

Review of: "Investigation of Mechanical Properties of Sisal Fiber and Sugar Palm Fiber Reinforced Hybrid Composites"

K. K. Ramachandran Ramachandran¹

¹ Government Engineering College, Thrissur

Potential competing interests: No potential competing interests to declare.

The reviewer thanks the authors and Qeios for the opportunity given to review the article. The article, in its present condition, does not possess the minimum quality to be considered for publication in any quality journals. The authors may consider the following comments/suggestions to revise the article.

Title:

1. In composite materials, the primary component is the matrix material. Since the title does not contain information regarding the matrix material, the title needs revision.
2. Sugar palm is a common term for a broad category of palm species, including *Cocos nucifera*. From the image provided, it seems the palm is *Borassus flabellifer*, commonly known as the doub palm or palmyra palm. Use unambiguous terms/names.

Abstract:

1. The first three sentences of the abstract are introductory information. In journal papers, introductory matter like background information, motivation, etc., may be completely avoided.
2. One of the important and required pieces of information, the matrix material, is missing.
3. The details such as specifications, make, model, etc., of the equipment/test facility used need not be given in the abstract.
4. Avoid terms defined by the authors like "specimen 2," etc., in the abstract. The abstract is required to be independent, and the reader should be able to understand it without reading the full text of the paper.
5. Revise the abstract with a brief highlight of the investigation carried out, the principal findings, and the major inferences/conclusions and postulates of the research.

Introduction:

1. The introduction is not focused and also not providing any clear idea of the motivation for the research, the research problem, objectives, and novelty of the research. It is, in fact, a collection of random pieces of information without any continuity and sequential flow of information. Also, it is not clear for what purpose some papers (mostly review papers) are cited in the introduction.
2. Authors may redraft the introduction with the required minimum background information, motivation for the research,

the research problem, research already reported in the domain, literature gap or need for this research, and objectives of the current research by citing literature that is absolutely required to be cited. It is more ethical to cite the original research rather than the review paper in which the original paper is reviewed. Ensure sequential flow of text and group similar text of about 200 – 350 words as paragraphs.

Materials and methods:

1. The materials and methods section is not meant for history or background information. This section should provide concise information regarding matrix and reinforcement materials (type of epoxy resin and its properties, hardener used, fibres used with their synthesis procedure, characteristics/properties, size of fibre, etc.), details of fabrication of the composite (proportion of matrix and reinforcements, equipment/machinery used, any special laying technique used, etc.), post-processing of the fabricated composites, and details of characterization of the fabricated composites (test standard followed, if any, specimen preparation, test details such as equipment specification, special settings, etc.)
2. “Agave sisalana, commonly known as sisal, is a well-known source of hard fibre with an estimated annual production of 400,000 tons in the world.” For statistical data of this kind, the source and year of such statistics must be given. In fact, this type of information is not required to be presented under “Materials and Methods”. Such information, if required to showcase the importance of the research, should be discussed under the “Introduction” section.
3. One should use the precious space of a journal meticulously and effectively. It is not clear the purpose of the two images in Figure 1, and the part used for extraction of fibre is not marked in Figure 2 or explained anywhere in the text. One image of interpretable size with clear labelling of the part used for extracting the fibre only needs to be given.
4. Images in Figure 7 are lacking clarity. Provide legible images, preferably following principles of engineering graphics.
5. A number of sub-subtitles with one or two sentences under each won't look good. In such cases, one can either reduce the sub-subtitles or the entire text under Materials and Methods may be grouped as paragraphs without any sub-subtitles.

Results and Discussion:

1. First few sentences under 4.1 are descriptions of test procedure, standards followed, etc. Information regarding tests, specimen size, and standards followed, etc., should be discussed under Material and methods.
2. For all the results, the information given under Materials and methods is simply repeated under Results and discussion.
3. Under Results and discussion, present the results and correlate/validate with the microstructure, underlying physics, and /or published or established findings.
4. This section is mostly a collection of results and is completely lacking any quality discussion/correlation of the results obtained.
5. Authors should correlate the results with the strengthening mechanism of thermosetting plastics and also compare the results with the reported findings for epoxy hybrid composites with other natural fibres, with clear citation of papers.

Also, provide the micrographs and density ratio of the composites (from the density and wt. fraction of individual components (rule of mixtures) and measurement of mass of the composite) and correlate the results.

Conclusions:

1. Avoid the use of terms like "Specimen 3." In a paper, the Abstract, body of the paper, and Conclusions are considered to be independent entities. So, the terms used in Conclusions should be such that the reader will be able to conceive them without reading the full text.
2. The last part does not seem in order. Authors may redraft the Conclusions with the highlights of the investigation and the principal findings and conclusions without reasoning, preferably as numbered or bulleted points

General:

1. The information regarding the matrix material is missing throughout.
2. The English language needs significant improvement ("... strength-to-weight ratios ...", "This research addresses that specimen-2....", "In recent days, composite materials... other superior properties of composites.", "... specific stiffness and strength, etc.").
3. Use appropriate scientific terms and internationally followed conversions, if available (use of "impact strength" is preferred over "impact test value," etc.)
4. Avoid repetition and ensure continuity and flow of ideas.