

Engaging in Scientific Publishing: Benefits and Norms to Follow as Authors and Reviewers

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The engagement of young researchers in the process of scholarly publishing is essential to their career development as well as to advancing science. It signals active involvement with the discourse in a field and contribution to the body of knowledge. Writing and reviewing scientific articles can facilitate a deep understanding of the scientific process and the nuances of effective experimental design as well as the acquirement of appropriate scientific communication skills; notably, these skills are central to the competitiveness and success of young professionals (YPs) in today's and tomorrow's workplace, be it in academia or industry. A number of research studies have explored the benefits of engaging young researchers in scientific publishing. As highlighted in some of these studies, despite the importance of the early exposure of graduate students and young researchers to scientific writing and peer review, relevant activities are often not prioritized within the framework of educational programs, thus leading to the limited development of key skills—critical to the success of YPs across different fields—such as communicating research to a general audience, structuring ideas through effective scientific writing, and identifying the strengths and weaknesses of experimental design [1]. Thus, it is of paramount importance that YPs are aware of the

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EDITOR'S NOTE

In this issue of *IEEE Antennas and Propagation Magazine*, we have a very useful and informative article by Prof. Konstantina S. Nikita, editor-in-chief of *IEEE Open Journal on Antennas and Propagation*, on the benefits of scientific publishing and review process. Participating in the scientific discourse by publishing scholarly articles and active participation in the review process has great benefits to young professionals (YPs) for their career development. Prof. Nikita's article provides very detailed guidelines and norms to follow as authors and reviewers. We have many more exciting articles planned for this column in future magazine issues. Anyone who would like to contribute to the "Young Professionals" column or have any suggestions on topics of interest, please contact me at cjreddy@ieee.org. Follow us on LinkedIn at <https://www.linkedin.com/company/ieee-aps-yp> for the latest updates and events that are of interest to the IEEE Antennas and Propagation Society's YPs.



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benefits of becoming actively involved in the publication process, both as authors and reviewers, and are also provided—and pursue themselves—relevant opportunities toward augmenting their technical and communication skills, which can prove valuable in their current and future careers. The IEEE Antennas and Propagation Society (AP-S) offers a range of journals, covering the entire spectrum of the antennas and propagation field, that represent excellent opportunities for YPs to advance their career through publishing and reviewing [2]–[7].

BENEFITS OF SCIENTIFIC WRITING FOR YPs

Scientific publishing conveys multiple benefits for YPs embarking on their career journey in an academic or

corporate environment (Figure 1) [1], [8]. It is a keystone of scientific communication and an important step in the research process. Research can advance knowledge and accelerate technical innovation only if the work is shared. Along these lines, YPs that communicate their ideas with the global scientific community through scientific writing in peer-reviewed journals are more likely to increase the impact of their research across their field. Especially open access publishing, supported by a multitude of data and code sharing repositories, can further maximize research impact by ensuring the availability and reproducibility of published research across current and future generations [9]. Moreover, adding a peer-reviewed publication to their curriculum vitae provides YPs with credibility to their critical thinking

and knowledge about a specific subject, increases professional prestige, and can contribute to career advancement. Considering that scientific publishing is a highly competitive and demanding endeavor, success in joining the scientific dialog by publishing a peer-reviewed article reflects a high level of technical and communication skills and helps in enhancing professionalism, resilience, confidence, and leadership and management skills, which are greatly valued in the workplace.

Equally important is the fact that scientific publishing is a continuing procedure that is inherent to the research process. In this regard, scientific writing can lead to the generation of significant results and conclusions while also sparking improvements of the presented work as well as new ideas. Moreover, the process of peer review can significantly enhance the quality of the article and inspire new ideas for future research projects. As a result, young researchers, who are early on familiarized with scientific publishing, not only are driven to develop core competencies, but also gain significant experience toward refining, enriching, and expanding their research as well as shaping and conquering their career goals.

NORMS TO FOLLOW AS AUTHORS

For young researchers preparing to share their work with the scientific community and the wider world, navigating the world of scientific publishing can be an overwhelming and daunting project. An author embarking on the publishing

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journey for the first time is usually confronted with a mass of information and requirements pertaining to the entire lifecycle of a publication, from writing, perfecting the manuscript, identifying an appropriate journal, and navigating the peer-review process to getting published and reaching the scientific community. Being aware of the following key points can facilitate the optimization of the writing process, improve the chances of publication, and enhance the overall publishing experience:

- *Select a journal:* The identification of an appropriate journal for article submission is critical to the evolution of the publishing process and should be based on the article's area of focus as well as the target audience. Browsing through journals that publish articles focusing on relevant topics to those featured in your research is considered a good practice. The type of the submitted article, i.e., research, review, short communication article, and so on, is also an important aspect that should be taken into account. Moreover, the type and breadth of the targeted audience, as defined by the topic, the level of interdisciplinarity, and the expected appeal to the scien-

tific community, may also play a crucial role. Evaluating candidate journals toward identifying your target journal and forming your submission plan is the next step and should be driven by several criteria including the journals' turnaround time, indexing, impact factor, open access options, editorial board members, and so on. Selecting a gold open access journal for the publication of your work is associated with benefits such as rapid publication, barrier-free access, enhanced dissemination, and maximum exposure, which provide authors the opportunity to maximize the impact of their research, connect with experts in the field, and contribute to enabling innovation to happen more rapidly [10]. Authors are in general advised to determine the aspects that matter the most for their research and address their publication needs.

- *Write your article:* Research articles follow a basic structure comprising different sections which serve a unique purpose as the article builds to its conclusion. Adhering to this structure facilitates the writing process and helps to ensure organizational coherence. Since the majority of scientific journals provide thorough instructions on article writing, which are usually summarized on their websites and in corresponding article templates, authors are advised to write and format their articles according to these guidelines.



FIGURE 1. The benefits of scientific publishing for young researchers.

When writing your article, it is recommended that you carefully work on the approach of the research presentation and take care of unfolding your research story logically rather than chronologically. Avoid writing and editing at the same time, which is usually destructive and may significantly slow down the writing process. It is also vitally important to consider the optimization of your article in terms of search engine optimization requirements at the beginning of the writing process. Special emphasis should be placed on the selection of appropriate and consistent keywords, the creation of a concise and accurate title that includes some of the most relevant keywords, and the optimization of the abstract with the aim of highlighting essential findings and the importance of the presented research. This approach will help to make your article discoverable on search engines and online journal platforms so that your work reaches the widest possible audience, and attracts significant interest, reflected in a high number of views, downloads, citations, and shares. Moreover, in line with the Declaration on Research Assessment [11], authors are encouraged to adopt specific best practices such as the provision of information about the specific contributions of each author, the inclusion of a sufficient number of references in research articles as well as the citation of primary literature in favor of reviews in order to give credit to the group(s) who first reported a finding. After completing the writing process, it is useful to have your article proofread and reviewed by a colleague; you will be provided with constructive feedback toward a significantly improved version of your article.

- **Submit your article:** After completing the writing of your article according to the specifications of the selected journal, your submission can be finalized. Accompanying your submission with a cover letter is a great way to commu-

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nicate to the editorial board the novelty of your research. It is recommended that the repetition of the abstract is avoided in the cover letter, which should be short and direct. The majority of journals have online submission portals that guide authors step by step through the article submission process. In case you have any questions about your journal's submission process, you can contact the journal's editorial office.

- **Navigate the peer-review process:** Articles are reviewed by experts working in the field in terms of their quality, validity, and novelty. Journal editors identify and invite reviewers to evaluate the articles they handle. The editor-in-chief makes the final decision based on their own assessment alongside the comments provided by the reviewers and the recommendations by one or more editors, depending on the journal's editorial board structure. After the review process is completed, the article is rejected or returned to the authors with comments and requests for changes and improvements. It is rare to have your article directly accepted without being asked to make revisions; any feedback should be treated as an opportunity to improve your article. When resubmitting a paper following revisions, it is essential to include a response letter to the comments raised throughout the review process and a detailed document highlighting all the implemented changes. Authors should use scientific language and provide clear evidence to demonstrate their arguments or illustrate the implemented revisions. In the

case of declining a referee's suggestion, it is important to adopt a polite, professional, and scientific manner. A decision of rejection should not discourage authors from persevering in publishing their work. Being patient and meticulous across the publication process and utilizing the received feedback in a constructive manner will ultimately lead you in optimizing your article and reaching your goal.

- **Publish and promote your article:** Once an article is accepted for publication, it enters the production phase of the publishing process. A few days after authors submit the final version of their article, a proof is sent to them for potential minor corrections and adjustments before final publication. Changes in the scientific content cannot be made at this stage. After an article appears online, it is important for authors to harness different promotional tools ranging from multimedia, personal websites, social media channels, and conferences, toward disseminating their work. In this way, they are able to maximize their research impact, as reflected in online usage and citation rates, and can also reap several career benefits by expanding their professional network.
- **Share your data and code:** Telling the whole story about your work and making it reproducible has tangible benefits for the community whether they are authors or readers. This typically requires publishing the code and data associated with your research through the available data and code repositories, such as IEEE Dataport [12] and Code Ocean [13]. Articles published with data sets/code meet the requirements of findable, accessible, interoperable, reusable research, and receive increased visibility, which is reflected in a higher number of citations. It grants other researchers easier access to the work, and facilitates fair comparisons.

BENEFITS OF PEER-REVIEWING FOR YPs

The peer-review process is considered the cornerstone of scholarly publishing as it aims to assess the quality of an article toward ensuring the publication of high-quality research, while also providing researchers the opportunity to optimize their articles, as peers identify errors and areas of weakness, and offer suggestions for improvement [14]. The engagement of YPs in the peer-review stage of scientific publishing is associated with multifold benefits, for themselves and for the research community (Figure 1) [15]. Evidence shows that the research efforts of YPs are rated as significantly improved after they have been exposed as reviewers to the evaluation procedure of research articles. In particular, reviewing has been associated with improved writing and critical thinking skills. The experience of identifying the strengths and weaknesses in others' research provides young researchers the opportunity to improve their own approach in performing research and writing scientific articles.

Moreover, given that reviewing is a professional service, it serves as an acknowledgment of the researchers' ability to provide editorial guidance, and can unlock unanticipated professional opportunities and facilitate career progression. Engaging with the academic community can be great for your reputation, esteem, and professional development. Another important benefit is that reviewers have access to emerging ideas and trends within their area of expertise before these are made public, which helps them to stay up to date in their fields, and gain insight into the review process so that they improve their own work. Reviewers also pay a key service to peer-reviewed science by assisting authors in improving their work and ensuring the publication of innovative and high-quality research. They are sentinels of science, and the success and progress of science depends on their diligent work. Along these lines, peer-reviewing empowers YPs to actively participate in the scientific dialogue and contribute to determining the advancement of their field.

NORMS TO FOLLOW AS REVIEWERS

Although getting involved in the peer-review process can be a highly rewarding experience that can help you to improve your own research and further your career, it is also considered a demanding service, especially for young researchers stepping up to the peer-review plate [16]. Since sourcing appropriate guidance can be challenging, the following tips provide a useful roadmap for navigating effectively and efficiently the landscape of peer review.

- *Respond in a prompt and responsible way:* When you receive an invitation to review, the article's abstract will guide you in deciding whether it falls within your area of interest and expertise. It is recommended to respond promptly and avoid introducing delays in the process. If you accept an invitation to review an article, be responsible and make sure to submit your review report by the deadline set by the journal.
- *Display integrity:* It is recommended that reviewers keep the content of the articles they handle confidential and avoid revealing any information to their family, colleagues, friends, supervisors, or students as this is considered a breach of confidentiality. Moreover, they should let the editor know in case there is a conflict of interest. Since it is common for senior reviewers to ask their students to review articles that have been assigned to them, it is advised that young researchers and senior colleagues utilize formal co-review on the basis of a mutual understanding, which is provided by several journals in order to enhance the experience of early-career researchers and acknowledge their contribution in the peer-review process.
- *Compose a thorough review and justify your comments:* Reviewers are expected to provide a summary of their overall impression of the presented research, followed by a discussion of specific areas for improvement. It is useful to divide this section into two parts, one for major issues and one for minor issues, and list within each section the relevant items so that your points are easy to follow. You may refer to specific lines, pages, sections, or figure and table numbers in order to help the authors (and editors) understand your points. Thorough and clear comments accompanied by sufficient justification based on concrete evidence and specific examples lead to the provision of constructive feedback, even if the recommendation is the rejection of the article. Moreover, make sure that you proofread your review before submission. Special emphasis should also be placed on avoiding the recommendation of unnecessary additional experiments or elements that are out of scope for the study or for the journal criteria, as well as using the review to promote your own research or hypotheses, e.g., by suggesting the citation of your own work.
- *Be polite and constructive:* Reviewers are expected to formulate their comments in a positive, constructive way and avoid the use of inappropriate, accusatory, or insulting language. In the case of negative comments, it is recommended that reviewers voice their criticism in a courteous way using neutral, objective language and maintain a professional attitude. In general, it is essential that they avoid any unethical or immoral practices, as this may also have implications for their professional reputation and career advancement. When reviewing articles written by nonnative speakers, it is recommended to be tolerant and point out elements that change the meaning, rather than commenting on the authors' quality of English.
- *Adopt a flexible approach:* Despite the multitude of guidelines for writing a peer-review report, reviewers should formulate and adjust their approach based on their accumulated experience and the article under review. Although a meticulous review report may be lengthy, a high-quality article requiring minor changes would leave little space for criticism and suggestions, leading to relatively brief reports.

- *Stay updated:* Keeping up to date with the published literature and developments in your field is essential for improving your subject knowledge and critical thinking skills. Adopting a critical approach when reading articles and contemplating how you would evaluate them as a reviewer is useful for enhancing your skills as reviewers. You may also read articles that are published online with the reviewer comments.
- *Build confidence:* Young researchers undertaking the role of reviewers for the first time are advised to seek out guidance and mentorship from more experienced colleagues and capitalize on the multitude of available resources for evaluating an article and structuring their feedback. Receiving support by an experienced mentor and familiarizing yourself with the process of peer review will facilitate building your confidence and track record.

CONCLUSIONS

The engagement of young researchers in the publishing process can be stimulating for expanding their knowledge, skills, and competencies toward the advancement of their research, their career development, and the prosperity of their discipline. The benefits of becoming involved in the publishing process both as an author and reviewer were summarized and the main focus points that young researchers should have on their radar to successfully navigate the world of scholarly publishing were presented. Such information

can serve as a jumping-off point for further investigation as young researchers immerse themselves in the publication process as authors and reviewers.

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(continued from page 148)

ANSWERS TO THE ANNUAL QUIZ

All the answers are derived from [2].

- 1) b) 1687.
- 2) c) Electromagnetic induction. (He also made fundamental contributions to the other two areas, diamagnetism and electrolysis.)
- 3) c) Rudolf Clausius.
- 4) b) 1861. (Maxwell was born in 1831 and died in 1879.)
- 5) b) Chemistry. (Her first Nobel prize was in the field of physics.)
- 6) a) Einstein. (Recall that $E = mc^2$.)
- 7) b) Superconductivity. (He was also the first person to liquify helium.)
- 8) c) Walter Brattain.
- 9) c) LED.
- 10) c) Internet.

