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## MDPI Style Guide

# First edition

MDPI, St Basel Anlage 66, 4052 Basel, Switzerland

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# **1. Introduction**

Welcome to the MDPI style guide. Its purpose is to offer guidance and advice to authors writing intending to publish in an MDPI journal. Topics covered include formatting and conventions specific to MDPI, and some tips for how to improve clarity and writing style.

This is a guide, not a set of instructions. English is a flexible language and most of its rules can be broken under the right circumstances. Our aim is to communicate the latest scholarly findings in a way that is accessible and readable. Most of the guidelines here are to aid clarity and precision. Where rigidly following this guide does not achieve that goal, exceptions can be made.

We do not expect authors to have strictly followed all of these guidelines when they submit their paper. Preparing a manuscript for publication is a key task of a publisher and includes applying the house style. Our editors will not reject a manuscript where the authors do not add a space before a unit of measurement or use the wrong tense to describe their experiment—at MDPI we pride ourselves on providing a comprehensive production service prior to publication. Authors may benefit from reading and applying the conventions given here, though, as improving clarity and removing ambiguity can increase the chance of passing peer review.

This style guide is organized according to the sections of a research article. It begins with the front matter, which includes the title, article type, author information, and abstract. It continues with the main text, where the majority of advice on writing style can be found. There is a chapter on the presentation of mathematical content, followed by one on representations of data—including how to assemble tables and figures. Next comes information about the back matter, which includes various declarations by the authors and advice on writing the bibliography. Finally, there is a short section on publication ethics and how to revise and resubmit a paper.

# Acknowledgments

Many people have contributed to the development of MDPI's style. Here, we acknowledge the invaluable input of several key people at MDPI. Dr Shu-Kun Lin founded MDPI and, in the early years, performed production for many papers himself. He instigated the pragmatic approach that MDPI applies, with an emphasis on what would most benefit the author and keep the authenticity of their writing. Ms Sara Faes has been a long-time English editor and coordinator, and continued along the path set by Dr Lin, providing training and support for countless English editors that have worked with MDPI over the years. Ms Hebe Li, Ms Ying Wang, and Mr Justin Li have established and grown the production team, and we are indebted to Dr Janine Daum for creating and maintaining MDPI's LATEX class and template files. Finally, we have received feedback from countless authors, editors, and readers. Their input has helped to improve our approach and we are extremely grateful to them.

## 2. Front Matter

The front matter covers parts of the article that usually appear at the top of the first page and give general information, including the title, abstract, journal name, and information about the authors. The format is standardized and much of it is added and formatted by the publisher.

### 2.1. Article Types

All articles are assigned a type, dependent on the content of the article. It is useful to readers, to inform them of what style of content to expect (original research, review, commentary, etc.) and for indexing services when applying filters to search results. This section details the most common article types. Editors have the final say on which type should be assigned to a published article.

#### 2.1.1. Article

The most popular type of published paper, articles report original research results. They report a complete piece of research, typically including introduction (background and motivation), methods, experimental results, and discussion, often referred to as an IMRAD structure. Some journals vary in their structure and authors should refer to the instructions for authors of the journal as early as possible in the writing process.

## 2.1.2. Review

Review papers consist of concise and precise updates on the latest progress made in a given area of research. They should be comprehensive and objective and not, for example, only report research results from a single research group or country. Systematic reviews are written by following a specific algorithm for finding papers to include. Criteria for which articles are reviewed are defined before carrying out a literature research. They should follow the PRISMA guidelines (<http://www.prisma-statement.org/>). [prisma-statement.org](http://www.prisma-statement.org/) (<http://www.prisma-statement.org/>) and the structure of the paper should be similar to that of a research article.

## 2.1.3. Communication

This type is similar to an article but with less content. The aim is to report preliminary but significant results. It should contain a complete research project and follow the IMRAD structure.

## 2.1.4. Commentary

Briefer than a review paper, a Commentary is usually an invited paper that gives an opinion on a specific topic. They are not as comprehensive as a review paper but should highlight the most significant papers and milestones in the subject area. While the author has the license to express their own opinion more than in other article types, they should acknowledge widely held divergent views. Commentaries are peer reviewed prior to publication.

## 2.1.5. Short Note

Short Notes are published only in the journal *Molbank*. They contain experimental data records for individual molecules (restricted to only one compound per paper). Any experimental data for individual compounds that is conventionally not publishable is particularly welcome. The aim is to save potentially useful scientific information from being lost, for example where a molecule is synthesized for a project but ultimately is not included in the final publication. The title for Short Notes is the systematic name of the molecules, according to IUPAC rules.

## 2.1.6. Case Report

Common in medical journals, case reports present detailed information on the symptoms, signs, diagnosis, treatment (including all types of interventions), and outcomes of an individual patient. They usually describe new or uncommon conditions that serve to enhance medical care or highlight diagnostic approaches. Special care should be taken when submitting Case Reports to ensure that appropriate permission for publication has been obtained from patients featured in the paper. A sample blank consent form can be found on the instructions for authors pages of relevant journals.

### **2.1.7. Proceedings, Extended Abstracts, Meeting Reports**

These types contain peer reviewed research output from conferences. Proceedings report new evidence or conclusions, and are expanded versions of work presented in a conference presentation. Extended Abstracts are submitted to a conference in advance and give details in support of a presentation made at the conference. Meeting Reports comprise a summary of material presented at a conference; they are often written by an organizer of the conference to inform those who could not attend, and may include a list of abstracts and presenters.

### **2.1.8. Interesting Image**

Some journals in the life sciences, such as *Diagnostics*, allow images to be published as papers. The number of images is at the discretion of the author. No regular manuscript text should be included. Instead, images should be accompanied by detailed captions with no restriction in length. An unstructured abstract of no more than 200 words should also be submitted. Image files can be included either in the template or uploaded separately in high resolution. There are no restrictions on use of color or image size, however features should be sharp and not blurred. For readability, we recommend that any text in figures is at least 12 pt. in size. Submitted images are peer-reviewed under the same process as a regular research article.

### **2.1.9. Comment and Reply**

If a reader wishes to publish feedback about a specific paper they can submit a Comment. Typically, before publication the authors of the original paper will be given the opportunity to respond, and both the Comment and Reply will be published together. Comments are published at the discretion of the editor and must provide useful narrative about the paper in question. Peer review of Comments and Replies is at the discretion of the Editor-in-Chief.

## 2.1.10. Editorial

Sometimes the editorial board or the publisher has an important viewpoint or information to communicate to readers. This can be done through an editorial. For example, the first publication of most journals is an editorial from the Editor-in-Chief setting out his or her vision for the journal. Major changes to the editorial process are also announced through editorials.

## 2.1.11. Updates and Amendments: Corrections, Erratums and Addendums

There are several methods to update published papers. A Correction reports a change that could affect the scientific interpretation of the content. An Erratum reports an update that makes a technical change, such as replacing a low-quality figure or adding missing information to a reference. An Addendum adds extra information to a paper, such as clarification of a method or an additional source of funding. In all cases, the original paper is updated and the publication showing the update is linked to the original.

## 2.1.12. Expression of Concern

Expressions of concern are used rarely and indicate that major but unresolved concerns have been raised about the paper. It is used either when an investigation could not determine the veracity of any potential problems, but the editorial office feels that readers should be aware of the allegations; or when an investigation is ongoing and likely to take a substantial amount of time. Most investigations can be completed sufficiently quickly that an Expression of Concern is not necessary. In other cases, the editors may decide that making unsubstantiated concerns public would be unfair to the authors or another party involved.

## 2.1.13. Retraction

The process of retraction is used to remove a published paper from the literature. Reasons for retraction include the results being found to be unreliable or not sufficiently novel (including plagiarism), or where authors have acted unethically, such as by fabricating data or making false claims about authorship. Retracted papers are not completely removed, but are watermarked as retracted. Retractions are usually the result of an investigation into the paper. MDPI journals are members of the Committee on Publication Ethics (COPE) and follow its guidelines for dealing with



such cases. For full details about the circumstances for retraction, please refer to the COPE guidelines for retraction and the MDPI retraction policy. Note that a Retraction does not imply anything about the behavior of the authors—the key purpose of a Retraction is to remove the article from the publication record. It could be for technical reasons, or through circumstances beyond the control of authors or the journal.

## 2.2. Article Titles

There are few rules about the titles of submitted papers, however there are some points that authors should keep in mind. The title conveys the main topic of the research and normally includes the principle results. It should be concise, descriptive, and grammatically correct. Periods should be avoided, instead authors can use commas, colons or en dashes. Italics should only be used where they are required for specific nomenclature (such as species names or journal titles), but should not be used for emphasis.

We recommend authors keep their audience in mind and we try to appeal to as broad a readership as possible. Therefore, avoid abbreviations and jargon that those outside of your field may not understand. Creative and original titles can be used, but make sure they do not sacrifice clarity in an effort to be eye-catching.

Some article types, including Corrections, Erratums, and Retractions, have specific formats for the title that must be followed. We also strongly recommend this format for Comments, although authors may submit an alternative title which will be used at the discretion of the editorial office. An example of the standard format is as follows:

Erratum: Nasonova, S. et al. Linking Regional Winter Sea Ice Thickness and Surface Roughness to Spring Melt Pond Fraction on Landfast Arctic Sea Ice. *Remote Sens.* 2018, 10, 37

Titles of book reviews should have the following format:

Microbiology in Dairy Processing: Challenges and Opportunities. By Palmiro Poltronieri. IFT Press Series, Wiley-Blackwell, UK, 2017; 321 pp.; ISBN: 978-1-119-11480-2

## 2.3. Author Names and Affiliations

In order to identify who wrote the paper and contributed to the work, author names and affiliations are displayed at the beginning of a paper. More details about qualification for authorship and author roles are given in the section on author contributions.

It is very important that author names and affiliations are correct. We are surprised how often we receive requests to update these parts of the paper after publication. Incorrect information can mean a lack of proper attribution, incorrect citation, and can even lead to problems with promotion or funding.

The publisher attempts to verify the authors' identities and where necessary will make contact with the authors to confirm details. Misrepresenting affiliations is extremely serious and may constitute fraud.

Author names should be written in full, except for middle names. Authors who commonly use a middle name may have this written instead (e.g., "P. John Smith"). Authors should typically be individually named and using institution or organization names as authors should be avoided. To avoid additional checks, please indicate any authors that only have a single name.

Affiliations should be the one the authors had at the time the work was carried out. Authors may also add a current affiliation as a footnote to the front matter. If the author is not affiliated to an institution, they may add the town or city and country in which they work. The main role of the affiliations is, as far as possible, to unambiguously identify the authors.

We strongly recommend authors to have an ORCID (see [orcid.org](https://orcid.org)), which is a unique identifier for scholarly researchers. Your ORCID can be added in the submission system and will be included in the final version of the paper with an icon linking to your online ORCID profile.

## **2.4. Abstracts**

The abstract contains a summary of the entire paper and can be up to 200 words long. It must not contain any images or tables (although a graphical abstract may also be submitted).

Authors should follow the style of a structured abstract, which is based on the IMRAD structure of a paper, but without using headings. In other words, give a background and motivation to the paper, a brief description of the methods, the principle results, then conclusions or interpretations. Some

journals in the medical field may require subheadings within the abstract, you may refer to the instructions for authors to see if this is required. Abstracts without headings should consist of a single paragraph.

Abstracts must be self-contained: they are often displayed and read independently of the rest of the paper. This means that any abbreviations used must be defined in the abstract, and no reference can be made to the bibliography or any figures. Citations to previously published papers are not required in abstracts.

The abstract, along with the title, is the first part of your paper that someone will read. It should give them a good overview of all the major aspects of the work carried out. It should not be thought of as a sales pitch to encourage readers to download and read the full article, although including some motivation is a good idea. Instead, you should focus on making it informative and comprehensive. A well-written abstract will mean that someone who reads the full article will already have a good idea of the contents and will be able to focus on the parts they are most interested in.

## ***2.5. Digital Object Identifiers***

A digital object identifier (DOI) is a unique number registered through a central organization, usually CrossRef for journal articles. Its role is to act as a persistent identifier, meaning that if the URL of an article changes the DOI can still be used to find its most recent location. The DOI is defined by the publisher.

We recommend using the DOI when citing articles as it will help readers to quickly locate the cited work. Any article can be located from the doi by prefixing it with <https://doi.org/> (<https://doi.org/>), e.g., <https://doi.org/10.3390/s10100001> (<https://doi.org/10.3390/s10100001>).

## ***2.6. Pagination***

In addition to the DOI, MDPI also issues pagination for articles. This includes several numbers or series of letters that identify where and when the paper was published:

**ISSN** A code that uniquely identifies serial works, such as academic journals. Each journal has a unique ISSN.

**Volume, Issue** These numbers originated from when journals were physically printed. Typically, journals publish one volume per year with issues on a biannual, quarterly, or monthly basis. Electronic journals still often use these and they are useful for identifying when a paper was published.

**Page range or article number** These identify the specific article in an issue. The page number typically starts with 1 at the beginning of a Volume. Many electronic journals have switched to article numbers, which assigns a single number to the entire paper.

Except for the ISSN, these numbers occur in citations, e.g., *Sensors* **2013**, 13(6), 6910–6935. Note, however, that the MDPI reference style omits the issue number (see the section on references).

## 3. Structure and Formatting

The next few chapters cover the main text of an article, which is written almost entirely by the authors. For research articles, this is where details of the experiments and results are presented. The main text may be supplemented by additional documents or sections, such as appendixes, supplementary material. Accession numbers, URLs, or DOIs can be used to refer to data or code hosted on other websites.

### 3.1. Overall Structure

Research articles have a standard structure, which is set out in the instructions for authors of the journal and the journal template. The majority of journals use a so-called IMRAD structure, meaning the sections are Introduction, Materials and Methods, Results, and Discussions. Some journals require a Conclusion section at the end, and others (particularly in chemistry) have the Materials and Methods section after the results and discussion. Authors may choose to have results and discussion as one or two sections.

Review articles, essays and other article types usually have a different structure, which is often more flexible. There should, however, still be a logical pattern. We recommend that the structure of an article is still considered, so the paper firstly presents a motivation for the work, followed by relevant data and previous work, and gives conclusions at the end. For systematic reviews, the structure should more closely follow that of a research article, with the methods describing how literature was chosen for inclusion.

Figures, tables, and schemes should appear in the text shortly after the first time they are cited. Where possible, they should be in the same section as the citation. It is not necessary to add them at the top or bottom of a page and they should not break paragraphs. However, authors do not need to strictly follow these rules and the production team will determine the most appropriate placement of figures. Note that there may be some adjustments in figure placement between author proofreading and final publication. Further details about adding these elements are given below.

## ***3.2. Paragraph Content and Structure***

There are no specific requirements from MDPI for paragraph structure but they should follow conventions for English writing. Paragraphs should contain and develop a single theme. They should be self-contained which means, for example, that you should not use pronouns (it, he, she, they) referring to previous paragraphs. A recommended structure for paragraphs is first to introduce the main idea, then give further relevant details, and finally to give interpretations or conclusions. This structure gives more clarity to readers: if the idea contained in a paragraph is not clear from the start there is more chance for misinterpretation. In some subjects, particularly in the humanities, an alternative structure may produce a particular effect on the reader that the author is trying to create, however, we recommend that care should be taken to ensure that the message is as clear as possible.

## ***3.3. Headings and Sections***

For research articles the heading titles are defined. For other types of paper the authors have more flexibility to choose the headings. You may use up to three levels of headings/subheadings. Sections headings are numbered, with first level headings as e.g., 1.; second level heading as, e.g. 1.2.; and third level headings as, e.g., 1.2.3. (as in this guide). Any headings used in a fourth level may simply appear as a paragraph with no indent. In this case, though, we recommend reassessing the section definitions to see whether only three levels could be used. Headings without numbers may also be used to introduce a series of different cases. See the mathematics section for certain special environments with their own heading styles (e.g., Theorem, Proposition, Proof).

Headings are written using title case, which means that the first letter of all words is capitalized with the exception of short words, including articles (a, the), and all prepositions (before, after, through, under, etc.). Pronouns (he, she, it) should be capitalized, as should prepositions used in compound words (e.g., set-up). If a word is hyphenated capitalize both parts. Italicized species names should not be capitalized (e.g. in *Escherichia coli*). The first word of the title and the first word after a colon should be capitalized regardless of the previous rules.

### 3.4. Formatting, Fonts and Symbols

When writing symbols, use common, standard fonts where possible. If you are using a template in Microsoft Word, ensure that the font is correctly set for all text, especially when copying and pasting text from a different document. The format painter tool can help.

Avoid using fonts such as symbol, wingdings or webdings. Authors should also avoid adding symbols as pictures, as it can lead to difficulties in formatting the final version. If there is a symbol you have difficulty in adding, leave a comment in the text so that the copy-editing team can take note.

For LATEX we recommend using an editor that includes a good list of symbols in the menus and a spell checker. This increases accuracy in writing and decreases the need to memorize many different codes. Table 1 contains LATEX code for a few especially useful symbols.

**Table 1.** Commonly used LATEX symbols.

Symbol Name	Symbol	LATEX Code
En dash	–	--
Em dash	—	---
Micro/mu	μ	\upmu (from the upgreek package)
Degree symbol	°	`\${\circ}\$
New line	(n/a)	\\

Quotation marks	“ ”	`` ''
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### 3.5. Abbreviations

Most abbreviated phrases should be written in full the first time that they are used, with the abbreviation in brackets, for example “small angle X-ray scattering (SAXS)”. Some very common abbreviations do not need to be defined—some of these are universal and others depend on your intended audience. Below are a few common abbreviations that usually do not need defining. Non-standard abbreviations for phrases that are commonly used throughout an article can be defined, but avoid redefining abbreviations that already have a more common meaning. Words used in abbreviations do not need to be capitalized, even if the abbreviation is capitalized.

Note that the abstract, main text, and figure/table/scheme captions are treated separately for abbreviations. This means that you need to define the abbreviation the first time you use it in each part—you may have to define the same thing three separate times. The reason for this is that they are often displayed in isolation, for example indexing services usually only display the abstract and you can browse figures without the main text via the journal website.

**Table 2.** Common abbreviations that do not need defining in the text. This list is not exhaustive and you may still choose to define these abbreviations for clarity.

Abbreviation	Meaning
AMP	adenosine monophosphate
ANOVA	analysis of variance
ATP	adenosine triphosphate
CI	confidence interval
CNS	central nervous system
COSY	correlation spectroscopy
DMSO	dimethyl sulfoxide
DNA	deoxyribonucleic acid
DPPH	2,2-diphenyl-1-picrylhydrazyl
ESR	electro-spin resonance

FTIR	Fourier-transform infrared spectroscopy
GDP	gross domestic product
GFP	green fluorescent protein
GIS	geographic information system
GLC	gas–liquid chromatography
GTP	guanosine triphosphate
HPLC	high performance liquid chromatography
HPLC/MS	high performance liquid chromatography/mass spectrometry
IR	infrared
LC–MS	Liquid chromatography–mass spectrometry
MALDI-TOF	Matrix Assisted Laser Desorption/Ionization Time-of-Flight
MEMS	micro-electro-mechanical systems
NMR	nuclear magnetic resonance
NOE	nuclear Overhauser effect

**Table 2.** *Cont.*

<b>Abbreviation</b>	<b>Meaning</b>
NOESY	nuclear Overhauser effect spectroscopy
PCR, RT-PCR, qPCR	polymerase chain reaction, real-time PCR, quantitative PCR
pKa	negative base-10 logarithm of the acid dissociation constant of a solution
R&D	research and development
RGB	red green blue
RNA	ribonucleic acid
SD	standard deviation
SDS-PAGE	sodium dodecyl sulphate polyacrylamide gel electrophoresis
TOCSY	total correlated spectroscopy
UV-VIS	ultraviolet-visible
v/v, w/v, etc.	volume per volume, weight per volume, etc.



The following Latin abbreviations may also be used in text: etc. (et cetera), to indicate that a list is incomplete; i.e., (id est), meaning “in other words” to add clarification to a phrase; e.g. (exempli gratia), meaning “for the sake of example” to introduce a list of examples. Note that it is not necessary to use e.g. and etc. in the same list. Confusion between i.e. and e.g. is common—if your list of examples is complete then use i.e., but if there are additional cases not mentioned then use e.g. Both e.g. and i.e. should be followed by a comma and do not need to be italicized.

Do not abbreviate “also known as” to “aka” or use an ampersand (&) instead of “and”, they should be written in full.

### 3.6. *Italics*

Authors may use italics for emphasis at their discretion. Be careful that there is no confusion, especially in disciplines where italicization is used for another purpose, such as in mathematical symbols or gene names.

Foreign words do not need to be highlighted or italicized, including Latin terms such as ‘in situ’. Authors may choose to do so for purposes of emphasis or where the term is being defined. Journal and book titles should always be written in italic, e.g., *The International Journal of Environmental Research and Public Health*.

Italics must be used for the genus and species when using Latin names of organisms. The first time the name is used it should be spelled out in full, but for further uses the genus can be abbreviated to the first letter. Note that the species is always written without a capital letter, including when it appears in a title; the genus name should always be capitalized. Similarly, italics should be used for gene names (but not for the corresponding proteins). Examples:

*Escherichia coli* is a common bacterium . . . *E. coli* was used in this article.

*Lac1* is the gene that encodes for the Lac1 protein.

### 3.7. *Bold Font*

Bold font should generally be avoided. If you wish to add emphasis, italics are preferred. Bold font is used in specific contexts, including figure captions and subtitles. In chemistry, bold numbers can be used to refer to molecules defined in Schemes.

### **3.8. *Quotations***

Any text taken from previous work, whether published or not, should be clearly indicated. The recommended way to do this is as a quotation accompanied by a citation and bibliography entry. Quotations should appear in double quotation marks (“ . . . ”). Long quotations may appear as a block quote: a separate paragraph set off from the rest of the text with an indent on either side. The exact formatting will be completed by a layout editor during production.

### **3.9. *Footers***

Most scientific journals from MDPI do not allow footnotes, however those in humanities and some areas of business and economics do. Check the instructions for authors of the journal to see the specific policy of a journal.

Where footnotes are permitted, they may be used to add additional explanatory notes to text. Information essential to understanding the text should not be added to footnotes. They can be used to add additional sources, explain the background to a particular point, reinforce ideas, or clarify intended meaning. Footnotes should not be used as replacement for a bibliography, since citations included only in a footnote will not be detected and counted by indexing services.

### **3.10. *Lists, Itemized Lists and Bullet Points***

Most lists can be included as inline text, however, authors may decide that the information is more clearly represented using bullet points. If there is a specific order to the list a numbered list may be used. A descriptive list may also be used, in which each item begins with an emphasized word or short phrase.

For inline lists, items should be separated by commas. An exception is where one or more items contains a comma, in which case semicolons can be used. Do not use commas for lists of two items. Serial (or Oxford) commas are recommended, however they may be omitted if done so consistently, especially when not using American English for spellings.

For itemized lists, introduce the list with a colon, add a semicolon at the end of each item, and a period at the end of the last item. Alternatively, periods may be used at the end of each item. Always capitalize the first word of each item.

Examples of lists. Using bullets:

- **The first;**
- **The second;**
- **The**

A numbered list:

- . **The first;**
- . **The second;**
- . **The**

A descriptive list:

**Item 1** the first.

**Item 2** the second.

**Item 3** the third.

Note that lists that give a few examples do not need to end with ‘etc.’, ‘and so on’, or similar text. Doing so means you have indicated twice that the list is incomplete. For example:

Examples include red, white, and green varieties. Popular varieties are red, white, green, etc.

# 4. Grammar and Tenses

## 4.1. Tenses

In scientific writing, the language around what is already known and what remains unknown needs to be precise. This relates to the passage of time and hence the use of tenses. The following looks at how tenses are used in each part of a research paper.

### 4.1.1. Introduction

In the introduction, current problems and past work are typically discussed, along with a description of what the paper presents. The authors should use the present tense to describe outstanding problems:

“The increase in the number of RF electromagnetic sources is associated with a growing concern about potential harmful health effects of human exposure to RF radiation.”

Former work could be in the past or present tense:

“These uncertainties are due to the directivity of the body-worn antennas [5], or body shadowing in which the body shields part of the EM fields.”

“In [4] it was shown that the location of PEMs contributes to the uncertainty of their measurements and results in an underestimation of the incident electric fields.”

New results being presented by the authors should be in the present tense (not future):

“The designed antennas and the frequency bands of the BWDM are summarized in Section 2.2. Section 2.3 presents the design of the receiver nodes.”

### 4.1.2. Methods

Methods should typically be presented in the simple past tense:

“The multi-antenna measurement system consisted of 22 autonomously working measurement units, for 11 different frequency bands, connected to a common serial bus system.”

An exception is where are described in the manner of instructions or an algorithm. These are most often used in theoretical papers:

“The following describes the calibration procedure. First, place the subject (Sb-1) on a rotational platform in the far field of a transmitting horn antenna (TX) in an anechoic chamber.”

The present perfect should be avoided:

“The subject has been placed on a rotational platform . . . ”

### 4.1.3. Results and Discussion

This is the section where tenses are most often mixed and there is more flexibility/ambiguity about the correct tense to use. As a rule, established facts should use the present tense, however difficulty arises when a single result is presented as establishing a fact. Authors may write the same phrase in different ways:

“The results show that commercial PEMs underestimate the actual incident power densities by a factor of 1.6 to 20.6.”

“In our study, commercial PEMs underestimated the actual incident power densities by a factor of 1.6 to 20.6.”

“Commercial PEMs underestimate the actual incident power densities by a factor of 1.6 to 20.6.”

The first example uses the present tense, because the results are fixed and will not change in the future. The second uses the past tense, much like the methods section, to describe what happened during the experiments. The third is a bolder statement that generalizes the results of the paper to all commercial PEMs.

The second is the best option as it is a clear statement of what happened during the current study. Anything that speculates or extrapolates the results should be clearly differentiated. For example:

“In our study, commercial PEMs underestimated the actual incident power densities by a factor of 1.6 to 20.6. This could imply significant measurement errors where PEMs are used in an industrial environment.”

It separates the third statement above into two distinct phrases that differentiate the results from the conclusions.

#### 4.1.4. Review Papers

In a review, the writing often jumps rapidly between established facts, the results of studies, and speculation. Paragraphs or sections can be a microcosm of a complete paper, firstly setting out a problem, describing work done, then making a conclusion about the current state of the field or speculating on the future. Be aware of which tense is appropriate for each statement:

“Smartphone imaging *is used* extensively in remote sensing, for example in aerial photography and grass roots mapping applications . . . It *has been applied* quantitatively, for example in determining ‘leaf area index’, which *is a measure* of foliage cover [18], and *could offer* powerful tools for tracking longer term trends in sky [19], land cover and vegetation conditions.”

There are different writing styles for reviews, such as using references to support a stated fact, written in the present tense:

“LOD is defined as the smallest concentration of an analyte that can be reliably detected, where reliable detection means the sensor response should be different from that of blank/reference [27].”

Alternatively, the authors describe work done, similar to a methods section:

“A microstrip coupled CSRR has been proposed as a chemical sensor [34]. In this setup, the microstrip line is designed on the top of substrate and CSRR is etched on the bottom ground. Withayachumnankul et al. [33] varied the concentration of water–ethanol solution, and the corresponding S-parameters were measured. To validate the proposed sensing system, the measured complex permittivity values of mixture were compared with the reference ones. This sensor showed four times higher sensitivity compared to their previous work.”

It is authors’ responsibility to differentiate established facts from speculation through the use of tenses. Use of tenses should be consistent throughout a manuscript in order not to confuse readers.

(Quotations in this section adapted from *Sensors* **2018**, *18*, 272; doi:10.3390/s18010272, *Sensors* **2018**, *18*, 232; doi:10.3390/s18010232, and *Sensors* **2018**, *18*, 223; doi:10.3390/s18010223.)

## 4.2. Plurals

Almost all students of English learn that plurals need to agree with other parts of the sentence, however it is an area where errors often occur, particularly in complex phrases. For example:

“The full implementation of the trained networks are available at”  
should be

“The full implementation of the network algorithms is available at”  
since the verb agrees with “implementation”, not “networks”.

The word “data” should be considered to be plural, so write “The data show that . . .” rather than “The data shows that . . .”. The singular form is “datum”.

## 4.3. Different Types of English: US vs. British

In MDPI papers, US, British or other variations of English can be used, however authors must be consistent throughout the paper. We recommend that authors use American English unless they live or work in a country that uses a different variation (e.g., the UK, Australia, or Canada).

The most notable difference between British and US English is the use of -ise instead of -ize as a suffix. Some words are different, a few examples are

British	US
Enquire	Inquire
Travelled	Traveled
Aluminium	Aluminum
Orientated	Oriented

A good spell-checker can help to identify words that are incorrectly spelled and authors should set the proofing language in their writing software to the version of English they wish to use.

## ***4.4. Non-English Words***

Articles can include text written in languages other than English provided that a translation is provided. This includes labels used in figures. Note that non-English words or phrases do not need italicizing.

# **5. Punctuation**

Authors should have a good knowledge of standard punctuation. This guide is not intended to be comprehensive and authors should refer to textbooks to ensure the correct use of punctuation. In this section, we highlight aspects that particularly reflect the MDPI style.

## ***5.1. Periods/Full Stops***

Periods that end sentences should be followed by a single space. Most abbreviations use periods to indicate where letters have been omitted. Note that “vs.” should be followed by a period, except in papers covering law, where the convention is to omit a period.

## ***5.2. Commas***

Good use of commas can help clarity in your writing. Sometimes it comes down to personal preference, however there are some guiding principles that should be applied. See **3.10** for the use of commas in lists.

Commas separate non-restrictive sentence modifiers—a phrase added to a sentence that is not essential to its meaning. Do not add commas for restrictive modifiers. For example:

“Due to a slower than expected process, the experiment continued for an additional five days.”



“The experiment continued for an additional five days in one case.”

With regards to style, it is usually best to minimize the number of commas used in writing. Since commas separate different ideas, too many commas in a single sentence may be an indication that the structure is too complex. The result will be that readers are confused, especially if the sentence starts on one theme, adds a lengthy subclause for explanation, then goes back to the original theme.

## 5.3. *Hyphens and Dashes*

There are four types of dashes used in writing:

- Hyphen: joins two separate words into a single concept.
- En dash: shows a link or relationship between two concepts, or a range.
- Em dash: used to introduce a subclause that clarifies the previous phrase.
- Minus sign: used in equations. In practice, an en-dash or hyphen can also be used by authors and it will be updated during production.

When using prefixes and suffixes, hyphens are not required unless omitting them creates ambiguity in the meaning or double letters. Some words are conventionally written with or without hyphens, and for others multiple forms are in common use. You will not be expected to know all of these and the editorial team will check before publication. A few examples are

Prehistoric, lifelike, anti-inflammatory, un-ionize.

For compound words, hyphens should typically be used. Two words together used to denote a single noun are termed ‘unit modifiers’. Note that hyphens should also be used in double-barrelled names. For example:

Three-dimensional, time-dependent, Parker-Bowles, grey-green. Chemical names, however, should not be hyphenated (e.g., sulfuric acid).

En dashes can be used to denote a chemical bond, a range between two numbers, or a relationship between two separate entities. They are also used between the last names of two different people when their names are used for a scientific concept. Some examples:

Carbon–oxygen bond A time–frequency plot 17–30 m in length Fabry–Perot Bose–Einstein

For MDPI papers, em dashes are preferred to colons when introducing phrases that provide clarification or definitions. Spaces should not be included either side of em dashes. For example:

“We measured alignment using linear dichroism—differential absorbance in perpendicular directions.”

We recommend using em dashes sparingly to avoid disrupting the flow of sentences.

## ***5.4. Colons and Semicolons***

As mentioned above, em dashes are preferred to colons for introducing definitions. Colons may be used to introduce lists or before equations, but not where they separate a verb and its object or a preposition and its object.

Semicolons may be used in lists, as mentioned above. For other uses of semicolons, refer to a grammar book. In general, we recommend using semicolons sparingly and considering whether a period or comma would be more appropriate.

## ***5.5. Apostrophes***

Apply the common usage of apostrophes to indicate ownership or contraction of words, although note that most contractions should be written in full (“cannot” instead of “can’t”, “it is” instead of “it’s”, etc.). Do not use apostrophes to pluralize abbreviations or numbers, e.g.,

“The results of five PCRs are shown.”

“This was common practice in the 1960s.”

# **6. Numbers and Mathematical Environments**

## ***6.1. Numbers***

Numbers should usually be written as digits, with a few exceptions. Where there are five or more digits to the left of the decimal point, use a comma to separate every three digits, e.g. 123,456 or 153,958.9476. As in the previous sentence, numbers 0–9 should be written as words unless they are a measurement, i.e., they are accompanied by a unit. For example:

five trees

5 m from the tree

If a sentence starts with a number, the number should always be written out in full, however it is often better to reword the sentence. As an example:

. . . and was heated. One hundred and seventeen grams of NaCl were added to the mixture.

But this could be reworded as:

. . . and was heated. A total of 117 g NaCL were added to the mixture.

## 6.2. Measurements and Units

When writing about measurements, use a space between a number and its unit. SI or SI-derived units should be used where possible; if you use alternative units please explain to the editors why it is necessary. Center dots can be used in units and a superscript <sup>−1</sup> is preferred to using “/”. For example:

$3 \times 10^8 \text{ m}\cdot\text{s}^{-1}$ .

Do not leave a space before a percentage (%) symbol, since the symbol is part of the number and not a unit. The same applies to degree (°) symbols when used for angles, so write 90° but 90 °C.

Powers of 10 can be indicated by a prefix to a unit. The following table shows terms that can be used in this way. For example, 1 pm = 1 × 10<sup>−12</sup> m.

**Table 3.** Prefixes to units that indicate powers of 10.

Abbreviation	Prefix
y	−24
z	−21
a	atto

f	femto
p	pico
n	nano
μ	micro
m	milli

Table 3. *Cont.*

Abbreviation	Prefix	Power of 10
c	centi	−2
d	deci	−1
da	deca	1
h	hecta	2
k	kilo	3
M	mega	6
G	giga	9
T	tera	12
P	peta	15
E	exa	18
Z	zetta	21
Y	yotta	24

### 6.3. *Dates and Times*

Times should be written using the 24-hour clock with a colon between the hours and minutes, e.g., 12:42. Dates should be written with the format day (as a digit) month (as a word) year (four digits), e.g., 1 January 2001. BC (before Christ) or AD (anno domini) can be added if necessary; CE (Christian era) and BCE (before the Christian era) are also acceptable. Where other calendars are used (e.g., lunar calendars), we recommended including the date using the Gregorian calendar as well.

## 6.4. Symbols

Mathematical symbols that appear between two numbers should have a space either side, such as in “ $a = 2b$ ”. Do not leave a space where there is only one number, e.g., “the number of samples in each case was  $>50$ ”. Do not include a space when writing ratios, e.g., 1:100.

## 6.5. Equations

You may include appropriate equations in your manuscript. They may be included inline or as a separate paragraph. Non-inline equations may be numbered starting from 1 (do not include a section number). In the appendixes, all equations should be prefixed with A and in the supplementary information with S. Minor or trivial equations do not necessarily need to be numbered, at the discretion of the author. In derivations involving multiple steps, obvious intermediate results may be omitted.

Punctuate equations as part of a regular sentence. For example, if the equation comes at the end of a sentence, a period should be placed immediately after the equation. It is not necessary to always use a colon to end the paragraph before an

equation. If the equation is followed by “where . . .” to define the symbols used, “where” should be all lower case and left aligned to indicate that it does not begin a new paragraph.

All terms used in an equation should be defined in the text. It is highly recommended to check specifically for this during proofreading before submission, as undefined terms could lead reviewers and editors to misinterpret your meaning. Also be aware of multiply defined symbols, and we recommend using standard notation in the field where it exists (e.g.,  $P$  for a probability function). Symbols used in equations should use italic font, although exceptions will be permitted where there is a convention not to use italics. Words in equations should not use italic font, for example,

$$P(x) = 2a \text{ iff } x > 0.$$

The final formatting of equations will be done by MDPI staff. To assist them, take note of any examples in the journal template. In Microsoft Word, make sure your equations can be edited using the standard Word equation editor, rather than appearing as a picture. Formatting is sometimes changed during production and errors may be introduced if the equations appears only as a figure.

LATEX is convenient for writing equations. Users of LATEX should try, where possible, to use common packages for introducing symbols, since this will make the production process more straightforward and error-free.

## 6.6 When to Use Mathematical Environments

Papers that report mathematical proofs have a structure that differs from other kinds of research papers. They usually contain a short motivation and introduction followed by a series of logically argued results (lemmas, proofs, corollaries, etc.), intermingled with some examples, remarks and definitions. In principle, these environments could be by authors from any field, but it is recommended only to use them for mathematics, as some readers may not be familiar with the structure.

The following environments may be used for mathematical content: Theorem, Lemma, Corollary, Proposition, Characterization, Property, Problem, Example, Examples and Definitions, Hypothesis, Remark, Definition.

The ‘Proof’ environment may be used for (mathematical) proofs of results. If they immediately follow the result, there is no need to state which result they refer to. If they appear later, the type and number of the result should be reference, e.g., “Proof of Theorem 3”. This can be automated in LATEX using the \label and \ref commands. Proofs may finish with a square box or “Q.E.D.”, the LATEX proof environment automatically adds the former.

Note that the MDPI LATEX class file automatically loads the amsmath and amsthm environments packages, which contain many commonly used symbols. You can see comments in the preamble of the MDPI LATEX template for more details.

## 7. Figures, Tables and Data

Figures, tables and similar items may be added to the text as appropriate. This section details how to use these. Authors are required to make their original data available unless there is a valid reason for not doing so (e.g., related to patient confidentiality). The best way to do this is to publish the data at the same time as, or before, the published article. This may be done alongside the article as an Appendix or Supplementary Material, or on a separate platform. In the latter case, we strongly recommend a platform that uses the datacite mechanism (see <https://datacite.org> (<https://datacite.org/>)) to assign a digital object identifier (DOI) to your data.

Any figures, tables, supplementary information, etc., must be cited in the main text of the document, e.g.,

“The data are shown in Table 3.” “This case is depicted in Figure 3d.”

Do not abbreviate Table and Figure to Tab. or Fig. The cited object should usually appear shortly after the citation and at the end of a paragraph. The final position of objects in the published PDF file is determined by the MDPI production team and may change between proofreading and publication.

## **7.1. Figures**

Figures are a graphic that supports the main text. They may represent data, an algorithm, a model, an image, or any other pictorial representation. Figures must be clear and readable, and we recommend a minimum resolution of 600 dpi. Any common figure formats may be used, including (but not limited to) tif, jpg, and png. For Cad and similar formats, a representation as, for example, a png file may be included in the text and the full original file included as supplementary material.

Note that the production process may change the type of your file and all files will be published in tif format. This should not affect the quality of your figure, however if you notice a decrease in the quality after publication you should contact the editorial office as soon as possible.

For figures with more than one part, the panels should be labeled a, b, c, d, etc. and each part can be separately cited in the main text. Each part must be individually described in the caption. Captions are mandatory and are added below figures.

## **7.2. Tables**

Long lists of categorized data may be added as a table. This could include where there are many cases with similar information or large amounts of numerical data.

Tables will be reformatted to the standard MDPI style prior to publication, and the journal template provides an example. Use of color is not recommended in tables, but may be accommodated where necessary. Similarly, merged cells may be included, but should be used sparingly and it must be clear which rows/columns correspond to each other. Do not supply tables as images, they must be editable by MDPI staff.

Very large tables, or many different tables showing similar cases may be included in an Appendix or as supplementary data.

Captions are mandatory for tables and are placed above the table.

## **7.3. Boxes**

A box is equivalent to a table with a single cell. They are typically used to describe a case study that illustrates and supports some aspect of the main text. Boxes must include a caption, placed above.

## **7.4. Schemes**

Schemes are common in chemistry to define the synthesis of a chemical. They can be included in a similar manner to figures. Carefully verify that the structures given are correct. It is not usually necessary to include hydrogen molecules in schemes. Captions are mandatory for schemes and are placed below the scheme.

## **7.5. Algorithms**

Algorithms are typically used in computing to explain a series of steps performed in a calculation or program. They may simply be included in the main text, but can also be numbered for easier citation. Use of monospace font is common for algorithms, but not mandatory. A caption must be included above the algorithm.

## **7.6. Captions**

As mentioned above, captions are obligatory and must be placed above or below objects. They should provide a description of the object such that the reader does not need to refer to the main text to fully understand. For example

“The four methods used.”



is not helpful to readers, whereas

“The four minimization methods used to find the optimum parameters of the Navier–Stokes equation for three microfluidic devices.”

is better. Recall that figures and captions sometimes appear online separate to the rest of the article and so must make sense when not accompanied by the main text.

## 8. Back Matter

The back matter includes important information that supplements the main text and provides further information and context. Most of the back matter is provided by the authors, but the structures are quite standard.

### 8.1. *Patents*

Authors may declare any patents related to the published work, either those pending or already obtained. The aim of this section is to create a better link between research articles and new inventions that they have contributed to. This section is not obligatory and there is no penalty for not declaring patents, but in most cases authors benefit from adding any relevant information here.

When declaring patents, please include the patent number and title, so that any interested readers can access the full details.

We strongly recommend against submitting papers for publication before patents have been granted, since publication can compromise the patent application process. Published papers will not be removed from journals in order for patent applications to be filed.

### 8.2. *Supplementary Material*

Some types of data or information are not suitable to be included in the main text. In this case, it may be included as supplementary material or in an Appendix (see below). Examples of information suitable as supplementary material include additional graphs, original datasets, and computer programs. In most cases, authors are free to choose what is included as supplementary material.

There is also no restriction on file type, although we recommend using common, open file types that will remain readable in the future. There may be restrictions on file size for files hosted by MDPI, however the editorial office will be able to offer alternative options if this is a problem.

There are two ways that supplementary material can be added. Either it can be submitted to MDPI along with the manuscript, or it can be hosted on a third-party platform and details included in the paper. In the latter case, authors should use a repository that uses datacite or an equivalent mechanism to give the files a digital object identifier. The website must also have a policy for data preservation, which reduces that chance that at some point in the future the link to the files will no longer work. A personal website, for example, would not be suitable. There is a list of suitable repositories at <https://www.re3data.org> (<https://www.re3data.org/>).

### ***8.3. Acknowledgments***

Acknowledgments are a place to recognize any contributions made to the paper that do not meet the criteria for authorship. This may include technical support, gifts received, or organizational assistance. There are few restrictions on what should be included, with the primary exception that anyone who meets the criteria for authors must be included as an author and not only acknowledged. Personal acknowledgements (e.g., of family members) are acceptable. This section should be kept relatively short, typically up to 100 words.

### ***8.4. Author Contributions***

Anyone included in the author list should have their role listed in the author contribution section. MDPI uses the CREDiT taxonomy for authorship and a standard wording as given in the journal article template. Further details are available at <https://casrai.org/credit/> (<https://casrai.org/credit/>) and a brief explanation of each role is available at <https://www.mdpi.com/data/contributor-role-instruction.pdf> (<https://www.mdpi.com/data/contributor-role-instruction.pdf>). Everyone and only those satisfying one or more of these roles should be included as authors. In addition, all authors must be fully aware of and approve submission of the manuscript.

### ***8.5. Conflict of Interest Statement***

MDPI uses the recommendations of the International Committee of Medical Journal Editors with regards to conflicts of interest (Cols) (<http://www.icmje.org/> (<http://www.icmje.org/icmje-recommendations.pdf>) [icmje-recommendations.pdf](http://www.icmje.org/icmje-recommendations.pdf) (<http://www.icmje.org/icmje-recommendations.pdf>)):

“A conflict of interest exists when professional judgment concerning a primary interest (such as patients’ welfare or the validity of research) may be influenced by a secondary interest (such as financial gain). Perceptions of conflict of interest are as important as actual conflicts of interest.”

Cols come in different forms and can affect authors, editors, and publishing staff. Having a Col does not mean that your paper will not be published, however omitting them could lead to retraction or, at least, re-evaluation of your paper. No conflicted third parties should be able to directly influence the results of your research or have a say in the final version. Conflicts of interest where there is a negative effect on the author as a result of the paper’s publication should also be declared.

Types of Cols include:

**Direct/indirect:** This concerns whether the Col refers specifically to an author (direct) or one of their associates, such as a close colleague or family member (indirect). **Financial/non-financial** : Both of these are important. Financial Cols concern receiving money from people or organizations with a vested interest in the outcome of the research, holding patents or salaried positions that depend on the research outcomes, or holding shares or other items whose value is dependent on the research. Non-financial Cols include benefits to groups the author is associated with and reputational benefits.

There are some grey areas about what to disclose as a conflict of interest. If you are unsure, we recommend making a declaration and checking with the editorial office prior to publication. Colleagues may also be able to provide advice. Examples of Col statements can be found in the instructions for authors and the journal submission template.

## 8.6. Glossary

This is an optional section defining terms and abbreviations used in the paper. It can be omitted for most papers, but may be useful if a large number of novel terms are defined. They can also be used where the author expects the readership to be unfamiliar with many of the terms used, for example if the paper is multidisciplinary.

## ***8.7. Appendixes and Supplementary Information***

Authors can use Appendixes to add further information to support the results reported in the manuscript. They should be used when including the information in the main text would disrupt the flow for readers or where only a minority of the audience is expected to be interested. Appendixes may include full details of lengthy mathematical proofs, additional figures, further experimental details, or additional data. If the information is very lengthy, or in a format that does not work well on a printed page, it may also be included as supplementary material (see above).

Note that sections in the Appendix are labelled with capital letters (as opposed to numbers, which are in the main text) and that all Appendixes must be cited in the main text. Figures or Equations in an Appendix are prefixed with 'A' (regardless of the section) and in supplementary material with 'S', and numbering begins from 1 at the beginning of the Appendix or Supplementary files (i.e. Figure A1, Figure A2, . . .).

## ***8.8. References***

Almost all papers contain a reference list giving details of previous work cited in the manuscript. The purpose of the reference list is to enable others to find works on which the published paper is based.

A citation should be included when what you are writing refers to or is based on previous work. Examples can also be cited. The citation list should contain only references to static content, i.e., something that is not expected to change over time. This includes journal and newspaper articles, patents, and details of specific equipment. Content that does not fulfil these criteria may be listed directly in the main text and might include company websites, or websites to track project development (such as github).

The reference section is highly structured and different types of references are formatted in a specific way. Full details are available from the instructions for authors' page of the journal you are submitting to, however below are examples of the most common types.

MDPI uses two reference styles, one based on the American Chemical Society (ACS) style and the other following the Chicago style. You should consult the instructions for authors to see which one applies to the journal you are submitting to. Templates for both are available for most common referencing software. Examples of the most common reference types are given in the following two sections.

### 8.8.1. ACS reference style

#### Journal article

Fisher, J.A.; Krapf, C.B.E.; Lang, S.C.; Nichols, G.J.; Payenberg, T.H.D. Sedimentology and architecture of the Douglas Creek terminal splay, Lake Eyre, central Australia. *Sedimentology* **2008**, *55*, 1915–1930.

#### Conference paper

Chum, O.; Philbin, J.; Zisserman, A. Near duplicate image detection: min-Hash and tf-idf weighting. In Proceedings of the 19th British Machine Vision Conference (BMVC 2008), Leeds, UK, 1–4 September 2008; pp. 812–815.

#### Book with editors

Shaw, P.A.; Bryant, R.G. Playas, pans and salt lakes. In *Arid Zone Geomorphology: Process, Form and Change in Drylands*; Thomas, D.S.G., Ed.; John Wiley & Sons, Ltd.: Chichester, UK, 2011; pp. 373–401.

#### Book without editors

McKie, T. A Comparison of Modern Dryland Depositional Systems with the Rotliegend Group in the Netherlands. In *The Permian Rotliegend of The Netherlands*; SEPM Society for Sedimentary Geology: Darlington, UK, 2011; pp. 89–103.

#### Preprint

Ward, D.W.; Nelson, K.A. Finite Difference Time Domain (FDTD) Simulations of Electromagnetic Wave Propagation Using a Spreadsheet. *arXiv* **2004**, arXiv:physics/0402096. Available online: <http://arxiv.org/abs/physics/0402096> (<https://arxiv.org/abs/physics/0402096>) (accessed on 13 October 2004).

## Thesis

Mäckel, H. Capturing the Spectra of Silicon Solar Cells. Ph.D. Thesis, The Australian National University, Acton, Australia, 2004.

## Patent

Sheem, S.K. Low-Cost Fiber Optic Pressure Sensor. U.S. Patent 6,738,537, 18 May 2004.

## Company website

Proto Labs Ltd. Protolabs. Available online: [\(https://uploads.protolabs.co.uk/\(https://uploads.protolabs.co.uk/es/PartUpload-MultiPart.aspx?LinkFrom=FC\)es/PartUpload-MultiPart.aspx?LinkFrom=FC\(https://uploads.protolabs.co.uk/es/PartUpload-MultiPart.aspx?LinkFrom=FC\)\)](https://uploads.protolabs.co.uk/(https://uploads.protolabs.co.uk/es/PartUpload-MultiPart.aspx?LinkFrom=FC)es/PartUpload-MultiPart.aspx?LinkFrom=FC(https://uploads.protolabs.co.uk/es/PartUpload-MultiPart.aspx?LinkFrom=FC))(accessed on 24 April 2017).

## Software

*Mathematica*, version 5.1; software for technical computation; Wolfram Research: Champaign, IL, USA, 2004.

## Data set

*The Sadtler Standard Spectra: 300 MHz Proton NMR Standards*; Bio-Rad, Sadtler Division: Philadelphia, PA, USA, 1994; No. 7640 (1-Chloropentane).

## Newspaper

Squires, S. Falling Short on Nutrients. *The Washington Post*, 4 October 2005.

## Blog

Matthew, L. FCC Chair Willing to Consecrate XM-Sirius Union. *Ars Technica* (blog), 16 June 2008. Available online: [http://arstechnica.com/news.ars/post/](http://arstechnica.com/news.ars/post/(https://arstechnica.com/news.ars/post/20080616-fcc-chair-willing-to-consecrate-xm-)  
<https://arstechnica.com/news.ars/post/20080616-fcc-chair-willing-to-consecrate-xm->

**sirius-union.html) 20080616-fcc-chair-willing-to-consecrate-xm-sirius-union.html**  
**(https://arstechnica.com/news.ars/post/20080616-fcc-chair-willing-to-consecrate-xm-**  
**sirius-union.html)** (accessed on 23 May 2017).

#### Unpublished work

Nokinara, K. Duke University, Durham, UK. Unpublished work, 2003.

#### Presentation

Zhang, Z.; Chen, H.; Zhong, J.; Chen, Y.; Lu, Y. ZnO nanotip-based QCM biosensors. Presented at the IEEE International Frequency Control Symposium and Exposition, Miami, FL, USA, June 2006.

## 8.8.2. Chicago reference style

#### Journal article

Žilinske, Asta. 2010. Negative and positive effects of foreign direct investment. *Economics and Management* 15: 332–36.

#### Conference paper

Teplin, Linda A., Gary M. McClelland, Karen M. Abram, and Jason J. Washburn. 2005. Early Violent Death in Delinquent Youth: A Prospective Longitudinal Study. Paper presented at the Annual Meeting of the American Psychology-Law Society, La Jolla, CA, USA, March 1.

#### Book with editors

Gould, Glenn. 1984. Streisand as Schwarzkopf. In *The Glenn Gould Reader*. Edited by Tim Page. New York: Vintage, pp. 310–12.

#### Book without editors

Huang, Yongfu. 2011. *Determinants of Financial Development*. London: Palgrave Macmillan UK.

#### Preprint

Lein, Matthias. 2008. Characterization of Agostic Interactions in Theory and Computation. Preprint, submitted July 10. Available online: **http://xxx.lanl.gov/abs/0807.1751**  
**(http://xxx.lanl.gov/abs/0807.1751)** (accessed on 16 July 2017).

#### Thesis

Choi, Mihwa. 2008. Contesting Imaginaires in Death Rituals during the Northern Song Dynasty. Ph.D. thesis, University of Chicago, Chicago, IL, USA, May 1.

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