**UNIVERSITAS LAMBUNG MANGKURAT**

**Agus Mirwan <agusmirwan@ulm.ac.id>**

# [MJFAS] 1479 : Interim Decision
1 message

**Ms Siti Nur Sakinah Ahmad** <sakinah@ibnusina.utm.my>　　　　Thu, Oct 17, 2019 at 9:01 AM
To: Agus Mirwan <agusmirwan@ulm.ac.id>

Dear Agus Mirwan,

Article Id : MJFAS 1479
Title: Temperature-dependent Kinetics of Aluminum Leaching from Peat Clay

Thank you for submitting your manuscript to Malaysian Journal of Fundamental and Applied Sciences. Your paper has been reviewed by your peers, and their comments are appended below.

The reviewers raise a number of points that require your attention, and your manuscript will be re-evaluated after adequate revision.

Please submit your revision online before 23rd October 2019 by logging onto the Malaysian Journal of Fundamental and Applied Sciences online system at ,

Malaysian Journal of Fundamental and Applied Sciences URL:
https://mjfas.utm.my/index.php/mjfas

When submitting your revised paper, please include a separate document uploaded as "Response to Reviews" that carefully addresses the issues raised in the below comments, point by point. You should also include a suitable rebuttal to any specific request for change that has not been made.

Thank you, and I look forward to receiving your revised manuscript.


With kind regards,


Ms Siti Nur Sakinah Ahmad
sakinah@ibnusina.utm.my
------------------------------------------------------
Reviewer F:

Rate the Graphical Abstract ::
　　Meaningful

The subject addressed in this article is worthy of investigation:
　　Yes

The information presented was new:
　　No

Generally the image, figure and table:
　　Good

Scientific approach, rigor and quality:
　　Fair

Clarity and conciseness of the report :
　　Fair

The conclusions were supported by the data:
　　Yes

Overall, the english expression and grammar:
　　Good

To what extent does the article meet this criterion?:
　　Succeeds by a small amount

General comments to author/editor:

This paper reports the Temperature-dependent Kinetics of Aluminum Leaching from Peat Clay. I believe to make the manuscript more reader friendly and to improve the impact authors need to make some improvements.
This manuscript can be publishable after all the concerns listed below were answered properly.


1.    The author did not show the reason why the peat clay extraction achieved up to 100 oC.

2.    Some unit should be revised, exp. mg/l    mg/L

3.    The description will be more interesting if author add mechanism of leaching by picture in the manuscript.

Recommendations:
    Publish after major revision

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Reviewer G:

Rate the Graphical Abstract ::
    Meaningful

The subject addressed in this article is worthy of investigation:
    Yes

The information presented was new:
    Yes

Generally the image, figure and table:
    Fair

Scientific approach, rigor and quality:
    Good

Clarity and conciseness of the report :
    Good

The conclusions were supported by the data:
    No

Overall, the english expression and grammar:
    Good

To what extent does the article meet this criterion?:
    Succeeds by a large amount

General comments to author/editor:
    1. The kinetics was developed from scientific equations. Are all the equation creating by the authors or taking from some sources? No information about it.
2. The image was not so clear, specially for the line of the SC Model with different temperature (Fig. 2)
3. I am a bit confuse with the conclusion. In conclusion, authors mentioned:
a. "...that the aluminium leaching from peat clay was occurred in two stage:...". I cannot found any statement that explain or supporting this conclusion in result part. So that, how to draw this conclusion?
b. "...kinetics parameter provides good concept of mass transfer phenomena...". The same with point a, I cannot found any statement about the relationship between kinetics parameters and mass transfer phenomena for this case.

Recommendations:
    Publish after minor revision

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Reviewer H:

Rate the Graphical Abstract ::

Meaningful

The subject addressed in this article is worthy of investigation:
    Yes

The information presented was new:
    No

Generally the image, figure and table:
    Good

Scientific approach, rigor and quality:
    Fair

Clarity and conciseness of the report :
    Good

The conclusions were supported by the data:
    Yes

Overall, the english expression and grammar:
    Fair

To what extent does the article meet this criterion?:
    Succeeds by a small amount

General comments to author/editor:
    1.      Please mention the Originality/Novelty of this paper should be
emphasized in the introduction
2.      The author did not explain why using HCl treatment for aluminum leaching
from peat clay rather than the other strong acidic treatment (such as HNO3
and H2SO4).
3.      Why HCl concentration of 4 M was chosen for aluminum leaching?
4.      The statement on the introduction paragraph 4 line 16 till end of this
paragraph not clearly written well (understanding), what is the authors
mean?
5.      What is the peat size fraction? Is that true in mm?
6.      Seems in figure 2 that the leaching time still did not reach the
equilibrium, but the author was chosen the time for leaching time is 60
minutes, how about it?
7.      No references from MJFAS were used as based the statement of the author
mention in this paper.

Recommendations:
    Publish after major revision

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Malaysian Journal of Fundamental and Applied Sciences
https://mjfas.utm.my/

**2 attachments**

**1479-7363-1-RV.docx**
14K

**1479-7355-1-RV(1).docx**
15K

Response to Reviews

Reviewer F:

This paper reports the Temperature-dependent Kinetics of Aluminum Leaching from Peat Clay. I believe to make the manuscript more reader friendly and to improve the impact authors need to make some improvements. This manuscript can be publishable after all the concerns listed below were answered properly.

1. The author did not show the reason why the peat clay extraction achieved up to 100 °C.
Response:
Authors are grateful for the comments. The recovery of aluminum increased with time and temperature. The aluminium recovery was about 91.267% after leaching at 90 °C for 60 min, which is the azeotropic point of 6 M HCl and water. $AlCl_3$ dissolution was less sensitive to temperature between 90 °C and 100 °C, which suggests that a diffusion process is likely to be the rate-limiting step because layers may quickly form on the particle surface and prevent acid from reaching the reactive zone at leaching temperature of 90 °C and above.

2. Some unit should be revised, exp. mg/l → mg/L
Response:
Authors agree with Reviewer and we are grateful for the for the suggestion. We already did.

3. The description will be more interesting if author add mechanism of leaching by picture in the manuscript.
Response:
Authors agree with Reviewer and we are grateful for the for the suggestion. Based on Mirwan et al. 2017, the mechanism of aluminum leaching was showed in Fig 2.
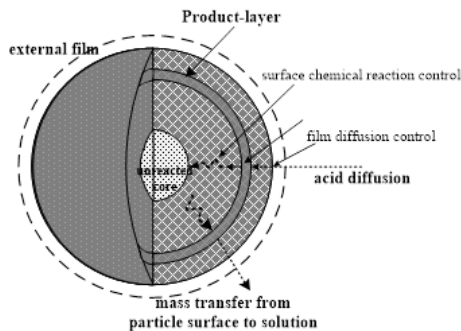


**Fig. 2** The mechanism of aluminum leaching of the SC model.

Reviewer G:

1. The kinetics was developed from scientific equations. Are all the equation creating by the authors or taking from some sources? No information about it.
   Response:
   Authors are grateful for the comments. The equations are derived based on the principle of SC model from the previous paper (Mirwan et al., 2017).

2. The image was not so clear, specially for the line of the SC Model with different temperature (Fig. 2)
   Response:
   Authors are grateful for the comments. To make it clearer, we did make a figure to better illustrate the SC model as following.
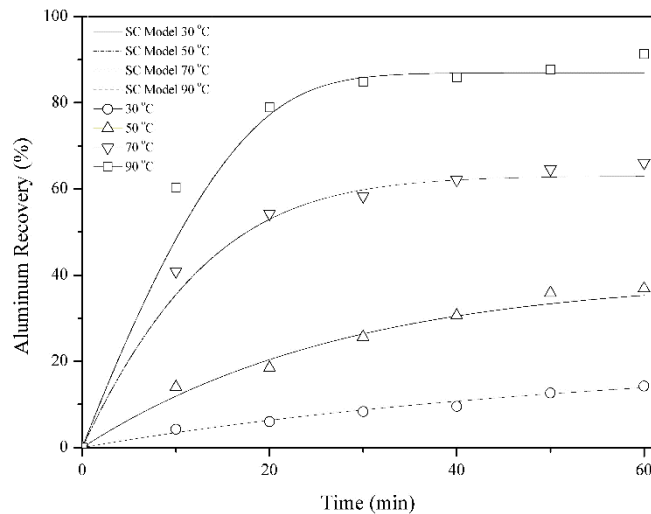


**Fig. 2** Aluminum recovery from experimental data and model curves

3. I am a bit confuse with the conclusion. In conclusion, authors mentioned:
   a. "...that the aluminium leaching from peat clay was occurred in two stage:...". I cannot found any statement that explain or supporting this conclusion in result part. So that, how to draw this conclusion?
      Response:
      Authors are grateful for the comments. The sentence was revised as "The results in the this research obtain that the maximum aluminum leaching recovery from peat clay occurred on 4 M HCl solution at temperature 90 °C".

   b. "...kinetics parameter provides good concept of mass transfer phenomena...". The same with point a, I cannot found any statement about the relationship between kinetics parameters and mass transfer phenomena for this case.
      Response:

Authors are grateful for the comments. The sentence was revised as: "The offered model is appropriate to depict the aluminum leaching kinetics from peat clay in conformation with the research conditions, which was verified by statistical criteria".

Reviewer H:

General comments to author/editor:

1. Please mention the Originality/Novelty of this paper should be emphasized in the introduction
Response:
Authors are grateful for the comments. A well appropriate model on aluminum leaching peat clay was accomplished; nevertheless, the parameters of model do not have bodily sense. While for industrial scale, leaching kinetics data for optimization process, reactor design, and suitable model are not existing

2. The author did not explain why using HCl treatment for aluminum leaching from peat clay rather than the other strong acidic treatment (such as $HNO_3$ and $H_2SO_4$).
Response:
Authors are grateful for the comments. Acids have been examined for Al leaching from WTS. Sulfuric acid ($H_2SO_4$) is one of effective solvents to extract the aluminum. Sulfuric acid could extract 70% of Al within 30 min at pH 2 and the leaching efficiency of Al reached 83.6% using 1 M $H_2SO_4$ within 30 min. However, due to toxic material the sulfuric acid can bring some negative effect on environment, and could lead to self-inhibition effect due to the new interaction during leaching process. HCl is beneficial for the improvement of $AlCl_3$ dissolution rate, but the solubility is decreases with the increase of concentration of HCl solution. When $AlCl_3$ is saturated in the reaction system, $Al_2O_3$ dissolution and precipitation keep a dynamic equilibrium, in which Al2O3 dissolution percentage reaches a plateau.

3. Why HCl concentration of 4 M was chosen for aluminum leaching?
Response:
Authors are grateful for the comments. $AlCl_3$ recovery rate depends on leaching kinetics, while dissolution tendency relies on thermodynamics. From the perspective of leaching kinetics, the increase of HCl concentration is beneficial for the improvement of $AlCl_3$ recovery, but the solubility of aluminum chloride ($AlCl_3$) decreases with the increase of concentration of HCl solution. Thus, we used HCl concentration of 4 M

4. The statement on the introduction paragraph 4 line 16 till end of this paragraph not clearly written well (understanding), what is the authors mean?
Response:

Authors are grateful for the comments. In the introduction paragraph 4 line 16 to the end describes the development of the use of the SC model. The SC model is the most widely used model for the leaching of different constituents from natural mineral materials or hydrometallurgy to acquire metal or other precious material.

5. What is the peat size fraction? Is that true in mm?
   Response:
   Authors are grateful for the comments. The peat clay was sieved to the size fraction of 0.044–0.210 mm or 200-325 mesh.

6. Seems in figure 2 that the leaching time still did not reach the equilibrium, but the author was chosen the time for leaching time is 60 minutes, how about it?
   Response:
   Authors are grateful for the comments. According to Figure 3 in manuscript revision, the leaching recovery increases with temperature, aluminum and at fixed temperature, it increases reaction time. However, when the reaction time exceeds 60 min, the leaching reaction reaches a steady state that is not influenced by temperature.

7. No references from MJFAS were used as based the statement of the author mention in this paper.
   Response:
   Authors agree with Reviewer and we are grateful for the suggestion. But in the meantime, we apologize that there are no references in accordance with our manuscript.

UNIVERSITAS
LAMBUNG MANGKURAT

Agus Mirwan <agusmirwan@ulm.ac.id>

# [MJFAS] 1479 : Final Decision - ACCEPTANCE
1 message

**Ms Siti Nur Sakinah Ahmad** <sakinah@ibnusina.utm.my>        Wed, Nov 20, 2019 at 3:44 PM
To: Agus Mirwan <agusmirwan@ulm.ac.id>

Dear Agus Mirwan,

Article Id : MJFAS 1479
Title: Temperature-dependent Kinetics of Aluminum Leaching from Peat Clay

We are very pleased to inform you that we are accepting your paper for publication in Malaysian Journal of Fundamental and Applied Sciences.

Congratulations, and thank you for choosing Malaysian Journal of Fundamental and Applied Sciences to publish your work.

Effective on 1st January 2017, the author(s) needs to pay MYR300 as a publication fee for each accepted manuscript by the editorial board. The fee is charged for the cost of managing the journal site, review process and management team. Payment can be made by bank transfer directly to the following account:

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**Please attach the proof of payment to sabariah@ibnusina.utm.my

Herewith, we would like to invite you to participate in our research consortium. We look forward to meeting you and welcoming you to I'M Research Consortium.  Please sign up at our research consortium website: http://imresearchconsortium.ning.com/. Together we will build tomorrow's traditions in scientific research and education.

Once again, congratulations and thank you for choosing Malaysian Journal of Fundamental and Applied Sciences (MJFAS) to publish your work.

The Editorial Office of Malaysian Journal of Fundamental and Applied Sciences (MJFAS) will be contacting you for further editing and proofreading processes before the online publishing of the manuscript at http://www.mjfas.utm.my.

Please be reminded that the editing and proofreading process only will be made after we accept the payment and registration on I'M Research Consortium website.

The Editorial Office of Malaysian Journal of Fundamental and Applied Sciences will be contacting you for further editing and proof reading processes before the online publishing of the manuscript at http://www.mjfas.utm.my.

With kind regards,

Ms Siti Nur Sakinah Ahmad
sakinah@ibnusina.utm.my

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**MJFAS INVOICE [1479] 201915-83.pdf**
173K