**Instructions for Preparing Research Article Manuscripts for the**

***Journal of Research of the National Institute of Standards and Technology***

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The *Journal of Research of NIST* (*JRes* *NIST*) is published online only using a rapid publication model. This means that papers are published on a continuous basis throughout the year, soon after they have been peer reviewed and accepted for publication. Papers published between January 1 and December 31 form a volume for that year. Papers are assigned Digital Object Identifiers (DOIs) to facilitate online access and citing. The NIST Research Library automatically files published articles with PubMed Central® on behalf of the authors. All articles are published as open-access, with no restrictions on Web posting, re-publication, or dissemination (other than citation of the original publication and DOI).

All articles should not be a review of previously published material. Rather, it should contain mostly new results. If you reuse material from a previously published article or conference proceedings paper, you must cite it, briefly summarize it, and clearly state what is new and important in the current manuscript.

# Review Process

* The *JRes* *NIST* Board of Editors is responsible for coordinating the peer review process and approving the articles to publish. Articles for special sections may use guest editors who are experts in their fields.
* Research articles submitted to *JRes* *NIST* undergo a thorough and rigorous editorial and technical review by reviewers with technical expertise in the paper’s topic.
* When you submit your paper to the Chief Guest Editor of a special section, please provide the names of at least two reviewers. For NIST-authored papers, these should not be reviewers who reviewed your paper for NIST internal review.
	+ Reviewers have the option of being known or anonymous. Reviewers who choose to be known typically contact the author directly to discuss revisions.
	+ The editors may or may not use those reviewers and additional reviewers.
* The Editor assigned for coordinating the peer review determines when a paper is ready to be officially accepted for publication. Final decisions of acceptance will be determined by the Chief Editor of *JRes NIST*.

# Manuscript Preparation and Submission

The instructions below apply to **Research Articles only*.*** Links to preparation and submission instructions for Technical Articles (data, software, tutorial, tech transfer brief) are available on the [JRes NIST webpage](https://inet.nist.gov/nvl/journal-research-national-institute-standards-and-technology) (these links are for NIST staff, non-NIST staff should request information from the Chief Guest Editor for the special issue by email to poster@nist.gov).

## 2.1 Submission

**For NIST-authored papers only:** Manuscripts intended for publication in *JRes NIST* must be approved by the Editorial Review Board (ERB) prior to publishing. When you receive the memo from ERB that your manuscript has been approved, make changes to the manuscript based on comments and edits noted in the ERB review process. Then follow instructions below.

**Note:** NIST-authored papers for special issues should be submitted to ERB and the special issue guest editor in parallel in order to expedite publishing.

## All non-NIST authored papers (no author is a NIST employee):

* Make sure the document is formatted according to the *JRes NIST* templates and specifications outlined in these instructions
* Submit the Word file to the Chief Guest Editor of the special section by e-mail to poster@nist.gov.
	+ In your submission email, please provide the names of at least proposed two reviewers. The editors may or may not use those reviewers and additional reviewers.

## 2.2 Page Limits

* There are no limitations on the number of pages. However, authors submitting papers that exceed 50 pages, must provide a justification for the page length when submitting their papers. Papers exceeding 50 pages may be more suitable for one of the NIST Technical Series publications.

## 2.3 General Format and Style Instructions

* **All accepted manuscripts** must be formatted according to the *JRes NIST* template and these instructions before submitting the final files to jresnist@nist.gov for publishing.
	+ It is recommended that authors compile their initial submission using the templates provided
	+ Templates include built-in styles and further instructions in comments
* Templates are available on the *JRes NIST* webpage in [MS Word and LaTeX formats](https://inet.nist.gov/nvl/journal-research-national-institute-standards-and-technology) (these links are for NIST staff, non-NIST staff should request information from the Chief Guest Editor for the special issue by email to poster@nist.gov).
* Although MS Word is the preferred format, authors may submit manuscripts prepared in LaTeX using the LaTeX template. When submitting a LaTeX document, please include the complete compiled LaTeX package, including a PDF file of the manuscript and figure image files.

## 2.4 Manuscript Organization

Your Research Article manuscript should contain the following components:

* Title
* Author(s)
* Author affiliation(s)
* Contact email addresses for each author listed in the manuscript
* Abstract (usually about 200 words)
* Key words (maximum 12, in alphabetical order, separated by semicolons)
* Glossary (list of symbols, if desired, unnumbered section; recommended only for mathematically complex articles)
* Body of text (Introduction and numbered sections, including any tables/figures)
* Appendices (if desired, numbered sections; e.g., 7. Appendix A, 8. Appendix B, etc.)
* Acknowledgments (if desired, unnumbered section)
* References (numbered section)
* About the author(s)

Your Research Article manuscript should have the following headings and subheadings:

* Headings and subheadings in the text should have a maximum of four levels, separated from text, be left aligned, and numbered as follows:

1. (Main level)

1.1 (Second level)

1.1.1 (Third level)

1.1.1.1 (Fourth level)

* When referring to numbered sections in the text, use the form “. . . Sec. 1.1 . . . ,” except at the beginning of a sentence where “Section 1.1 . . .” is the correct form.

## 2.5 References

Authors should use the *Proceedings of the National Academy of Sciences of the United States of America (*[*PNAS*](http://www.pnas.org/)*)* style based on [*Scientific Style and Format: The CSE Manual for Authors, Editors, and Publishers*](http://www.scientificstyleandformat.org/Home.html) (8th edition) while adhering to the following requirements:

* Indicate references both within the body of the manuscript and in a list of references at the end of your manuscript.
* Number each reference using Arabic numerals enclosed with brackets. Reference numbers should start with [1] and continue in order.
* When citing multiple references in one in-text citation, continuous numbers should be included as ranges:
	+ Correct: *The information can be seen clearly in various papers [1–5].*
	+ Incorrect: *The information can be seen clearly in various papers [1, 2, 3, 4, 5].*
* When referring to references in the text parenthetically, use the form “[1].” For example, “As Jones and Smith have shown [1];” however, when a reference is referred to non-parenthetically, use the form “. . . Ref. [1] . . .” (except at the beginning of a sentence where “Reference [1] . . .” is the correct form).
* Include the article title when citing journal articles.
* Include the DOI, when available, as the last item in the citation and cited as a complete URL. Example: [https://doi.org/10.1006/jmbi.1995.0238](http://dx.doi.org/10.1006/jmbi.1995.0238).

**Reference Examples**

* **Journal Articles:** Xiong H (2015) Multi-level bell-type inequality from information causality and noisy computations. *Chinese Journal of Electronics* 24(2):408–413. <https://doi.org/10.1049/cje.2015.04.031>.
* **Books:** Giancoli D (2008) *Physics for Scientists and Engineers with Modern Physics* (Pearson Education, New York), 4th Ed.
* **Book Chapter**: Lash S, Urry J (1994) Economies of Signs and Space (Sage Publications, London), Vol. 4, Chapter 8, 3rd Ed., pp 201–213.
* **Article/Essay in an Edited Collection:** Chilson P (2008) The Border. *The Best American Travel Writing 2008*, Vol. 1, ed Bourdain A (Houghton Mifflin Company, Boston, MA), Chapter 8, 3rd Ed., pp 44-51.
* **Conference Paper:** Maloney TJ (2016) Unified model of 1-d pulsed heating, combining wunsch-bell with the dwyer curve. *38th Electrical Overstress/Electrostatic Discharge Symposium (EOS/ESD)*, pp 1–8. <https://doi.org/10.1109/EOSESD.2016.7592562>.
* **Standard:** International Organization for Standardization (2002) *ISO 10303-21:2002 – Industrial automation systems and integration -- Product data representation and exchange -- Part 21: Implementation methods: Clear text encoding of the exchange structure* (International Organization for Standardization, Geneva, Switzerland), 2nd Ed.
* **Technical Report:** National Institute of Standards and Technology Office of Weights and Measures (2016) Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality. U.S. Department of Commerce, Washington, D.C., NIST Handbook 130. <https://doi.org/10.6028/NIST.HB.130-2016>.
* **PhD Thesis:** Hostetler T (2007) *Bodies at War: Bacteriology and the Carrier Narratives of ‘Typhoid Mary’*. Ph.D. thesis. Florida State University, Tallahassee.
* **Unpublished work:** Marcheford P (1993) Report on the Gross National Product 2000–2016.

**Reference Managers**

* *JRes NIST* Endnote and BibTeX styles are available on the [internal JRes NIST page](https://inet.nist.gov/nvl/journal-research-national-institute-standards-and-technology). For more information on managing references, visit the [NIST Research Library's webpage](https://inet.nist.gov/nvl/services/managingreferences). These links are for NIST staff. Non-NIST staff may request information by e-mail to poster@nist.gov.

## 2.6 About the Authors

Please include a two- to three-sentence summary about each author, immediately after the references section. For example:

***About the author:*** *Ryan Fitzgerald is a physicist in the Radioactivity Group of the Ionizing Radiation Division of the Physical Measurement Laboratory at NIST. He carries out research in radioactivity metrology to meet demands from a variety of sectors: basic science, health, security, environmental and commercial.*

## 2.7 Footnotes

* Footnotes should be brief and used minimally. Indicate footnotes using superscripted Arabic numerals, beginning with “1.” Number footnotes consecutively throughout the manuscript. Type footnotes at the bottom of the page on which they are referenced. In most cases, it is best to avoid footnotes. Instead, try to integrate the footnote information into the text.

## 2.8 SI Units and Measurement Uncertainty

* Manuscripts must be consistent with the NIST policy on the use of the International System of Units (SI). See NIST Special Publication 811, 2008 Edition, Guide for the Use of the International System of Units (SI), by A. Thompson and B. N. Taylor at <http://physics.nist.gov/cuu/pdf/sp811.pdf>.
* Manuscripts must be consistent with the NIST policy on statements of uncertainty associated with measurement results. See NIST Technical Note 1297, 1994 Edition, Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results, by B. N. Taylor and C. E. Kuyatt at <http://physics.nist.gov/Pubs/guidelines/TN1297/tn1297s.pdf>.
* Never hyphenate numbers with unit symbols, even when used as adjectives (e.g., 0.25 cm is the correct form; 0.25-cm should not be used). If there is any ambiguity, rearrange the words accordingly. Thus the sentence, “The samples were placed in 22 mL vials,” might be written as “The samples were placed in vials of volume 22 mL.”

## 2.9 Mathematical Equations

* If using MS Word, prepare equations using MathType or Word Equation Editor.
* Center equations throughout the manuscript.
* Number equations using Arabic numbers in parentheses, to the right of the equation. Each equation should be numbered consecutively throughout the manuscript.
* Refer to equations in the text as Eq. (1), etc., except at the beginning of a sentence, where “Equation (1)” should be used.

## 2.10 Disclaimer

If it is necessary to refer to commercial products, include the following disclaimer, once, as a numbered footnote, not as a reference, at the first mention of any commercial products:

*Certain commercial equipment, instruments, or materials are identified in this paper to foster understanding. Such identification does not imply recommendation or endorsement by the National Institute of Standards and Technology, nor does it imply that the materials or equipment identified are necessarily the best available for the purpose.*

# Tables

* Tables should appear in the manuscript, as soon as practicable, after their mention in the text.
* Number tables using Arabic numerals, beginning with “1.”
* Headings should be concise, with only the first letter of the first word in both table and column headings capitalized.
* Indicate table footnotes using superscripted letters (a, b, c, etc.) at the bottom of the table.
* When referring to numbered tables in the text, use the form “... Table 1 ....”
* Tables and table captions should be centered
	+ Table caption is left aligned if it goes over 1 line

# Figures

* There are no limitations on the number of figures
* Figures should be included in the document along with the figure captions.
* If figures are being submitted separately they should be in a format compatible with MSWord; place figure captions where the figures should appear in the text.
* When referring to numbered figures, use the form “... Fig. 1 ...,” except at the beginning of a sentence where it is correct to spell out the word Figure.
* Figure captions should be as concise as possible—detailed descriptions of the figures should be given in the text.
* Figures and figure captions should be centered
	+ Figure caption is left aligned if it goes over 1 line

# Supplemental Materials

* Authors who have supplemental materials should submit them when submitting their manuscripts for review. Supplemental materials may include computer code or data files associated with the paper. A brief description of the supplemental material must be included in the paper. A DOI will be assigned to the supplemental material and inserted into the paper by the Information Services Office. Ideally, short supplemental text, figures, and tables should be included as an appendix to an article.

# Manuscript Checklist

Authors are responsible for formatting, proofing, and correcting errors in manuscripts prior to publishing. While proofreading before submitting the **final** PDF to jresnist@nist.gov **for publishing**, authors should verify:

* manuscript is in the *JRes NIST* template
* manuscript has correct font sizes and line spacing according to the template
(line spacing: 1.1pt; size: 10pt for body text and Headings 2-4; 12pt for Heading 1;
8pt for Figure and Table captions)
* correct spelling, particularly of specialized terminology
* correct in-text references to [tables](#_Tables), [figures](#_Figures), [sections](#_2.4_Manuscript_Organization), [equations](#_3.9_Mathematical_Equations), and [references](#_2.5_References)
* correct author names, affiliation, emails
* keywords alphabetized, separated by semicolons, and end with period
* correct section numbering (see instructions [above](#_2.4_Manuscript_Organization))
* ‘About the Author’ statement after references (see instructions [above](#_2.6_About_the))
* format and number tables and figures (see instructions [above](#_Tables))
* mathematical formula and scientific notation (see instructions [above](#_3.9_Mathematical_Equations))
* reference citations in correct format (see instructions [above](#_3.4_References))
* include disclaimer if applicable (see instructions [above](#_3.10_Disclaimer))