Sample manuscript showing style and formatting specifications for *Journal of Biomedical Optics*, *Neurophotonics*, and *Biophotonics Discovery* journal papers

First Author,a Second Author,a Third Author,b Fourth Authora,b,\*

aUniversity Name, Faculty Group, Department, City, Country

bCompany Name, City, Country

**Abstract**

**Significance:** This section of the structured abstract states the rationale for the work, incorporating pertinent background to communicate the work’s relevancy to the field of study.

**Aim:** This section specifies what exactly was studied. While the significance conveys the broader impact, the aim is more specific to the study, tools, or systems used.

**Approach:** This section briefly describes the materials and methods used.

**Results:** This section provides a core summary of study numbers, analyses, discoveries, or data descriptions. If many studies were completed, this section may include several sentences.

**Conclusions:** An interpretive statement that summarizes the work approach and results is important to round out the end of the abstract.

**Keywords**: optics, photonics, light, lasers, templates, journals.

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# 1 Introduction

This document shows the suggested format and appearance of a manuscript prepared for SPIE *Journal of Biomedical Optics* (JBO), *Neurophotonics*, and *Biophotonics Discovery* (BIOS). Accepted papers will be professionally typeset. This template is intended to be a tool to improve manuscript clarity for the reviewers. The final layout of the typeset paper will not match this template layout.

## 1.1 Use of This Template

Authors may use this Microsoft (MS) Word template by employing the relevant styles from the Styles and Formatting list (which is accessed from the Styles group in the Home ribbon, Fig. 1):

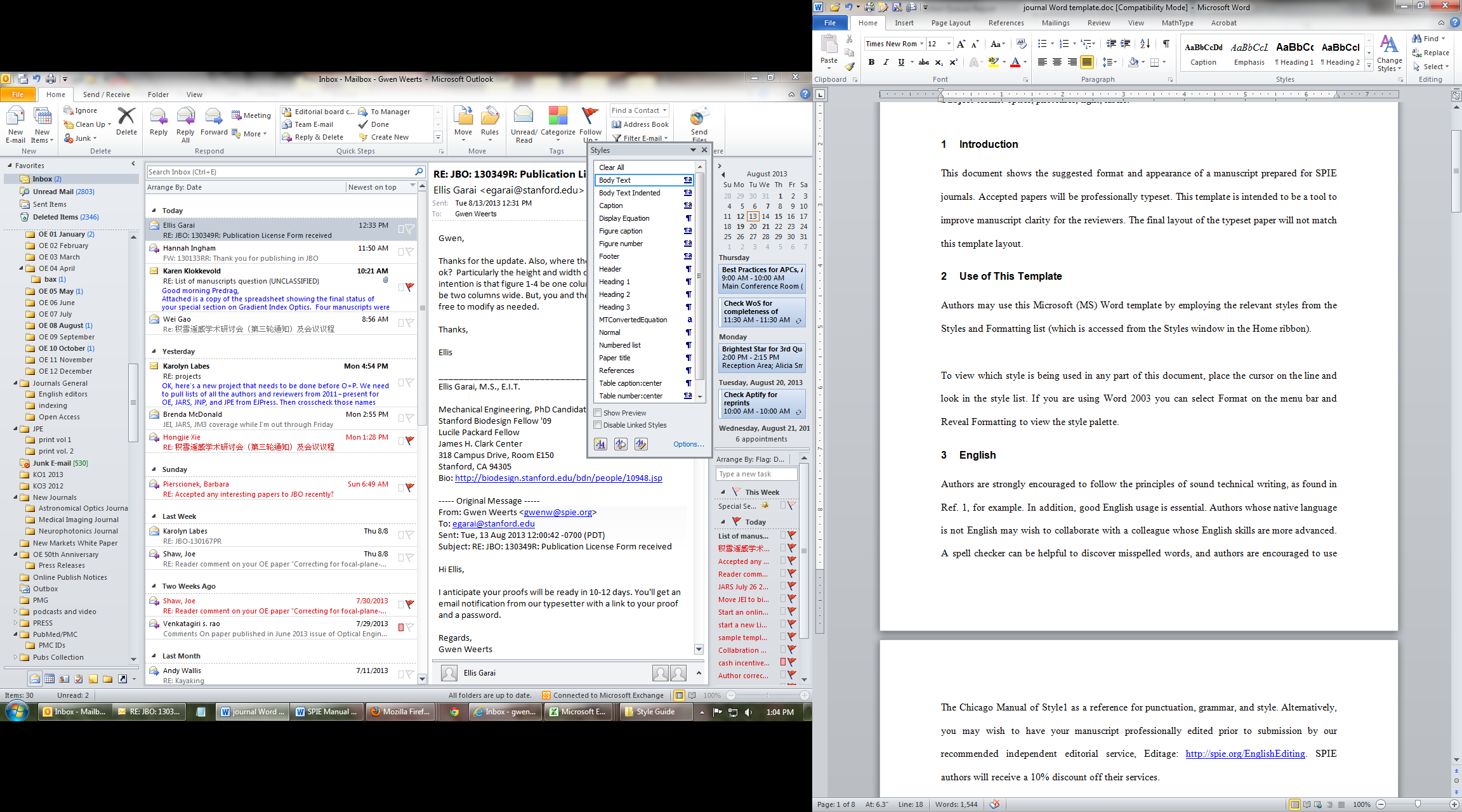


Fig. 1 MS Word 2010 Home ribbon. Red arrow indicates where to access Styles window.

To view which style is being used in any part of this document, place the cursor on the line and look in the style list (Fig. 2):

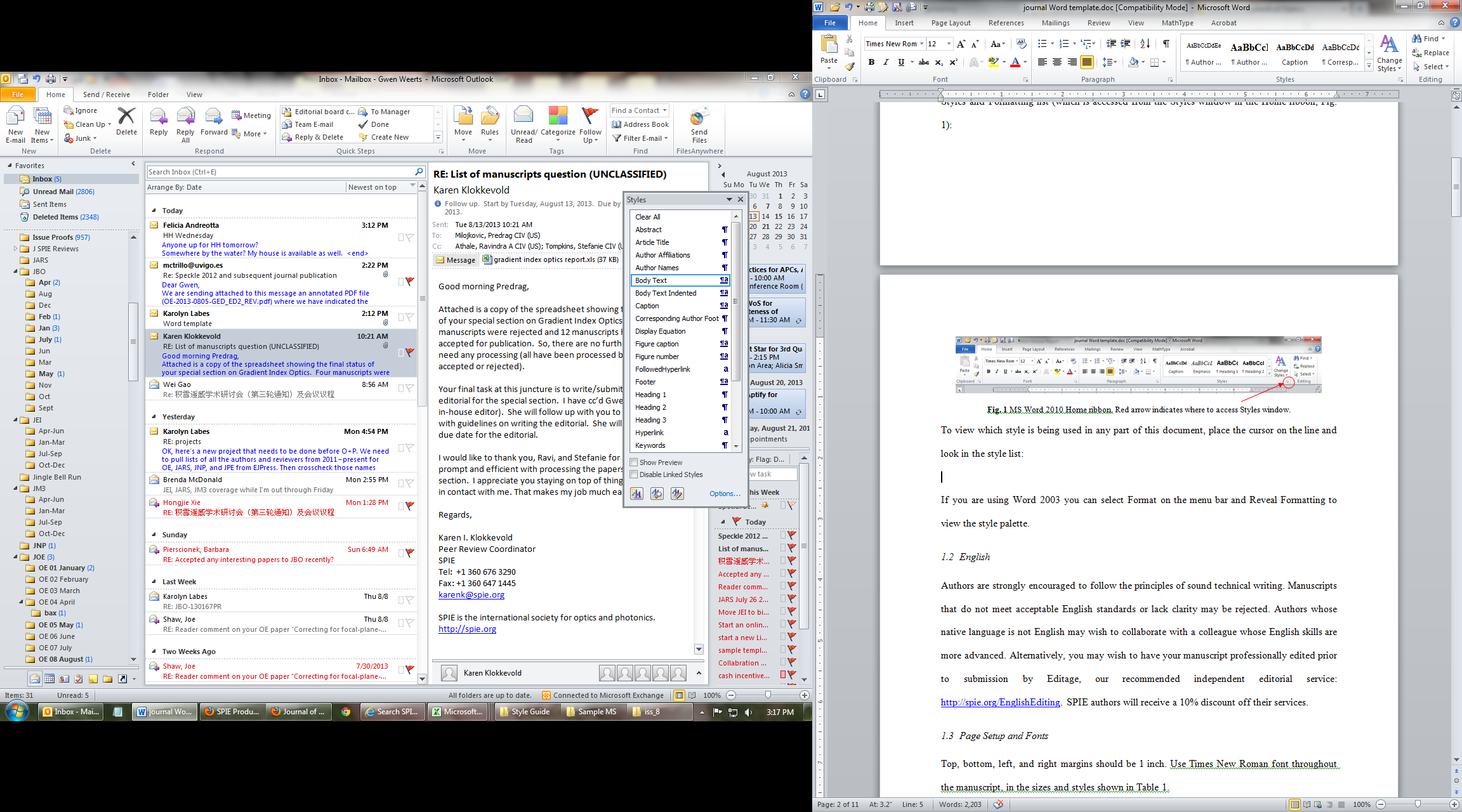


Fig. 2 Styles window.

If you are using Word 2019 you can select Format on the menu bar and Reveal Formatting to view the style palette.

## 1.2 English

Authors are strongly encouraged to follow the principles of sound technical writing. Manuscripts that do not meet acceptable English standards or lack clarity may be rejected. For authors who want help improving language and grammar, AI tools, such as Grammarly or PaperPal, offer a low-cost editing option. Use of Large Language Models (LLMs) and other AI tools to clean up language and grammar must be disclosed in the Acknowledgments section. Alternatively, you may wish to have your manuscript professionally edited prior to submission by Editage, our recommended independent editorial service: <http://www.editage.com/spie>. SPIE authors will receive a 15% discount off their fee for services.

## 1.3 Page Setup and Fonts

Top, bottom, left, and right margins should be 1 inch. Use Times New Roman font throughout the manuscript, in the sizes and styles shown in Table 1.

**Table 1** Recommended fonts and sizes.

|  |  |
| --- | --- |
| **Style name** | **Brief description** |
| **Article Title** | **16 pt, bold** |
| **Author Names** | **12 pt, bold** |
| Author Affiliations | 10 pt |
| Abstract | 10 pt |
| Keywords | 10 pt |
| **Heading 1** | **12 Pt, bold** |
| *Heading 2* | *12 pt, italic* |
| *Heading 3* | *11 pt, italic* |
| Body Text | 12 pt |
| Figure caption | 10 pt |
| Table caption | 10 pt |

# 2 Parts of a Manuscript

This section describes the normal structure of a manuscript and how each part should be handled.

## 2.1 Title and Author Names

The article title appears left justified at the top of the first page. The title font is 16 pt, bold. The rules for capitalizing the title are the same as for sentences; only the first word, proper nouns, and acronyms should be capitalized. Do not begin titles with articles (e.g., a, an, the) or prepositions (e.g., on, by, etc.). The word “novel” should not appear in the title, as publication will imply novelty. Avoid the use of acronyms in the title, unless they are widely understood.

The list of authors immediately follows the title. The font is 12 pt bold and the author names are left justified. The author affiliations and addresses follow the names, in 10 pt normal font and left justified. For multiple affiliations, each affiliation should appear on a separate line. Superscript letters (a, b, c, etc.) should be used to associate multiple authors with their respective affiliations. The corresponding author should be identified with an asterisk, and that person's email address should be provided below the keywords.

## 2.2 Structured Abstract

The abstract should be a summary of the paper and not an introduction. Because the abstract may be used in abstracting journals, it should be self-contained (i.e., no numerical references) and substantive in nature. The structured abstract, required by JBO, BIOS, and *Neurophotonics*,outlines the following: (i) the motivations for the work relative to background materials, (ii) the aims or hypotheses of the work, (iii) the approach, materials, and/or methods used, (iv) a summary of key results, and (v) the final conclusions of the study described in an interpretive way. Only a sentence or two can be included in each section, so that it is easy to read yet comprehensive of the study, enabling readers to determine relatively quickly whether the paper is relevant to their interests.

BIOS authors must also provide a short discovery statement (3 sentences or less) that describes the specific scientific discovery and/or the translational impact (either realized or potential) of the manuscript. The statement should mention the optical technology used. For accepted manuscripts, the statement will be displayed in a separate call-out box in the typeset/published article.

## 2.3 Subject Terms/Keywords

Keywords are required. Please provide 3-6 keywords related to your paper.

## 2.4 Body of Paper

The body of the paper consists of numbered sections that present the main findings. These sections should be organized to best present the material. Standard parts of a research paper: Introduction, Materials and Methods, Results, Discussion, and Conclusion.

It is often important to refer back (or forward) to specific sections. Such references are made by indicating the section number, for example, “In Sec. 2 we showed…” or “Section 2.1 contained a description….” If the word Section, Reference, Equation, or Figure starts a sentence, it is spelled out. When occurring in the middle of a sentence, these words are abbreviated Sec., Ref., Eq., and Fig.

At the first occurrence of an acronym, spell it out followed by the acronym in parentheses, e.g., charge-coupled diode (CCD).

## 2.5 Appendices

Brief appendices may be included when necessary, such as derivations of equations, proofs of theorems, and details of algorithms. Equations and figures appearing in appendices should continue sequential numbering from earlier in the paper.

## 2.6 Disclosures

Conflicts of interest should be declared under a separate header, above Acknowledgments. Conflicts of interest include relationships, affiliations, and financial interests pertinent to the research presented in a manuscript. Potential conflicts of interest may include employment, ownership of stock or stock options, patents, honoraria, grants, royalties, consultancies, donations, and other types of funding. Even the appearance of a conflict can constitute a breach of ethical publishing, and therefore situations and activities that may be perceived as conflicts should be reported. Conflict of interest disclosures should cover the past three years. If no conflicts of interest exist, a statement confirming *“*The authors declare that there are no financial interests, commercial affiliations, or other potential conflicts of interest that could have influenced the objectivity of this research or the writing of this paper” is included in a Disclosures section of the manuscript. For assistance generating a disclosure statement, see the form available from the International Committee of Medical Journal Editors website: <http://www.icmje.org/conflicts-of-interest/>

Use of Large Language Models (LLMs) and other AI tools must be disclosed along with all other tools used in the study. The disclosure should describe which AI tool was used and how it was used. Note: AI tools used in such methodologies as data collection and figure creation should be disclosed in the Materials and Methods section or a similar section of the paper.

## 2.7 Code, Data, and Materials Availability

In support of open scientific exchange, SPIE journals require Data and Code Availability Statements in all accepted papers under the heading “Code, Data, and Materials Availability,” which should follow the Disclosures section. These statements should provide access information regarding the computer code, data, and materials that would be required to replicate or interpret the findings reported in the paper.

## 2.8 Acknowledgments

Acknowledgments and funding information should be added after the conclusion, and before references. The acknowledgments section does not have a section number. Include grant numbers and the full name of the funding body. Use of Large Language Models (LLMs) and other AI tools to clean up language and grammar must be disclosed in the Acknowledgments section.

## 2.9 References

The References section lists books, articles, and reports that are cited in the paper. The references are numbered in the order they are cited. Examples of reference styles are given at the end of this template.

For books1,2 the listing includes the list of authors (initials plus last name), book title (in italics), page or chapter numbers, publisher, city, and year of publication. Journal article references3,4 include the author list, title of the article (in quotes), journal name (in italics, properly abbreviated), volume number (in bold), inclusive page numbers or citation identifier, and year. A reference to a proceedings paper or a chapter in an edited book5,6 includes the author list, title of the article (in quotes), conference name (in italics), editors (if appropriate), volume title (in italics), volume number if applicable (in bold), inclusive page numbers, publisher, city, and year.

The references are numbered in the order of their first citation. Citations to the references are made using superscripts, as demonstrated in the preceding paragraph. One may also directly refer to a reference within the text, for example, “as shown in Ref. 5 ...” Two or more references should be separated by a comma with no space between them. Multiple sequential references should be displayed with a dash between the first and last numbers.1–5

### 2.8.1 Reference linking and DOIs

A Digital Object Identifier (DOI) is a unique alphanumeric string assigned to a digital object, such as a journal article or a book chapter, that provides a persistent link to its location on the internet. Authors should include the DOI at the end of each reference in brackets, if a DOI is available. See examples at the end of this manuscript. A free DOI lookup service is available from CrossRef at <http://www.crossref.org/freeTextQuery/>. The inclusion of DOIs will facilitate reference linking and is highly recommended.

## 2.9 Author Biographies

Author biographies are encouraged, especially for primary and corresponding authors. Biographies should be approximately 75 words. Biographies should be placed at the end of the manuscript. Personal information such as hobbies or birthplace/birthdate should not be included.

# 3 Section Formatting (Heading 1)

Type each section heading on a separate line using the appropriate style from the style list. Sections should be numbered sequentially.

Paragraphs that immediately follow a section heading are leading paragraphs and should not be indented, according to standard publishing style. The same goes for leading paragraphs of subsections and sub-subsections. In this MS Word template, use the Body Text style for leading paragraphs and the Body Text Indented style for all subsequent paragraphs.

## 3.1 Subsection Headings (Heading 2)

Subsection headings should be numbered 1.1, 1.2, etc.

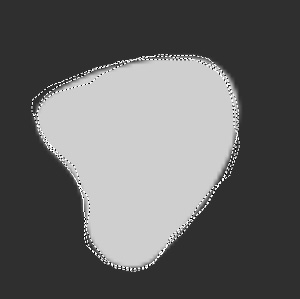
### 3.1.1 Sub-subsection headings (Heading 3)

Sub-subsection headings should be numbered 1.1.1, 1.1.2, etc. Only the first word is capitalized.

# 4 Figures and Tables

## 4.1 Figures

Figures are numbered in the order in which they are called out in the text. Figures should be embedded in the manuscript for the initial submission; individual figure files will be requested for the first revision in .tif, .eps, .png, or PDF format. We cannot accept application files, i.e., Corel Draw, Microsoft PowerPoint, etc. All figure parts must be labeled (a), (b), etc. Each figure file should contain all parts of the figure. For example, Fig. 3 contains two parts (a) and (b); therefore, all of the labeled parts should be combined in a single file for Fig. 3. Further details about figure formatting can be found in the author guidelines: [www.spiedigitallibrary.org/journals/journal-authors](http://www.spiedigitallibrary.org/journals/journal-authors). A figure caption list should be provided after the references.

sy00590_

(b)

(a)

Fig. 3 Example of a figure caption: (a) sun and (b) blob.

## 4.2 Tables

Tables are numbered in the order in which they referred to. They should appear in the document in numerical order and as close as possible to their first reference in the text. Table captions are handled identically to those for figures, except that they appear above the table, and when called out in the text, the word “Table” is always spelled out. See Table 1 for an example.

## 4.3 Video

Please refer to the video section of the author guidelines for specific submission guidelines and requirements. Acceptable file types include MOV (.mov), MPEG (.mpg), and MP4 (.mp4). The recommended maximum size for each file is 10-12 MB. Authors may insert a representative “still” image from the video file in the manuscript as a “figure.” This still image will be linked by the publisher to the actual video file, as will the caption label. Video files should be named Video 1, Video 2, etc. Otherwise video files are treated in the same manner as figures. The multimedia file type should be included in parentheses at the end of the figure caption, along with the file size. See Video 1 for an example.



Video 1 Example of a video still image (MPEG, 2.5 MB).

# Appendix A: Supplemental Material

Authors may submit supplementary material supporting original articles. The total combined limit for all submission files is ~100 MB. Please indicate whether the supplementary material is intended for publication.

If intended for publication, supplementary material such as notes, figures, and tables should be compiled by the author into a single “Supplementary Material” PDF file to be linked to the parent article upon publication (e.g., doi [10.1117/1.JBO.25.1.015004.s01](https://doi.org/10.1117/1.JBO.25.1.015004.s01)).

Any references citations in the supplementary material must be included in the full list of references in the main article; if any references are not cited in the main text, they should be listed in order at the end of the main reference list.

Countable supplementary items mentioned in the main text should be numbered sequentially with an uppercase S to identify them as supplementary, i.e. Fig. S1, Fig. S2, etc.

All supplementary material will be assessed for appropriateness and value. The journal editor has final authority to decide whether the supplementary material should be published with the article. Authors are responsible for ensuring that any supplemental material they submit are not subject to any prior copyright. Questions about supplemental material may be directed to the SPIE journal editorial office, [jbo@spie.org](mailto:jbo@spie.org) or [neurophotonics@spie.org](mailto:neurophotonics@spie.org).

# Appendix B: Miscellaneous Formatting Details

## B.1 Formatting Equations

Equations may appear inline with the text, if they are simple, short, and not of major importance; e.g., a = b/c. Important equations appear on their own line. For example, “The expression for the field of view is

, (1)

where *a* is the …” Principal equations are numbered, with the equation number placed within parentheses and right justified. Authors are strongly encouraged to use MS Word Equation Editor or MathType to create both in-text and display equations. Equations are considered to be part of a sentence and should be punctuated accordingly.

## B.2 Formatting Theorems

To include theorems in a formal way, the theorem identification should appear in a 10-pt, bold font, left justified and followed by a period. Formal statements of lemmas and algorithms receive a similar treatment. The text of the theorem continues on the same line in normal, 10-pt font. For example,

**Theorem 1.** For any unbiased estimator…

## Disclosures

Conflicts of interest include relationships, affiliations, and financial interests pertinent to the research presented in a manuscript. Potential conflicts of interest may include employment, ownership of stock or stock options, patents, honoraria, grants, royalties, consultancies, donations, and other types of funding. Even the appearance of a conflict can constitute a breach of ethical publishing, and therefore situations and activities that may be perceived as conflicts should be reported. Conflict of interest disclosures should cover the past three years. If no conflicts of interest exist, a statement confirming *“*The authors declare that there are no financial interests, commercial affiliations, or other potential conflicts of interest that could have influenced the objectivity of this research or the writing of this paper” is included in a Disclosures section of the manuscript.

## Code, Data, and Materials

Provide specific access information or restrictions for computer code, data, and/or materials that would be necessary to reproduce and build upon the findings reported in the article (i.e., link to a repository; provide guidance on commercial or public access). If applicable, the permanent link(s) should be provided in this section. If the data or code cannot be made publicly available, the authors should state the reason and explain how it can be obtained. Likewise, if data sharing is not applicable, the statement must say so. The following examples may be used as guidance for Availability Statements:

• All data in support of the findings of this paper are available within the article or as supplementary material.

• The data presented in this article are publicly available in [repository name] at [DOI link].

• The archived version of the code described in this manuscript can be freely accessed through Code Ocean [DOI link].

• The data utilized in this study were obtained from [third party name]. Data are available from the authors upon request, and with permission from [third party].

• The data that support the findings of this article are not publicly available due to [privacy, ethical concerns]. They can be requested from the author at [email address].

• Data sharing is not applicable to this article, as no new data were created or analyzed.

## Acknowledgments

This unnumbered section is used to identify people who have aided the authors in accomplishing the work presented and to acknowledge sources of funding. Use of large language models and other AI tools for language and grammar clean-up should be disclosed here.

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Biographies and photographs for the other authors are not available.

**Caption List**

Fig. 1 MS Word 2010 Home ribbon. Red arrow indicates where to access Styles window.

**Fig. 2** Styles window.

**Fig. 3** Example of a figure caption: (a) sun and (b) blob.

Video 1 Example of a video still image (MPEG, 2.5 MB).

**Table 1** Recommended font sizes and styles.