masih ada 3 referensi yang lebih dari 10 tahun terakhir.
Kelengkapan Unsur dan Kualitas Penerbit	: Jurnal Reaktor merupakan jurnal nasional terakreditasi Sinta 2 SK No. 30/E/KPT/2018. Terbitan lengkap memuat volume, nomor, tahun dan halaman.

Semarang, 10 Okt 2022

Penilai 2

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ISSN 0022-0717 (print)
ISSN 1872-7957 (online)

P-ISSN 0022-0717

E-ISSN 1872-7957

Reaktor

Volume 15 Number 1 October 2014

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Language: **EN (#)** | DOI: [10.14710/reaktor.22.2.42-48](https://doi.org/10.14710/reaktor.22.2.42-48) (https://doi.org/10.14710/reaktor.22.2.42-48)

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Received: 16 Jun 2022; Published: 30 Aug 2022.

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Received: 12 Jun 2022; Published: 30 Aug 2022.

General information (#issueInfo)

Published: 18-08-2022

Total Articles: 5
(including Editorial)

Total Authors: 23

Total affiliation countries (3) (#issueCountry)

Total authors' affiliations (10) (#issueAffiliations)

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Sedimentation Process of TiO₂ Nanoparticles in Aqueous Solution

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(Received : 12 June 2022; Published: 30 August 2022)

Abstract

TiO₂ nanoparticles, a semiconductor photocatalyst is widely used in various applications especially for water treatment. The common problems for the application are separating the nanoparticles from the water body and recovering it to be reused. This research was conducted to investigate the aggregation and sedimentation properties of TiO₂ nanoparticles via chemical addition. The experiment was carried out for 5 hours by varying the pH, ionic strength, and the addition of organic matter such as rhodamine B, methylene orange, and humic acid. The results indicate that pH and ionic strength greatly affect the TiO₂ sedimentation process. Sedimentation can be formed properly when the solution is at pH 1 and 14, this happens because pH is close to the isoelectric point. Meanwhile, ionic strength with a concentration of 0.1 M gave the most optimal results in TiO₂ sedimentation. In the presence of ionic strength with the appropriate concentration, the thickness of the electrical double layer particles can be reduced so the attractive force increases and sedimentation occur. Meanwhile, in the presence of organic matter, rhodamine B, methylene orange, and humic acid did not significantly affect the formation of TiO₂ sedimentation.

Keywords: titanium dioxide, sedimentation, ionic strength, isoelectric point, water treatment

How to Cite This Article: Ariyanti, D., Purbasari, A., Lesdantina, D., Saputro, E. A., & Gao, W. (2022). Sedimentation Process of TiO₂ Nanoparticles in Aqueous Solution. *Reaktor*, 22(2). 70-78. <https://doi.org/10.14710/reaktor.22.2.70-78>

INTRODUCTION

Due to its particular crystal structures, electronic, optical and thermal properties, TiO₂ nanoparticles are widely used in cosmetics, sunscreens, food preparation, drug delivery systems, and other products (Irshad et al., 2021). These nanoparticles are often combined with other compounds such as graphene (Sharma et al., 2018), aluminium (Girolando, 2013), silica (Azizi et al., 2020), or cellulose (Garusinghe et al., 2018) to produce a composite with desired properties for particular purposes. Its

remarkable performance in the photocatalysis process also derived a prospective application in water and wastewater treatment, especially for organic degradation (Tsang et al., 2019). By employing nano-sized particles of TiO₂, the optimum efficiency of the photocatalytic process can be achieved (Rodríguez-González et al., 2019). Apart from that, there are some industries that use TiO₂ nanoparticles in many purposes that are given in chart below:

Comparison of Different Volume Reactor for Batik Wastewater Pre-Treatment with Ozonation to Improve Biodegradability

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(Received: 20 December 2021; Published: 18 August 2022)

Abstract

Batik is a unique ethnic and heritage textile from Indonesia with low biodegradability (BOD₅/COD) and demanding biological wastewater treatment. However, in its application a high biodegradability value is needed. To increase biodegradability, the ozonation process can be used as pre-treatment. The purpose of this study is to determine the effectiveness of ozone pre-treatment in color removal, COD removal, and changes in biodegradability. This study was divided into two types of the reactor with a volume of 2 L and 16 L with each ozone dose of 4 mg/min and 40 mg/min. The results of color removal in the reactor with a volume of 2 L showed a value of 85% for color removal and 34.6% for COD removal. The reduction in efficiency occurred in the color removal to 65% in reactor 16 L. The variables used are the location of the sample point, volume reactor and the time of sampling. The removal of COD with a volume of 16 L was not evenly distributed at each altitude of 43; 35; and 33% (50; 100; 150 cm). Biodegradability increased from 0.143 to 0.49 (2L reactor) and 0.4-0.45 (16L reactor), this allows for the application of higher biological wastewater treatment. Which the NH₃-N and total phenol removal efficiencies of 12.9%-31.4% and 3-21.2%, respectively.

Keywords: Pre-treatment ozone, batik wastewater, biodegradability, COD removal, color removal

How to Cite This Article: Sofiyah, E. S., Septiariva, I. Y., Helmy, Q., Notodarmojo, S., & Suryawan, I. W. K. (2022). Comparison of Different Volume Reactor for Batik Wastewater Pre-Treatment with Ozonation to Improve Biodegradability. *Reaktor*, 22(2). 42-48. <https://doi.org/10.14710/reaktor.22.2.42-48>

INTRODUCTION

Batik is one of the textile products that have increased rapidly because nowadays batik as a fashion starting to develop. In addition, batik designated as one of Indonesia's original cultural heritage by UNESCO. This added to the people's love for this type of fashion increased. Along with the increasing number of batik consumers, existing batik that primarily produce byproduct including solid waste and

wastewater. The batik industry is included in the textile industry, which consumes the most water in its production process, because of which wastewater-produced reaches 3919–8159 L/pc (Handayani et al., 2019) or 17.93 L/pc (Handayani et al., 2018). Wastewater from textile industry is one of the basic environmental problems (Xu et al., 2018; Apritama et al., 2020). The most commonly used batik wastewater treatment is conventional sedimentation or storing

Cellulose Nanofibers Derived from Cigarette Butts Deacetylation and Its Application in Pickering Emulsion

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(Received: 16 May 2022; Published: 18 August 2022)

Abstract

Cellulose nanofibers (CNF) have been applied in various applications due to the abundant raw materials and excellent mechanical and thermal properties. In this work, CNF from Cigarette butts (CNF-CB) was used as emulsion stabilized for oil in water emulsion. CNF was prepared from regenerated cellulose fibers produced by alkaline autoclaving deacetylation at 121°C for 15 minutes and then Acid hydrolysis using 55 wt.% of sulfuric acids at 45 °C for 45 min. The FTIR spectra of CNF-CB showed chemically convert from Cigarette butts waste, indicating removal of the acetyl group. TEM micrographs showed nanocellulose with diameters of 8-32.30 nm. XRD analysis showed that the CNF-CB is a cellulose II allomorph with a crystallinity index of about 88.04%. Thermogravimetric analysis showed high char residue for the nanocellulose compared to raw fibers. The addition of CNF-CB with a concentration of 0.5% into the oil-in-water emulsion (O/W) showed better stability than commercial surfactant. In conclusion, this approach offers a promising strategy for upcycling cigarette butts waste to produce nanocellulose, which could be used in various applications.

Keywords: Deacetylation, Acid hydrolysis, Cigarette Butts, Cellulose Nanofibers, Pickering emulsion

How to Cite This Article: Amanda, P., Masruchin, N., & Amelia, A. (2022). Cellulose Nanofibers from Regenerated Cellulose fibers of Cigarette Butts and Application in Pickering Emulsion. *Reaktor*, 22(2). 49-58 <https://doi.org/10.14710/reaktor.22.2.49-58>

INTRODUCTION

Pickering emulsion is an emulsion that uses solid particles as an alternative surfactant to improve the emulsification process and emulsion stability. (Albert et al., 2019; Chevalier & Bolzinger, 2013; Z. Sun et al., 2022). For several decades, Pickering emulsion has been applied in various of applications, from drug delivery and pharmaceuticals to cosmetics and the food industry (Saffarionpour, 2020). Numerous solid particle is used in Pickering emulsions, such as silica particles (Macedo Fernandes Barros et al., 2019; Tikekar et al., 2013), mineral particles (Teixeira et al., 2011), metal oxide (Zhai et al., 2013), polymer particles, and even biopolymer

such as nanocellulose (Aaen et al., 2019; Asabuywa Ngwabebhoh et al., 2018; Salas et al., 2014).

Nowadays, nanocellulose as a biobased material has sparked much attention and scientific curiosity in research and development (Reubroycharoen et al., 2018; Shaghaleh et al., 2018). During the past decade, nanocellulose was generally extracted from lignocellulosic biomass, bacterial cellulose, or natural fibers (Li et al., 2018; Valencia et al., 2019). However, the limitation of the forest and agriculture sectors for cellulose resources makes non-plant cellulosic sources getting worldwide interest and attention. Utilization of discarded waste such as Cigarette butts to produce nanocellulose is a great