Judul : Thermal decomposition of struvite in water: qualitative and quantitative mineralogy analysis

Journal: Environmental Technology

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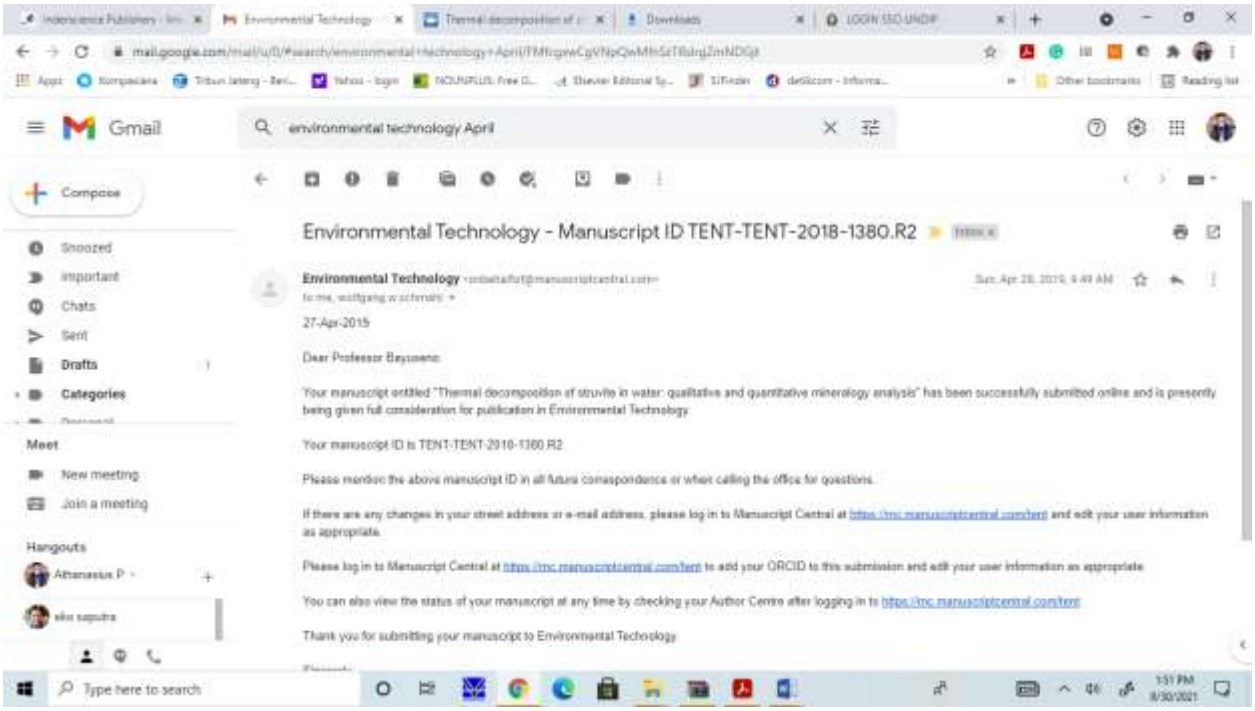
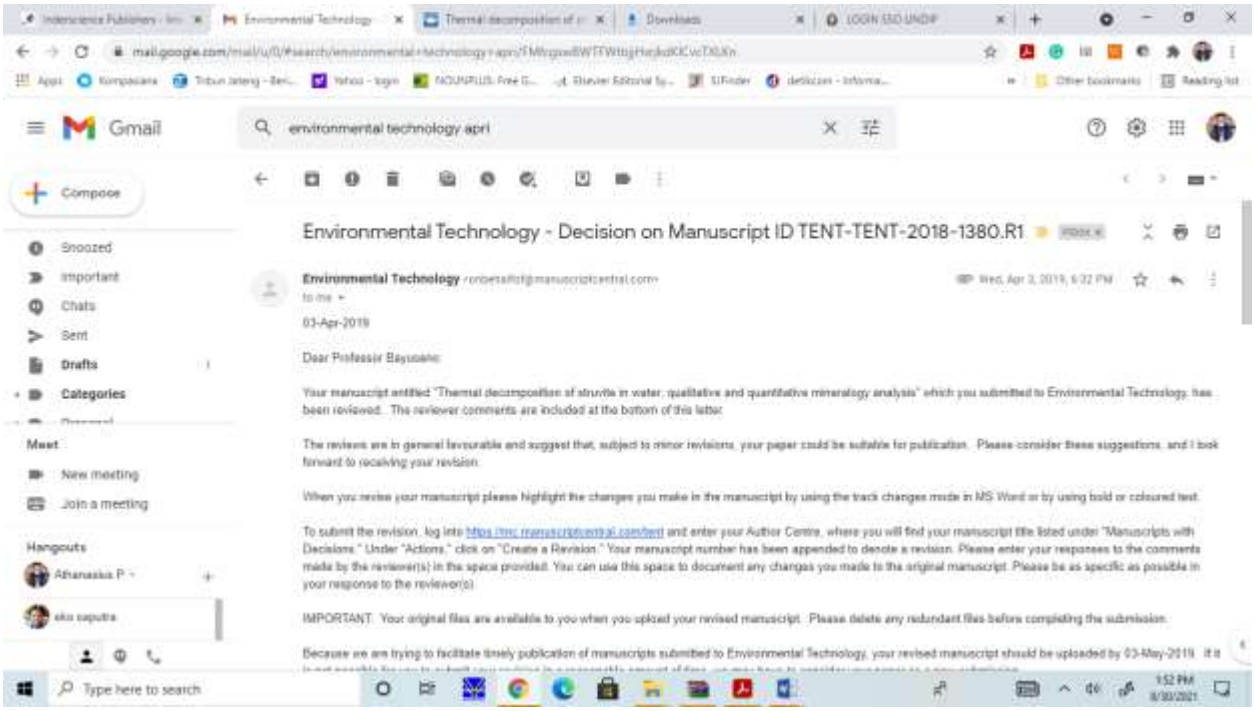




Dear Editor,

Thank you again for your letter on our manuscript. We would like to thank the reviewers for their constructive remarks. The manuscript has been improved accordingly. In the text we used

track changes for the addition/revision of the manuscript. Following, we wrote in the font style of yellow for the answer of the reviewer.

Referee:1

Comments to the Author

Table 1. I suggest adding standard errors for the values reported. Was the experiment performed only once? Looking over the data, the numbers add up to 100. This implies that one of the values was determined by difference. That value should be reported as it was not determined independently and would have a higher error. Also, significant digits need to be reported in a consistent manner.

Response:

Thank you for this suggestion.

For better accuracy in counting statistics, The XRD measurement of each sample was repeated eight times across the same 2θ range, and the plots of each XRD intensities were summed for subsequent qualitative and quantitative Rietveld analysis. Here the phase quantitative analysis was performed at the refined scale factor to provide the relative weighted fractions of the phases, With the Rietveld method, the amounts of all phases present in the sample could be quantified simultaneously. The phase quantification procedure involved the identification of major and minor phases. Correspondingly total of wt.% the relative weighted fractions of the crystalline phases would be 100 %.The data in table 1 had been amended. This statement has been also added paragraph.

Revised version

For the better accuracy in counting statistic, the same aforementioned procedure was repeated eight times in the sample across to the same 2θ range. A total of XRD intensity was determined by summing up all diffraction intensities of peaks positioned in that 2 range. The summed plots of X-ray diffraction peak intensities were then utilized for the qualitative and phase quantitative analysis by the Rietveld method.

With the XRD Rietveld method, the amounts of all phases present in the sample could be quantified simultaneously. In this method, the weight percentages of the phases were estimated using the X'Pert plus 1.0 software, on which the obtained scale factor of each phase was used to calculate the weight fraction of each crystalline phase. Accordingly, the major and minor crystalline phases could be identified by this method. The total of the weight percentages of the crystalline phases would be 100 %.

Sample size: What is the size of the struvite sample that was tested? Was the sample weight different for different tests at different temperatures?

Response:

Thank you for this question.
The less amount sample (about 1 mg) was diluted in the less water and used for each experiments. We used the sample holder for transmission method with a central hole of 1 cm diameter. The size of struvite sample is presented in line 117, page 5.

Referee:2
Comments to the Author

The authors have addressed the reviewers' comments.
Response:
Thank you for the comment

Referee:3

Comments to the Author

The revised version of the manuscript titled Thermal decomposition of struvite in water: qualitative and quantitative mineralogy analysis is significantly improved now and reflects the practical usability of the work properly. It can be accepted for publication after the following minor suggestions are addressed (report attached)
Attachments area

1. In abstract, the use of the word 'similarly' in the sentence does not seem very appropriate "Similarly, the decomposition of struvite into an …… XRD intensity background increased dramatically and shows a structure. Further, improve the later portion (highlighted) to make it more clear.

Response:
We had amended accordingly
Revised version

Moreover, the decomposition of struvite into an amorphous form of magnesium hydrogen phosphate may have occurred as the XRD intensity background increased dramatically and shows a glassy structure.

2. In abstract Page Line 17, it should be 'containing' instead of "contained'.

Response:
We had amended accordingly
Revised version:

In this study, the XRD (X-ray diffraction) sample holder containing struvite and water in a sealed condition and then was heated to temperatures of 55 to 120 ^{O}C for 24 h.

3. Page 4, Line75-76, "Eventually, one water molecule together with 0.5 water molecules was absent", meaning is not very clear.

Response:
We had amended accordingly
Revised version

Lastly, the process was followed by the loss of one water molecule together with 0.5 water molecules [2, 22].

4. Page 11, Line 254-256, "Also this study provides …. and the possible reuse of struvite as a fertilizer as part of sustainable development", seems too broad and general considering the specific outcome of the work. Hence it may be removed as the later sentences are well written on the significance of the work.

Response:

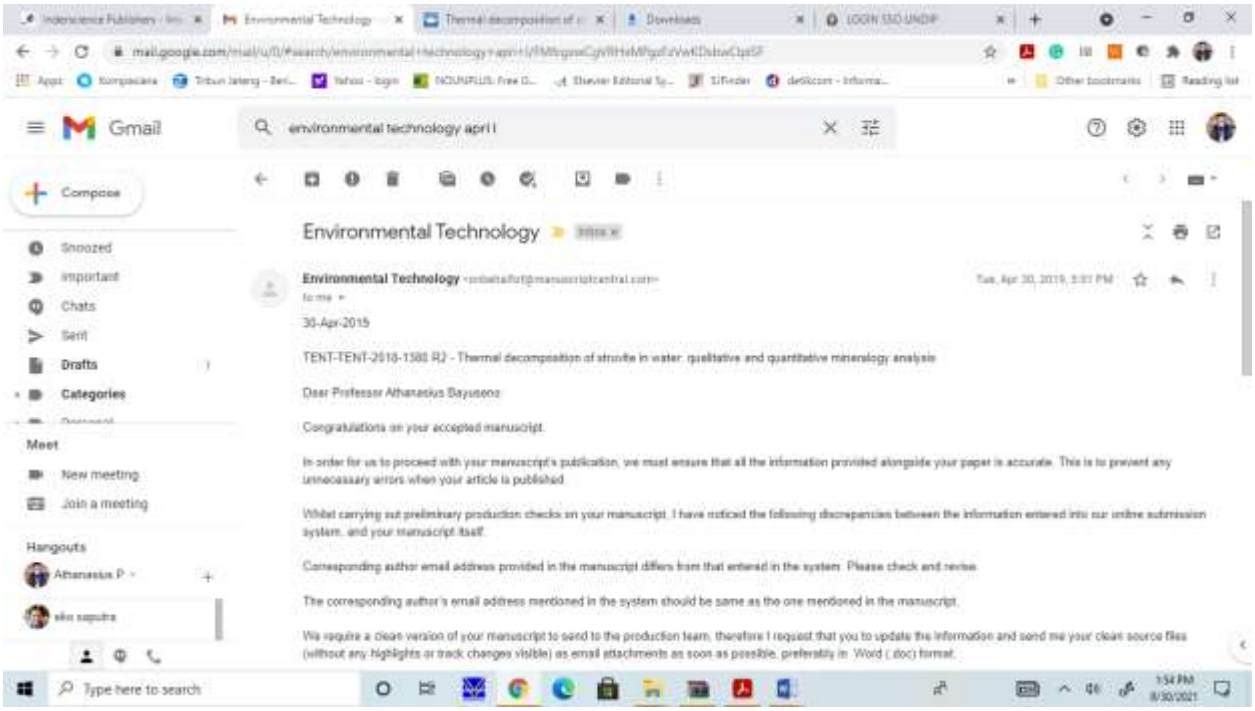
Thank you very much for this suggestion and we had amended accordingly
Revised version

Also this study provides the experimental approach and technical insights for evaluation of phosphorus recovery in the area of wastewater treatment through struvite crystallization and the possible reuse of struvite as a fertilizer

5. Further, since the reviewer could not find a separate file on author's response it was a bit difficult how the comments were addressed.

Response:

We had tried to address all reviewer's comment and added the statement onto the paragraphs.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30-Apr-2015
TENT-TENT-2018-1388.R2 - Thermal decomposition of struvite in water: qualitative and quantitative mineralogy analysis
Dear Professor Athanasius Bayuseno
Congratulations on your accepted manuscript.
In order for us to proceed with your manuscript's publication, we must ensure that all the information provided alongside your paper is accurate. This is to prevent any unnecessary errors when your article is published.
Whilst carrying out preliminary production checks on your manuscript, I have noticed the following discrepancies between the information entered into our online submission system, and your manuscript itself.
Corresponding author email address provided in the manuscript differs from that entered in the system. Please check and revise.
The corresponding author's email address mentioned in the system should be same as the one mentioned in the manuscript.
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