



sri hidayati &lt;srihidayati.unila@gmail.com&gt;

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**Reviewer Invitation for Revised Version JCLEPRO-D-20-19496R3**

1 message

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**JCLP** <em@editorialmanager.com>  
Reply-To: JCLP <support@elsevier.com>  
To: Sri Hidayati <srihidayati.unila@gmail.com>

Tue, Jun 1, 2021 at 12:32 PM

Ref: JCLEPRO-D-20-19496R3  
Title: A low capital method for silicon interference in bamboo kraft pulping alkaline recovery system  
Authors: Tao Wang; Yidan Zhong; Chen Wang; Guolin Tong  
Type: Original article

Dear Sri Hidayati,

We have received a copy of the revised version of the above-referenced manuscript. I would be grateful if you could give me an opinion on its suitability for publication, as you very kindly reviewed the original version.

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Yours sincerely,

Santanu Bandyopadhyay, Ph.D.  
Associate Editor  
Journal of Cleaner Production

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#### Abstract

The problem posed by the silicon interference in bamboo pulp black liquor has been troubling bamboo pulp mills as well as hindering the development of non-wood pulp mills. Silica is separated from bamboo pulp black liquor by acid precipitation, accompanied by the sediment of lignin, which is disadvantageous to alkali recovery system. The amount of carboxylate increases through the oxidation of lignin, and the solubility of lignin increases. So the lignin precipitation and the removal of silica can be quantified by the combination of acidification and light oxidation. For solving the problem, we separate the silicon in the black liquor through oxygen oxidation and carbon dioxide acidification without affecting the stability of the alkali recovery system. TG, combustion calorific value and visible light absorption are tested after oxidation and acidification. Finally, by comparing with the mature pulp black liquid alkali recovery system, it is concluded that when taking economic capital into consideration, oxidizing to pH 12.45(at 80oC) and acidifying to pH 10 (at 50oC) are suitable for our goal. In this case, the silicon removal rate reaches 76.41wt%; the amount of separated lignin is 17.58wt% and the calorific value loss of black liquor reaches 26.47%.

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#### Original Referee Reports:

##### Reviewer 4: (Previous Version)

The topic is original and interesting, but many changes are required in order to improve its quality before being accepted to be published

- \*
- \* Improve English (example "the better conditions")
- \* I found the abstracta bit confusing
- \* "while some, such as the coagulation/flocculation, producing greenhouse gas directly as a result of the applied processes" I cannot understand the mening of this.
- \* There is not a clear structure in the development of the introduction. And the readability is quite poor (too long sentences, no connectors, no a logical sequence of ideas - from an specific problem to a proposed solution and why)
- \* "However, the content of silica in bamboo, which reaches 1%-1.5%(Peng, 2018; Xu, 2015), is much higher than that in wood material." Why this content is so high? Is parto df the composition of the bamboo? Or is an impurity during the bamboo collection?
- \* "is burned directly to produce thermal energy, however, itis a kind of useless utilization" Useless? Black liquor combustion is generally accepte and i am sure that it is more profitable that many strategies for lignin recovery.
- \* The aim should be clearer
- \* What is methane acic? (page 3 line 46). And hydrogen dioxide??????
- \* Figure 1. You cannot define a black liquor without lignine. Change name of the final liquid stream
- \* "heating up to 80oC for black liquor, oxygen was added into the flask" how? Flow rate? Kla????? pH decrease during the oxidation?
- \* "the pH value of the solution to 12.85, 12.75, 12.70, 12.45". Why these pH values?
- \* Materials section is quite unclear
- \* 2.4.3 Determination of silicon in BL. Did not the color of black liquor interfere with the photometric method?
- \* Explain results from table 2. A figure with these data could be more clarifying
- \* Include standard deviations
- \* The main drawback of this paper is that the discussion of results is very confusing and difficult to follow. It should be completely rewritten in order to improve its readability. And English should be revised by a native speaker (there are too many mistakes and typos)
- \* Figure 4. Are you comparing two streams with diferent initial solid concentrations?
- \* Table 4 is redundant
- \* 3.5. Viscosity. Was thixotrophy discarded? The changes in rheology, are mainly due to pH or to oxidation?
- \* What will you do with the final liquid stream obtained (figure 1) when applying your strategy at industrial scale???

**Reviewer 5: (Previous Version)**

In this paper, silica was separated from the bamboo pulp black liquor through oxygen oxidation and carbon dioxide acidification. It is a badly written paper. Many sentences are difficult to follow. This is not an original work. Similar studies have been carried out:

Ono, K., Isono, Z., & Tsuda, T. (1969). Desilicification from the high silica containing kraft black liquor by the improved carbon dioxide method. *Agricultural and Biological Chemistry*, 33(4), 622-624.

Highlights: There is no verb in the first three highlights

Abstract: Line 17-18, and based this on the premise of not affecting the stability of the alkali recovery system. Unclear sentence.

Introduction Page 2, Line 4-8, "Due to their energy requirements Most chemical, .....directly as a result of the applied processes" Unclear, correct the sentence

Page 6, Line 52-54 and Page 7, line 17-19, inconsistency and different explanation.

Page 10, Line 13-25, and Fig 5, Why viscosity decreased and reached to WPBL at the oxidation 12.45 and CO<sub>2</sub> addition to pH10. Fig 5 C is enough others are discussed.

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