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ahmad firdhaus (INDONESIA): "Analysis of the tensile and bending strength of the joints of ‘Gigantochloa apus’ bamboo composite laminated boards with epoxy resin matrix"

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Correspondence History

Correspondence Date	Letter	Recipient	Revision
Jan 08, 2023	APC Payment Complete	Katarzyna Gajewska	
Jan 03, 2023	APC Payment Complete	ahmad firdhaus, M.Eng	1
Jan 02, 2023	APC Payment Request	ahmad firdhaus, M.Eng	1
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Dec 25, 2022	Editor Decision - Accept	ahmad firdhaus, M.Eng	1
Nov 14, 2022	Author Submits Revision Confirmation	ahmad firdhaus, M.Eng	1
Nov 14, 2022	PDF Built and Requires Approval	ahmad firdhaus, M.Eng	1
Oct 18, 2022	Editor Decision - Revise	ahmad firdhaus, M.Eng	0
Sep 12, 2022	Author Notice of Manuscript Number	ahmad firdhaus, M.Eng	0
Sep 09, 2022	Author Submits New Manuscript Confirmation	ahmad firdhaus, M.Eng	0
Sep 09, 2022	PDF Built and Requires Approval	ahmad firdhaus, M.Eng	0

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Date: Oct 18, 2022
To: "ahmad firdhaus" ahmadf@lecturer.undip.ac.id
From: "JMBM" Katarzyna.Gajewska@degruyter.com
Subject: Your Submission

Ref.: Ms. No. JMBM-D-22-00202
Analysis of the tensile and bending strength of the joints of 'Gigantochloa apus' laminated boards with epoxy resin matrix
Journal of the Mechanical Behavior of Materials

Dear Mr firdhaus,

Reviewers have now commented on your paper. You will see that they are advising that you revise your manuscript. If you are prepared to undertake the work required, I would be pleased to reconsider my decision.

For your guidance, reviewers' comments are appended below.

If you decide to revise the work, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript.

Your revision is due by Jan 04, 2023.

To submit a revision, go to https://www.editorialmanager.com/jmbm/ and log in as an Author. You will see a menu item call Submission Needing Revision. You will find your submission record there.

Yours sincerely

Katarzyna Gajewska
Managing Editor
Journal of the Mechanical Behavior of Materials

Reviewers' comments:

Reviewer #1:
The manuscript presents the use of connections in bamboo laminates. The manuscript can be accepted for publication after minor revision:
In introduction:
1. Use either % or percentage in the entire manuscript.
2. 0° is written as 0o.
3. Use the term plant-based natural fibers, as natural fibers also have other sources.
4. Mention significance and applicability.
5. Provide more literature related to bamboo connections. The reviewer provides a reference for the author, listed in the attachment.

Overall:
1. Add a reference to ASTM in the bibliography.
2. The writing style and typos need to be checked
3. Elaborate on the fracture analysis.
4. Unify the Figure and Table label and caption. This need to be done for the joint name in the entire manuscript. For example, not limited to, using either 'finger' or 'Finger.'

Reviewer #2:
Include composites in the title
Write bamboo in the title
Keyword - include bamboo
section 2.1 - remove all literature review
shorten the fabrication section
ISO and ASTM standards - take this as references and list them in reference list as well
Avoid 'will' future tense in methodology
Section 3 - avoid using 'will'
Compare the results with published work
section 4.2-should merge in results and discussion - section 3
Add Acknowledgement
ref 29 - write all authors

There is additional documentation related to this decision letter. To access the file(s), please click the link below. You may also login to the system and click the 'View Attachments' link in the Action column.
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In compliance with data protection regulations, you may request that we remove your personal registration details at any time. (Use the following URL: https://www.editorialmanager.com/jmbm/login.asp?a=r). Please contact the publication office if you have any questions.

Date:	Dec 25, 2022
To:	"ahmad firdhaus" ahmadf@lecturer.undip.ac.id
cc:	katarzyna.gajewska@degruyter.com
From:	"JMBM" Katarzyna.Gajewska@degruyter.com
Subject:	Your Submission

Ref.: Ms. No. JMBM-D-22-00202R1
Analysis of the tensile and bending strength of the joints of 'Gigantochloa apus' bamboo composite laminated boards with epoxy resin matrix
Journal of the Mechanical Behavior of Materials

Dear Mr firdhaus,

I am pleased to inform you that your work has now been accepted for publication in Journal of the Mechanical Behavior of Materials.

It was accepted on Dec 25, 2022

Comments from the Editor and Reviewers can be found at the bottom of this message.

In order to process your accepted manuscript and prepare the proof, kindly please provide the necessary data:

(upload to the Editorial Manager system or send via e-mail directly to the Managing Editor: Katarzyna.Gajewska@degruyter.com):

1. **Final, editable version of your manuscript** in one of the following file formats: **DOC**, **DOCX** or **TEX**.
2. **All the figures** as separate files (**Figure 1, Figure 2, Figure 3**, …) in one of the following file formats: **bmp, jpg, jpeg, eps, pdf, tiff, png**.
3. **The corrected references list:** The references list should be corrected according to the Journal's standard (Vancouver references style) presented in the Instructions for Authors (https://www.degruyter.com/publication/journal_key/JMBM/downloadAsset/JMBM_Instructions%20for%20Authors.pdf) or the examples given below:

   [1] Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. N Engl J Med. 2002;347(4):284-7.

   [2] Rose ME, Huerbin MB, Melick J, Marion DW, Palmer AM, Schiding JK, et al. Regulation of interstitial excitatory amino acid concentrations after cortical contusion injury. Brain Res. 2002;935(1-2):40-6.
4. **Scan/photo** of the signed **License to Publish**, which can be found on the Journal webpage or under the link: https://www.degruyter.com/publication/journal_key/JMBM/downloadAsset/JMBM_Open%20Access%20License%20to%2

Thank you for submitting your work to this journal.

With kind regards

Katarzyna Gajewska
Managing Editor
Journal of the Mechanical Behavior of Materials

Comments from the Editors and Reviewers:

Reviewer #2:
accept

To:
David Hui
Editor-in-Chief
Journal of the Mechanical Behavior of Materials

Thank you for giving us the opportunity to submit a revised draft of our manuscript titled *Analysis of the tensile and bending strength of the joints of 'Gigantochloa apus' bamboo composite laminated boards with epoxy resin matrix* by Parlindungan Manik, Ahmad Firdhaus, Kiryanto, Tuswan, Bagus Muhammad Ichsan for consideration for publication in the Journal of the Mechanical Behavior of Materials. We appreciate the time and effort you and the reviewers have dedicated to providing your valuable feedback on my manuscript. We are grateful to the reviewers for their insightful comments on my paper. We have been able to incorporate changes to reflect most of the suggestions provided by the reviewers. We have highlighted the changes in blue font colour within the revised manuscript. Here is a point-by-point response to the reviewers' comments and concerns.

Best regards,

Ahmad Firdhaus

#Reviewer 1

1. Use either % or percentage in the entire manuscript.
   Answer: thank you for recommendation, we have used % in entire manuscript.

2. 0̊ is written as 0o.
   Answer: We have revised the degree writing

3. Use the term plant-based natural fibers, as natural fibers also have other sources
   Answer: we changed the sentences into plant-based natural fibers

4. Mention significance and applicability.
   Answer: the applicability has been added in Section 4. The updated version is as follow:

   In practice, numerous bamboo boards can be joined together using mechanical joints to form a huge panel in the ship construction production procedure. Solid jointed boards and connecting boards made of entire sawn wood are used to make laminate joints. A connecting board constructed of linked connecting slats or short sawn wood is referred to as a non-solid jointed board. Butt joints, finger joints, scarf joints, tongue and groove joints, and desk joints are the 5 types of connecting blades and boards. Flat-based typical structures such as decks, walls, and superstructure members, among others, are better suited to this manufacturing approach in the early stages of construction. Furthermore, creating curved-based bamboo boards might be a more difficult process requiring specialized production procedures. For example, flat bamboo boards can be arranged and then joined together to create a deck with specific scantling calculations.

5. Provide more literature related to bamboo connections. The reviewer provides a reference for the author, listed in the attachment.
   Answer: the literature listed in the attachment is cited in reference number 23.

6. Add a reference to ASTM in the bibliography.
   Answer: We agree with your suggestion. We have added the ASTM as references in the reference number 24 and 25.

7. The writing style and typos need to be checked.
   Answer: Thank you for your valuable comment. We have rechecked the grammatical structure and error of the whole revised manuscript. The authors ensure the readability of the article has improved.

8. Elaborate on the fracture analysis.
   Answer: fracture analysis of each joint types has been added.

3.1 Result of Tensile Test

It can be seen in Figure 11 that there is a fracture in each tensile test specimen, wherein the test specimen most of the fractures are located between the joints. Due to axial load, fracture is initially started at the joint connection of the applied load at testing specimen, in which the glue/ adhesive layer breaks due to lower strength compared to bamboo material. The crack at adhesive layer surface then grows into delamination between bamboo lamina. The desk joint seen in Figure 11e has the most substantial tensile strength due to its cross-sectional area, which is more significant than other types of connection. For this type of connection, the finger joint has the weakest tensile strength because the connection is quite complicated, and this type of connection allows air bubbles to be trapped between the joints of the boards.

3.2 Result of Bending Test

As shown in Figure 13, there are similar fractures phenomena in each bending test specimen, wherein the test specimen, the fractures are mainly located between joints. Due to bending load, fracture is initially started at joint connection at bottom part of the applied load at testing specimen, during which the glue/ adhesive layer breaks due to lower strength compared to bamboo material. Surface cracks are initiated at the lower surface of the specimen under tension. surface crack has a similar pattern for each joint type variation. In all laminated bamboo composites, lamina delamination occurs due to the non-adherence of fibers between the laminae and the matrix material due to the weak adhesive layer. In addition, desk joints have the most substantial tensile strength because the cross-sectional area of the connection is more extensive than other types of joints. Finger joints have the weakest tensile strength because the connection is quite complicated, which allows air bubbles to be trapped between the joints board. In addition, desk joints have the most substantial tensile strength because the cross-sectional area of the connection is more extensive than other types of joints. Finger joints have the weakest tensile strength because the connection is quite complicated, which allows air bubbles to be trapped between the joints board..

9. Unify the Figure and Table label and caption. This need to be done for the joint name in the entire manuscript. For example, not limited to, using either 'finger' or 'Finger.
   Answer: We have changed the table and figure captions in entire manuscript.

#Reviewer 2

1. Include composites in the title
   Answer: We have changed the title of the manuscript into: Analysis of the tensile and bending strength of the joints of '*Gigantochloa apus'* bamboo composite laminated boards with epoxy resin matrix

2. Write bamboo in the title
   Answer: We have changed the title of the manuscript into: Analysis of the tensile and bending strength of the joints of '*Gigantochloa apus'* bamboo composite laminated boards with epoxy resin matrix

3. Keyword - include bamboo
   Answer: Keywords: Laminate plates, laminate joint, tensile test, bending test, Gigantochloa apus, bamboo.

4. Section 2.1 - remove all literature review
   Answer: We have removed all content in section 2.1

5. Mention significance and applicability.
   Answer: the applicability has been added in Section 4. The updated version is as follow:

   In practice, numerous bamboo boards can be joined together using mechanical joints to form a huge panel in the ship construction production procedure. Solid jointed boards and connecting boards made of entire sawn wood are used to make laminate joints. A connecting board constructed of linked connecting slats or short sawn wood is referred to as a non-solid jointed board. Butt joints, finger joints, scarf joints, tongue and groove joints, and desk joints are the 5 types of connecting blades and boards. Flat-based typical structures such as decks, walls, and superstructure members, among others, are better suited to this manufacturing approach in the early stages of construction. Furthermore, creating curved-based bamboo boards might be a more difficult process requiring specialized production procedures. For example, flat bamboo boards can be arranged and then joined together to create a deck with specific scantling calculations.

6. shorten the fabrication section
   Answer: We have shorten in Section 2.2. The changes are as follow:

   2.2 Test Specimen Manufacturing

   Apus bamboo laminated joint boards are made in stages. First, 3-year-old, 150 mm-diameter bamboo apus from Yogyakarta, Indonesia, are felled. As seen in Figure 2, after cutting apus bamboo, the stem must be cut 30 cm before the branch. Bamboo stems are peeled and split into blades. Splitting bamboo yields 30 x 20 mm slats. Using a four-sided tool, bamboo slats are laminated. This process yields 1.2, 1.8 and 3mm thicknesses. Figure 3 shows drying bamboo slats. This ensures that no water remains in the bamboo or bamboo fibers.

   Aligned bamboo slats are glued with epoxy resin to make apus bamboo laminate board. In this process, bamboo slats are arranged parallel to the direction and according to their thicknesses and glued on top of bamboo slats that have been glued and put together again with epoxy resin until they reach 10 mm. In terms of specific strength, the bamboo

slats-prepared laminated board is superior to other methods [23]. Figure 3 shows how Apus bamboo is glued between layers to form a laminate board, then pressed to densify the layers. Figure 4 shows how more glue was used to reduce space risk on a laminated board. The following method connects laminated boards using butt joints, finger joints, scar joints, tongue-and-groove joints, and desk joints. After the joints dry and harden, laminated boards are cut to the sizes specified in tensile and bending tests. Then, the surface is smoothed by sanding.

7. ISO and ASTM standards - take this as references and list them in reference list as well
   Answer: We have added ISO and ASTM in reference number 24 and 25.

8. Avoid 'will' future tense in methodology
   Answer: We have avoided the use of “will” in the entire manuscript.

9. Section 3 - avoid using 'will'
   Answer: We have avoided the use of “will” in the entire manuscript.

10. Compare the results with published work
    Answer: We have compared the present result with previous study (reference number 22 and 26). The changes are as follows:

    In previous studies [22], testing has been carried out on the technical analysis of apus bamboo, where apus bamboo is tested without using reinforcing fiber, commonly referred to as raw material. The results of this test can be seen in Table 10 for the tensile test strength and the bending strength in Table 11.

    These results are consistent with the study of Manik et al. that 7-layer bamboo composites with a greater epoxy mass matrix exhibited better mechanical qualities than 3 and 5 layers [26].

11. section 4.2-should merge in results and discussion - section 3
    Answer: We have merged section 4.2 into Section 3

12. Add Acknowledgement
    Answer: We have added the acknowledgment:

The author would like to express gratitude to the Laboratory of Ship Material and Strength at Diponegoro University, Indonesia, for providing research facilities and assistance with experimental testing.