

REVIEWS ON THE MANUSCRIPT [24]

Reviewer 1:

The phenomenon is well-studied, the main physical mechanism is explained in a qualitative way.

But there are some points to clarify:

- The time/wire diameter dependance consists of only 3 points. This data is definitely not enough to confirm the theory. The values of time/wire diameters of the figure 3 are not the same as in the table 1. It is not clear why the author didn't plot the additional points from the table 1.
- In the improved theory, when the author tried to account for heat exchange between a wire and environment, he estimated the temperature inside the wire ($T/2$) and the distance between the points with the air temperature and one with $T/2$ (y approx. equals to 3 cm). It would be really good to mention how the experiment was conducted.

Besides, the author's style is not appropriate.

Reviewer 2:

Comments:

The interesting part of the article is the creation of thermodynamic model (called mathematical) of the process and providing some experimental measurements (time of melting vs. load, wire diameter etc.), to confirm the theoretical assumptions.

Experimental results from Figure 4 should be stressed more in the conclusions.

The strongest and the weakest aspect of the paper:

The strongest aspect of the paper is the experimental analysis of the proposed mathematical model.

The weakest part is style and lack of references. The author does not mention even in a single phrase that effect is well-known and is called "Regelation".

Organization and Presentation:

The structure is very hard to follow. (This remark applies to many of the author's articles, but this is one of the hardest to understand.) The text should be divided and named with section titles. The main parts should be: abstract, few introductory chapters (introduction, theoretical analysis, assumptions, etc.), main content (theoretical results, experimental results etc.), and conclusions in the end.

Style:

The reviewer likes and enjoys the style and sense of humor and attitude of the author, however it makes the article very hard to understand, almost unreadable. It should be changed. Some of the comments should be removed (like "how much time has left for the small human, who is standing under the load.")

Additional Questions:

- What is the Regulation effect ?
- While writing the equations for heat, what assumptions do you make about your system (is it closed, isolated, subject to energy dissipation? is the system placed in a refrigerator and is it important, etc.)?

References:

The Author does not refer to any external literature. There are some interesting articles on the subject, for example: http://www.td.mw.tum.de/tum-td/de/forschung/pub/CD_Grigull/047.pdf

Recommendation

- Divide the text into parts (Abstract, conclusions, etc.)
- Remove 90% of unnecessary comments, and add all the necessary ones (model assumptions, discussion of the measurement methods, abstract, etc)
- Please consider revising any parts of the text that are unspecific and do not clarify of what results are obtained and what conclusions are drawn.
- Add a chapter (five sentences approx.) with a discussion of limitations of your solution
- Add a discussion of errors in your measurements
- Do not be cruel, remove the small human from figure 1. His life was hard enough.

Summary:

The article is not recommended for publication now. However, since it has some very interesting theoretical and experimental results, the article can be re-written and re-sent for another revision.

Reviewer 3:

The presented manuscript attempts to solve a problem of a wire cutting a block of ice.

Author did take the liberty of using a non-standard style of presentation, making from the manuscript more a story than a research paper. But unfortunately this is not my main issue with the work.

As the problem was not extremely complicated, a proper solution would require serious experimental results, decent theory and their comparison. The experimental setup could be somehow acceptable, even if the dependencies on diameter are almost useless and the masses are unhappily chosen.

However, the main problem is connected with the theory.

I cannot agree that all the energy gained by freezing of the water will flow back down via the wire. Especially, if the wire does not have a good heat conductance (the first wires used), the theory will not work.

The last equation seems be more meant as a joke – some of the parameters are not described, most of them are unknown.

The connection between theory and experiment is extremely weak and only qualitative.

No theoretical predictions were done, author just did fitting of a function expected by the theory. It seems that if he would include real numbers in the theoretical calculations (such as heat conductance and capacity) he might come to a conclusion that the theory is not complete and does not describe sufficiently the results obtained.

Therefore, unfortunately I do have to suggest to the editors to reject the manuscript unless the author will be able to:

- Rewrite the theory and include quantitative analysis
- Completely rewrite the paper, changing the style to a research manuscript rather than a story “How did I measure ...”
- Ask a skilled colleague in English to check for miss-used words.

Editorial decision:

After thorough consideration and evaluation of the reviews and of the manuscript, we take the editorial decision to invite re-submission.

If the article undergoes a complete overhaul by the author, each concern of each reviewer needs to be thoroughly resolved.

Theory vs experiment: make sure that a revised theory and a sufficiently detailed description of experiments would satisfy the expectations of each reviewer.

Style: We resolve that some stylistic features are inappropriate for the publication.

We request that the text is revised to remove nonsense and reduce the amount of sarcasm to a reasonable minimum.

The examples of the most troubled phraseology are as following: Dracula dropped in water (page 1), “God wants it to be so” (page 2), “I’ve almost turned into an ice sculpture, while writing down data” (page 4), “there’s an angry Transylvanian count somewhere inside our ice cube” (page 4), “trip through Romania has damaged my brain” (page 4), “you don’t have superhuman abilities” (page 4.)

Please never address the readers and comment on their experiences. All parts with “you” need to be switched to first person.

Structure: We recommend implementing rigorously the suggestions of all three reviewers.

Data linearization: There is no need to “linearize” the dependences by re-plotting the same data twice. If a data set is well fitted by a hyperbola (Figure 2) or parabola (Figure 3), this is a sufficient result to conclude that a particular mathematical relation is a valid fit. Never plot duplicate data unless necessary. You may opt to add a measure of the quality of your fit, e.g. via a chi-square Pearson test.