

Thoughts on Writing for Review: A Former JASMS Associate Editor's Perspective

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ABSTRACT: This is an invited Account and Perspective, providing observations and advice on writing for review derived from a 40-year academic career that has included 27 years' service as an Associate Editor for the *Journal of the American Society for Mass Spectrometry* (JASMS) and nearly 14 years at the National Science Foundation. This work describes an Associate Editor's perspective. It offers observations on what editors and reviewers look for in manuscripts and some of the more common, best avoided mistakes. Emphasis is on JASMS guidelines, but many elements should be generally applicable and are intended for use by both authors and reviewers.

■ BACKGROUND

The early days of JASMS were challenging. One major concern was receipt of sufficient manuscripts in what seemed to be a highly competitive publication landscape; I handled just 12 manuscripts in 1989–1990, our first, 9-issue year. There were also concerns that JASMS may be perceived as parochial, given its explicit tie to the *American Society for Mass Spectrometry* (ASMS). But Ron Hites, who was then President of ASMS, envisioned an affordable, quality journal that would appear monthly on mass spectrometrists' desks. His vision proved viable, and it did not take long for JASMS to take the disciplinary lead and to obtain its current international profile. During my last editorial year, JASMS received about 300 unsolicited submissions, of which roughly 70% were accepted. Overseas submissions first exceeded those from the US in 2005.

The evolution was challenging, gratifying, and fun. Not only did JASMS grow in stature and scope, but it modernized almost continuously. We moved fairly quickly from paper to email submission and review and became fully online with As Soon As Possible (ASAP) capabilities in 2004, generating electronic archives all the way back to Volume 1, Issue 1. In 2010, we experienced the shift from Elsevier to Springer as our Publisher; a second change of publisher began in 2020 with a new partnership with the American Chemical Society (ACS). Throughout, the support of the mass spectrometry community has been solid and essential. Authors have provided groundbreaking manuscripts illustrating the revolution of our discipline—I find it remarkable that some said in 1989 that we were a mature science dominated by applications. Members and others have provided reviews assuring high quality and impact. Advertisers and the Society have enabled continuing affordability, including reasonable library pricing. Even before Federal policy mandates, the Society insisted on free public access following a 1-year embargo period, consistent with the Society's mission of advancing and promulgating our science. ASMS is a remarkable organization!

In light of growing responsibilities at the National Science Foundation (NSF), I halved my JASMS commitment in 2009, then finally stepped down from JASMS at the end of 2016—a year after Mike Gross became Editor Emeritus. Current Editor-in-Chief Joe Loo asked if I might be willing to share some retrospective insights. After some delay I am now responding to Joe's request.

Although I retired from the University of Tennessee (UT) in 2009, I am writing this under my UT byline because it was relevant during most of my service to JASMS. The comments provide observations made and advice derived in the course of handling over 900 manuscripts and assisting with multiple JASMS author/editor/reviewer workshops conceived and organized by Founding Editor-in-Chief Mike Gross. For optimum currency, I have taken my own advice and consulted the latest Instructions to Authors while preparing these comments. I hope that there may be something useful here for a broad cross-section of JASMS readers and others.

■ OBSERVATIONS AND ADVICE

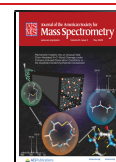
1. General Advice. Some things should be obvious, but I'll include them anyway. When preparing a manuscript, start with something new and appropriate to the target audience and journal. JASMS initially focused on new mass spectrometry science, deferring to more specialized journals for new applications. The line is increasingly fuzzy, as new types of applications often require new concepts, new approaches, or important enabling refinements. By way of illustration, suppose that you have optimized an elution scheme for a specific

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environmental application. You might target a separations journal if the gradient program is unusual, nonintuitive, and/or based on new insights. An environmental journal might be more appropriate if the application is unique and environmentally important, but the methods more-or-less conventional. A mass spectrometry journal would be the proper target if the implementation required a clever and potentially widely useful approach to dealing with phenomena like ion suppression effects, or if it represents an important new application for mass spectrometry. If you choose to write three papers, make sure each picks up where the predecessor left off, and adds something; the application paper may logically be the last in the series, citing (rather than repeating) the enabling improvements. The Committee on Publication Ethics (COPE) Web site¹ maintains detailed, definitive, and concise information about serial publication and other elements of publication ethics, such as plagiarism and self-plagiarism. These are widely recognized guidelines—JASMS is one of over 12000 COPE members.

Proofread your manuscript before submission. Take advantage of your word processor's spell checker. Have someone with relevant (but perhaps not advanced) expertise read it, to ensure that you have not assumed things that are not obvious to most readers. If English is not your first language, seek assistance from a native speaker. There are also commercial services that offer this kind of assistance; I cannot vouch for the value they add. Springer and ACS offer free online language tools² which may be of value even to native speakers. Another valuable resource is the American Chemical Society's Guide to Scholarly Communication³ (an expanded digital edition is now available⁴). There are at least two guides specifically relevant to mass spectrometry nomenclature.⁵

2. Follow Instructions! While the formatting and other rules are generally simpler for publications than for proposals, and the chances for corrections greater, compliance is about as much of an issue. The latest JASMS Instructions to Authors (available at https://publish.acs.org/publish/author_guidelines?coden=jamsef) provide detailed instructions for each section of the manuscript, including the proper sequence of manuscript sections. Here I highlight some pitfalls I've noted over the years.

a. Title Page. Meandering titles risk bewildering reviewers and eventual readers. Be short and to the point; the title is not an abstract. While there is some sentiment for doing away with assigning significance to the sequence of listed authors,⁶ the submitting author needs to ensure concurrence of all coauthors. I have twice encountered individuals who were surprised to find that they were listed as a coauthor of a manuscript they hadn't seen. Neither paper was published. Like most journals, JASMS requests that a mailing address and contact information for the corresponding author(s) appear on the title page. Number pages (all but the figures) starting with Page 1 on the title page; this helps reviewers help you—it is hard to offer specific suggestions on unnumbered pages. Some software enables numbering the lines as well, allowing advice from the reviewer and editor to be even more specifically targeted.

b. Abstract. This may be the most important, most accessible, and least understood section of many manuscripts. The Abstract is a brief statement of key findings. In contrast to a conference "abstract" (which is often self-contained), a manuscript abstract is *not* a summary or miniature version of the paper (including an introduction and experimental

section). JASMS limits your abstract to 250 words; I've seen drafts many times longer. Summarize the findings, not the whole manuscript. Minimize introductory material (the focus of the next section)—a sentence or two is plenty. Keep it short and make people want to secure and read the full paper!

c. Introduction. This is another section that is often inflated. It is critically important to place your work in context, especially if you are reporting a new approach (which needs to be compared with the state of the art) or a new application (the significance of which may not be obvious without some context). The aim is to provide technical, not historical, context. You should not routinely begin the Introduction with "the dawn of the age of man". For new areas with little or no precedent, it may be appropriate to cite all relevant prior work (at most a handful of papers). For more mature areas, it may suffice to cite a key review, and even that may be unnecessary. It is not necessary to remind JASMS readers that, for example, combining MS with chromatography is a powerful tool, or that the earliest mass analyzers were magnets and employed electron (aka "electron impact") ionization. While digitization has relieved some of the stress on journal manuscript pages (with an accompanying increase in the average length of articles, though not necessarily their average new content), pages are still limited and should be treated with due respect. Moreover, reader and reviewer time and attention spans are also limited. They want to get to the heart of the matter quickly and do not expect to reread their favorite monograph to refresh their memory on the basics at the start of each new article. If the reviewer's work is relevant, it should be cited, but not necessarily paraphrased. Although the standard deviation is large, the "average" Introduction is perhaps 1–2 pages, double spaced. For Communications and Notes, the Introduction should be even shorter, a paragraph or two.

Be objective. Resist the temptation to disparage the state of the art in order to inflate the importance of your new findings. There's a subtle but significant difference between stating that "The Jones method typically takes about 10 h; the range of applications could be greatly expanded by acceleration" vs "The Jones method is wholly unsatisfactory for real applications". Remember that if you have found a way to improve on Jones, Dr. Jones is a likely reviewer. Keep new results and conclusions out of the Introduction. It sets the stage, it is not a synopsis. It is common to conclude this section with something like "We now report efforts to improve on Jones' method" rather than "We have lowered the LOD to 1 zmol and the response time to 1 fs" (remember to define recurring nontrivial abbreviations at first use in the Abstract and again in the body of the paper). The latter information is better suited to the Abstract—"Figures of merit have been improved to 1 zmol LOD and 1 fsec response time".

d. Experimental Section. Standard guidance is that you should provide enough detail to enable a reader to reproduce your experiments. There is no need to provide drawings or extraordinary detail in describing commercial instruments. If, for example, the paper focuses on the design and initial assessment of a useful new ion source, a drawing of the source (but not the entire instrument) might be worth a thousand words for illustrating the *new* aspects. If you choose to provide the drawings in a preliminary report, you can subsequently cite that report rather than republish the diagram. Safety should be addressed as appropriate, but it is not customary to state that there are no safety considerations when that is accurate.

There are multiple ways to present experimental parameters. If they are relatively simple, they can be included in the text (e.g., laser fluence, power, duty cycle). If important details are more numerous, a table can be effective, concise, and complete. If parameters vary significantly in the course of the described experiments, it may be best to specify a range and direct the reader to the details: "Concentrations varied from 1 to 10 μM , as indicated for each individual experiment". This is especially important if the paper is about the optimization or impact of one or more parameters. Remember to include the source and grade of chemicals and materials (e.g., "reagent grade" or "type 304 stainless steel"). If you intend to "publish" (i.e., make public) your work, you should not base performance evaluation on proprietary compounds. Readers cannot reproduce measurements on "Compound X" if you cannot tell them what Compound X is. Include information about replicates (in this section or with the data). It is surprising how many scientists appear to believe that they can compare numbers (e.g., limits of detection) without considering uncertainties or assess uncertainties without replication. Do not forget the importance of statistics! If your research utilizes special software, mention it in the Experimental section. If the paper is about new software, describe it in the Results and Discussion section, possibly providing details (e.g., computer algorithms) in the Supporting Information.

e. Results and Discussion. There is room for variation here, but it has been my experience that papers that integrate the results and discussion aspects into a single narrative are generally easier to follow than those that first present all the data ("Results") and then discuss it in a separate section. Value is certainly enhanced if the narrative is concise but clear and flows with tight logic—even scientific authors are storytellers. Remember standard rules of composition—start a paragraph with a theme sentence that introduces an idea, and end it (when possible) with a bridge to the next paragraph. It is generally easier to follow the story line if there is one idea per paragraph. Sentences that fill a paragraph and paragraphs that fill pages generally exceed the reader's attention span, necessitating rereading and resulting in diminished effectiveness. Subsection titles can be very effective if the topic is complex. Practices for the use and format of subtitles varies; the JASMS Instructions to Authors offer the excellent advice that you view a recent issue for examples.

Most journals (including JASMS) prefer that you incorporate equations and schemes/molecular formulas into the text. JASMS requests that equations be numbered consecutively, with Arabic numbers (in parentheses) at the right; structures be numbered consecutively with **boldface** Arabic numerals, and schemes be numbered with consecutive capital Roman numerals. Sophisticated word processors can imbed figures and tables, giving a polished, typeset appearance helpful to reviewers. Be aware, however, that guidance for margins, line spacing, etc., often complicate or preclude such presentation formats, possibly reducing the value returned for the effort required. To facilitate review, JASMS currently prefers that you imbed figures, tables, and schemes, but also provide copies at the end of the submission.

f. Conclusions. This section is optional and should *not* be a repetition of the Abstract. It is reserved for broad conclusions (sometimes addressing future work or directions) *not already drawn* in the Results and Discussion section. It should add, not summarize, insight. If in doubt, leave it out.

g. Acknowledgments. Be sure to acknowledge your funding agency/agencies, using the format they specify in their Terms and Conditions. For example, NSF's standard Terms and Conditions⁷ state that the acknowledgment should read "This material is based upon work supported by the [name of awarding agency(ies)] under Award No. [recipient should enter the awarding agency(ies) award number(s)]". Publications are often viewed as a measure of performance not only for investigators and projects, but for the agencies that support them. As an aside, acknowledging two or more grants on every paper leaves an author open to questions regarding overlap, especially among government-funded projects.

It is customary to use this section to acknowledge contributions (e.g., suggestions, prereview comments) that do not rise to the level of coauthorship. I once acknowledged an anonymous reviewer whose comments were particularly helpful.

If you reuse figures or other materials published elsewhere, you are responsible for securing permission from the copyright owner and providing evidence thereof to the editors/publisher of your new submission. It is an appropriate courtesy to also notify the relevant author of reused materials if the copyright holder is someone else. Permission should be cited in the figure caption, table, or reference, using wording specified by the copyright owner (e.g., "used with permission"). This information should not be included in the Acknowledgments section.

h. References. Comprehensive reference lists are valuable for review articles. For *research* papers addressing a well-defined new finding or capability, voluminous reference lists are rarely justified; cite only *directly relevant* background and context (precedent). Citing a key review is generally equivalent to citing its contents. It is rarely necessary to cite a textbook in a research paper; remember the specialized knowledge base of your audience! "Typical" research manuscripts contain on the order of 20 references. Including 50 or more—especially if they are largely self-citations—is usually excessive. Inclusion of article titles is helpful to readers and reviewers and is now mandatory for many (perhaps most) journals, including JASMS. Check the format requirements (including the citation format) of the journal you are targeting. Modern reference software packages can greatly facilitate your formatting tasks and can help avoid inadvertent duplication. Journal policies vary on use of endnotes for text other than references; some (including JASMS) prefer footnotes on the citing page for material other than references. Footnotes should be used sparingly, in part because they can be distracting to readers and reviewers.

i. Figures. A picture may be worth a thousand words, but it takes a lot of journal space and increases the cost of publication (to the publisher, if not to the author). Use figures judiciously. A synonym for "figure" is illustration - use figures to illustrate key points and data; details can be provided in tables or as Supporting Information. Collecting a dozen or more frames into a single "figure" with a half-page caption is inelegant and rarely effective. It is easier to compare tabulated quantitative data (with uncertainties!) than it is to compare raw spectral data. A few words of text often can (and should) replace a figure such as a sparse mass spectrum. Avoid figures with large amounts of white space—if all the relevant information lies between m/z 980 and 990, do not show a spectrum spanning m/z 0–1000 or even 900–1000. Remove spurious material such as acquisition dates or raw counts which may be

autogenerated by your data system. Explanatory annotations are better provided in the caption than on the figure itself, but keep captions short. Detailed discussion belongs in the text, not the caption. Instructions to Authors provide specific and useful guidelines for formatting figures (e.g., line widths, resolution, and font). Use of color has become more common as it has become less expensive. Nevertheless, its use should be judicious to be effective. Please be considerate of readers like me who have color vision deficiencies (~8% of men and 0.5% of women⁸). It is easier to distinguish a dashed from a solid line than it is to distinguish a red line from a pink one—especially when the paper is printed out on a black-and-white printer.

j. Tables. Well-constructed tables are a high-density way of conveying data and information, especially when column- or row-wise comparisons are intended. Uncertainties are easily presented by including “ \pm ” for each numeric entry (be sure to explain in the table caption or the Experimental section what the uncertainty represents, e.g., “the standard deviation of triplicate measurements”). A succinct table caption lets the reader understand at a glance what the information represents—often a key target for a reader. In the early days of JASMS, I proofread table entries. That quickly became impractical as submission pressure increased; it is the author’s responsibility. It is an important responsibility. I was surprised how many interchanged digits, rows, and/or columns I discovered when I scrutinized the data.

3. The Review Process. At the inception of JASMS, Editor-in-Chief Mike Gross prepared and distributed business cards stating something along the lines that “This card plus two favorable reviews will enable you to publish your work in the *Journal of the American Society for Mass Spectrometry*”. Except for the disappearance of the cards, that guideline has not change significantly in the history of JASMS. Each handling editor has their own preferences for selecting manuscript reviewers. For me, reviewers suggested by the author were generally considered for one review (avoiding conflicts of interest, such as collaborators or mentors), while the second reviewer was selected from my knowledge of the field, the cited references, or the *Journal’s* extensive keyword-searchable reviewer database. In early days, reviewer candidates responded quickly and affirmatively, likely reflecting the sense of ownership Society members experienced. As time went on, it became routine to contact three candidates in hope of securing two timely reviews. The online system made it easy for the editors to specify alternates who would be contacted automatically if a primary candidate declined the request. The requested response time was (and remains) 2 weeks from receipt of the article; actual response times grew slowly but steadily from that target. For the year that ended April 30, 2019, 31% of review requests were declined or ignored, and the average review time was 5 weeks.

A great deal of effort has been invested to reduce review time. If you have interest in reviewing for the journal, contact the Editor-in-Chief (eic@jasms.acs.org). If you agree to review, please submit your review in a timely fashion. Authors and editors are anxious to receive your feedback! Equally important, if you are unable to review, please decide and respond as soon as you are asked, so a replacement reviewer can be secured. Suggestions for alternative reviewers are always appreciated. Reviewing is a debt owed by published authors.

Reviewers logically look at the Title and Abstract first. They want to know what the paper is about, and will form a quick

first impression as to whether the topic is interesting—often the basis for a decision to accept or decline the review request. This accounts at least in part for the importance of those elements. The farther down the candidate list an editor must go to find a willing reviewer, the less likely it is that the reviewer who agrees will be enthusiastic about the paper. Beyond that, reviewers (and editors) look for clarity, conciseness, and significance. Does the narrative flow logically? Is the context (Introduction, including background) clear, concise, and complete without being pedantic? Are conclusions well-supported? Are alternative interpretations adequately addressed? Is there sufficient experimental detail to enable a reader to reproduce the experiments? Is safety considered, when appropriate?

A valuable review may devote a sentence or two summarizing the paper, then homes in on strengths (e.g., novelty, importance, and clarity) and weaknesses. It is not necessary or useful to paraphrase the paper in a review. It is helpful to the author if the review points out specific grammatical issues, but it is more important to point out specific strengths (e.g., “This work resolves the long-standing uncertainty about...”) or errors (e.g., “The authors fail to cite the 2009 JASMS paper of Smyth and Jones, which is directly relevant and could address the uncertainty about...”). Are more/better figures needed? Are important details missing? Is the work likely to have impact (be cited)? Remember the reviewer’s dual audience (editor and author). Keep all remarks constructive. Avoid hyperbole or broad generalizations (“the [best/worst] paper I’ve read”).

It is sobering to consider the impact factor—related to the average number of citations for a journal’s articles over the preceding 2 years. For 2018, JASMS’s impact factor was 3.202 (499 articles published in 2016 and 2017 were cited 1598 times in 2018, ranging from 0 to 39 citations per paper; see ISI Web of Science). For comparison, the impact factor for *Science* was 41.037, the *Journal of the American Chemical Society* was 14.037, and *American Laboratory* was 0.043. A key role of reviewers and editors is to ensure high quality, optimizing the impact of authors’ work.

4. Postreview. If your manuscript is accepted without revision, congratulations! You are in a truly elite group (it only happened to me a handful of times in my career). Sit back, celebrate, and prepare to turn around the galley proofs the day you receive them. Possibly even more surprising than how few papers are cited more than a handful of times, is the relatively large number of papers for which publication is significantly delayed because the author fails to return the galley proofs on time. The technical half-life of scientific papers is usually quite short—most papers receive half of their citations within two to four years of publication. While a few groundbreaking papers can endure delays, in most cases science marches on, pushing work toward obsolescence while an author dithers over (or simply ignores) galley proofs.

An even more pervasive and impactful source of delay is the revision process. A request for revision is the most common outcome of JASMS review. If the reviewers and editor have done their jobs, what’s needed should be fairly clear. Typical requests vary from simple clarification of specific points or passages, through provision of additional background and/or consideration of alternative explanations, to expansion of the supporting data. All but the last of these should be manageable in a relatively short period of time—delay will only make revision more difficult. Even provision of additional data

generally should not delay revision beyond a few weeks—more substantial requirements constitute a request for a new manuscript that will require rereview. Excluding outliers (papers withdrawn or abandoned), it typically takes 4.5–5 weeks for the author to revise and resubmit. This is a number with a large standard deviation. You can both directly and indirectly reduce the time to publication of your work if you undertake revision expeditiously and send the revised manuscript with a clear, detailed, and concise point-by-point response to the reviewers' and editor's comments. The aim is both to make the manuscript clear(er), and to make clear to the editor that you have been responsive to the reviewers. In many instances, the editor can accept the revisions immediately upon receipt. Even when a reviewer suggests rereview, the process generally goes quite quickly and smoothly (a few days under review) if the cover letter makes clear that the author has been responsive. Little if any of the response should be argumentative rebuttal; it is rarely necessary or constructive to argue with anonymous reviewers who have endeavored to provide constructive criticism as a service to the scientific community. Constructive response to constructive criticism is usually a good path forward: "We thank Reviewer 2 for pointing out the issues on page 3. The passage was rewritten to remove the ambiguity".

Roughly a quarter of JASMS submissions received in the most recent reporting year were rejected or withdrawn. This is actually the smallest fraction in the past decade (during which the number has been as high as 41%), probably reflecting the clarity of the community's understanding of what is appropriate for JASMS. Still, being in that group is disappointing at best and can be frustrating. If it happens to you, overcome your disappointment and then use the reviewer and editor feedback to make a better paper and/or to find a better fit for your work. You can sometimes authorize the editor to share anonymous review copies with the editor of another journal, facilitating review if the main complaint was fit.

5. Final Words. Nearing 5000 words with no figures or tables, this manuscript slightly exceeds the 13-page average that emerged as a norm over my period of editorial service. Preparing it has been an illustration of my view that writing is an iterative learning process that benefits from feedback. I wish I had saved some of the drafts Jim Taylor (my PhD mentor at Wisconsin) handed back to me covered in red ink (in the days before word processors, both the draft and the comments were hand-written, and "cut and paste" was a literal process involving scissors). The drafts may have helped my graduate students realize that I was trying to help, not annoy them. The same aim applies to reviewers and editors. Our shared aim is to document and advance science. It is a gargantuan communal effort, requiring lots of volunteer review work. Do your part. Be, thank, and listen to a reviewer.

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Notes

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