Journal of
Micro/Nanolithography,
MEMS, and MOEMS

Nanolithography.SPIEDigitalLibrary.org

The Ethics of Scientific Publication

Chris Mack

SPIE.

Chris Mack, "The Ethics of Scientific Publication," *J. Micro/Nanolith. MEMS MOEMS* **17**(1), 010101 (2018), doi: 10.1117/1.JMM.17.1.010101.

The Ethics of Scientific Publication

As mentioned many times by me before in these editorials, the main ethos of paper writing in science is to make the paper reader-centric, not author-centric. But readers can be thought of as a proxy for science as a whole, so that making a paper reader-centric is equivalent to putting the advancement of science first. The goal is to advance science by writing a paper that adds novel scientific content to the existing communal collection of scientific knowledge.

There can be other goals in science writing, self-interested goals that benefit the author.[1] There is nothing fundamentally wrong with self-interest, unless these additional goals come in conflict with the main goal of scientific advancement. Unfortunately, they sometimes do. As a result, it is wise for authors to always keep their ethical responsibilities in mind throughout the process of researching, writing, and publishing. If the advancement of science always remains as each author's primary goal, conflicts will usually work themselves out.

1 The Primary Ethic of Scientific Publication

For a result to be scientific, and contribute to the body of scientific knowledge, it must be described sufficiently so that the paper's conclusions can be validated by others. I call this the primary ethic of scientific publication. It requires openness, honesty, and integrity on the part of the authors, all traits that most scientists readily exhibit. When followed, this ethic allows new scientific knowledge to add to existing knowledge and for science to advance.

When commercial or competitive interests intrude, there may be pressure on authors not to provide sufficient detail in a paper. Companies may want to keep certain ideas trade secrets. Authors may want to keep flaws hidden, to increase the chance of publication and to maximize claims of significance. Authors may also want to keep certain techniques to themselves in order to keep ahead of rival research groups in generating new results. Secrets may be desirable, or even necessary, but they are not a part of science.

Put simply, if other interests require that details necessary to validating a paper's conclusions cannot be disclosed, then that paper should not be published in a peer-reviewed journal. Authors who want to keep necessary details hidden should not submit such work for publication.

2 Author Responsibilities Before Publication

Before submitting a manuscript to a peer-reviewed journal for publication, here are the major responsibilities of the authors:

- Carry out the research leading to publication in an ethical manner.
- Write your paper with openness and honesty, keeping the primary ethic of scientific publication in mind.
- Cite as you write to avoid plagiarism through sloppy citation practice.[2]
- Ensure that the work is original and has not been previously published or submitted for publication elsewhere.[3] Cite your own prior and overlapping work properly.
- Select the list of authors appropriately, with full approval of the submission by all authors.
- Choose the most appropriate journal[4] and submit the best manuscript possible. Never knowingly submit a poor manuscript with the hope that the editors and reviewers will help you fix it.
- Spend the time to understand the submission requirements of the chosen journal and comply with those requirements.
- Identify all funding sources and notify the editors of any potential conflicts of interest.

3 Author Responsibilities During the Peer-Review Process

During the review process, the authors find themselves waiting until that anticipated moment arrives when the editor returns a first decision, often with reviewer comments attached. If the decision requires a response and a revised manuscript, the response and revisions provided by the authors are critical to whether the manuscript will finally be accepted or rejected. To that end, here are the major responsibilities of the authors during this process:

- Treat editors and publication staff with respect throughout the publication process.
- Do not take critical reviews personally (this can be hard advice to follow), and never respond to a review while angry or upset. It is human nature to interpret a criticism of your work as a criticism of yourself, but this is rarely an accurate response and never an appropriate one. If you find your temperature rising while writing a response to a review, set it down and take up the task later.
- Almost always, revisions in response to reviews will make the paper better. Despite any emotional reactions you may have and the extra work that the revisions entail, be grateful for this opportunity to improve your paper based on an expert's assessment.
- Reply to a journal request for manuscript revision by providing a point-by-point response to every item brought up by reviewers and editors. You do not have to accept every request for revision made by a reviewer, but if you

disagree with a point, explain why (with evidence if appropriate). If you make a change to the manuscript in response to a reviewer point, describe exactly what change has been made.

- Before submitting a revised manuscript to the journal, make sure that every author has approved all changes.
- In rare circumstances, material added to a revised manuscript may require the addition of a new co-author. If so, carefully explain in your response why the new author is being added.

Remember that during the peer-review process the material found in your manuscript cannot be submitted to another journal for consideration. If your manuscript is rejected, you are then free to submit the manuscript elsewhere. It is very wise, however, to take any comments or criticisms that accompany a rejection very seriously and to improve your manuscript accordingly before trying again.

4 Author Responsibilities After Publication

An author's responsibilities do not end with publication. Here are the major responsibilities of the authors after publication:

- Authors are responsible for responding to well-considered criticisms of their work after it has been published. If necessary, errors discovered after publication should be corrected through errata or subsequent publications.
- Be prepared to share the data found in your paper (or that your results rely upon) with other researchers upon request. Once published, you must consider these data to be open source and not proprietary.
- Because you might have to share them, all data that the paper relied upon should be carefully organized and archived for as long as practically possible (a minimum of three years is a good goal).

Advances in technology have the opportunity to make the primary ethic of scientific publication easier to achieve. Archives of supplemental material and data can be linked to a publication so that authors do not have the bear the burden of keeping a publication's data available to others. SPIE is currently investigating options for providing this service to its authors and readers.

5 Conclusions

All parties involved in the publication process have ethical responsibilities formed by the role of publishing in the progress of science. Here, the author's responsibilities have been spelled out before, during, and after the publication of a scientific paper.

6 Announcement

This editorial is the last in a series of editorials I've written, spanning six years, on the topic of how to write a good scientific paper. I have collected up these editorials, edited them, added some new material, and organized them into a book: *How to Write a Good Scientific Paper*, published by SPIE. Thanks to the generosity of SPIE, the electronic version of this book will be available free of charge. You can find it here: http://spie.org/Publications/Book/2317706. My hope is that it will be useful to any scientist or engineer who wants to publish in a peer-reviewed journal.

Chris Mack
Editor-in-Chief

References

1. C. A. Mack, "Editorial: why write and publish a paper?," *J. Micro/Nanolith. MEMS MOEMS* **16**(4), 040101 (2017).
2. C. A. Mack, "Editorial: plagiarism," *J. Micro/Nanolith. MEMS MOEMS* **15**(4), 040101 (2016).
3. C. A. Mack, "Editorial: double publication," *J. Micro/Nanolith. MEMS MOEMS* **16**(2), 020101 (2017).
4. C. A. Mack, "Editorial: picking the right journal," *J. Micro/Nanolith. MEMS MOEMS* **14**(4), 040101 (2015).