

## Preparing a Manuscript for Publication

Julia Chan

Professor

Department of Chemistry & Biochemistry  
University of Texas at Dallas

Associate Editor | *Science Advances* (AAAS)

Editor | *J. Alloys and Compounds* (Elsevier)

Editorial Advisory Board for ACS Journals

*Chemistry of Materials & Inorganic Chemistry*



## Communication tidbits

### Today's workers need communication skills: oral, written, and technological

Written communication is just as important as verbal or non-verbal communication. Good written skills are priceless. Writing is a skill.

#### • Practice Makes Perfect

Despite the fact that you may not enjoy writing, or not consider it a particular talent of yours, it is critical that you develop what skill you do have, by using it as much as possible.

- "An individual's knowledge enters the domain of science only after it is presented to others in such a fashion that they can independently judge its validity." Hence, the way we communicate our scientific research findings becomes an integral part of the research activity. – NAP "On Being a Scientist"

## Objective

### • My perspectives

- as author
- reviewer
- editor

- Since 1997 February (my first manuscript), we have published more than 160 articles in different peer-reviewed journals

- Chemistry
- Materials Science
- Physics



Chem. Mater. 1997, 9, 531–534

**Rare-Earth Halides as Fluxes for the Synthesis of Tantalum and Niobium Carbide**

Julia Y. Chan and Susan M. Kauzlarich\*

Department of Chemistry, University of California, Davis, California 95616

Received July 8, 1996. Revised Manuscript Received October 1, 1996

531

3

## 10 tips for Writing a Truly Terrible Journal Article

- Refuse to read the previous literature published in your field
- Take the lazy route and plagiarize
- Omit key article components
- Disrespect previous publications
- Overestimate your contribution
- Excel in ambiguity and inconsistency
- Apply incorrect referencing of statements
- Prefer subjective over objective statements
- Give little care to grammar, spelling, figures, and tables
- Ignore editor and reviewer comments



4

## Writing!

- When should you begin to think about writing?
- How many drafts?
- How do you communicate your work?
- Do you market your articles?
- How concerned should I be about the title and abstract of my papers?



Adapted from <http://acsoncampus.acs.org/resources/video/episode-1/>

5

## Part 1: Six things to do before writing your manuscript

### 1. Think about why you want to publish your work – and whether it's publishable

- Have I done something new and interesting?
- Is there anything challenging in my work?
- Is my work related directly to a current hot topic?
- Have I provided solutions to some difficult problems?
- Yes, it's a good idea to start writing as you go (helps with framing your thoughts and hypothesis)



JORG: CHUM © 2006

WWW.PHDCOMICS.COM

6

## Part 1: Six things to do before writing your manuscript

### 2. Decide what type of the manuscript to write

- **Full articles, or original articles**, are the most important papers. They are substantial completed pieces of research that are of significance as original research.
- **Letters/rapid communications/short communications** are usually published for the quick and early communication of significant and original advances. They are much shorter than full articles (usually strictly limited in size, depending on each journal).
- **Review papers or perspectives** summarize recent developments on a specific hot topic, highlighting important points that have previously been reported and introduce no new information. Normally they are submitted on invitation by the editor of the journal.

7

## Part 1: Six things to do before writing your manuscript

### 3. Choose the target journal

Do not gamble by scattering your manuscript to many journals at the same time. Only submit once and wait for the response of the editor and the reviewers.

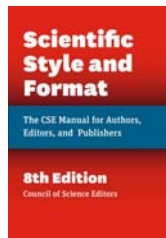
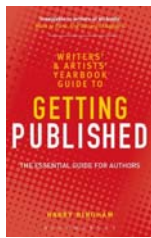
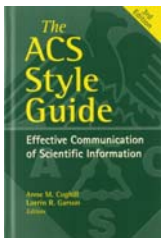


- Are your findings very specialized?
- Are your findings of broad scientific interest?
- Do you describe a break though?
- Is it an incremental advance?
- Research the scope of prospective journals

8

## Part 1: Six things to do before writing your manuscript

### 4. Pay attention to journal requirements in the Guide for Authors



9

## Part 1: Six things to do before writing your manuscript

### 5. Pay attention to the structure of the paper.

Introduction: What did you/others do? Why did you do it?

Methods: How did you do it?

Results: What did you find?

And

Discussion: What does it all mean?



10

## Part 1: Six things to do before writing your manuscript

### 6. Understand publication ethics to avoid violations

- Redundant publication
- Suspected plagiarism
- Suspected fabricated data
- Suspected guest, ghost or gift authorship
- Other cases
  - Suspected ethical problem with a submitted manuscript
  - Suspicion that a reviewer has appropriated an author's idea or data



<http://retractionwatch.com/>

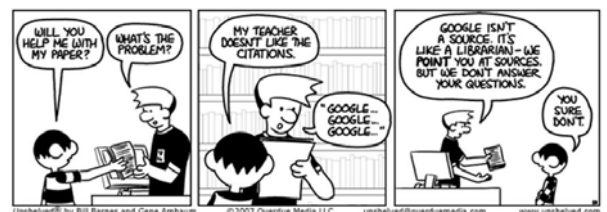
11

## Part 2:

### 11 steps to structuring a science paper editors will take seriously

Two important things you should do that will set the groundwork for the entire process.

- The **topic to be studied** should be the first issue to be solved. Define your hypothesis and objectives (These will go in the Introduction.)
- **Review the literature** related to the topic and select some papers (about 30) that can be cited in your paper (These will be listed in the References.)



Unshelved® by Bill Barnes and Gene Ambaum ©2007 Overdue Media LLC unshelved@overduemedia.com www.unshelved.com

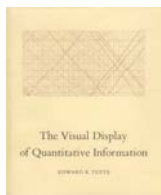
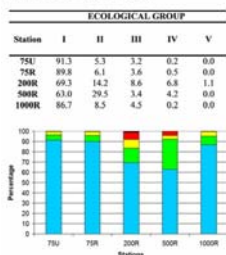
12

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 1: Prepare the Figures and Tables**

- Avoid crowded plots
- Use well-selected scales
- Think about appropriate axis label size
- Include clear symbols and data sets that are easy to distinguish
- Never include long boring tables

Should you use a table or chart?



13

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 2: Write the Methods**

For chemicals, use the conventions of the [International Union of Pure and Applied Chemistry](http://www.iupac-chemistry.org). For units of measurement, follow the [International System of Units \(SI\)](http://www.bipm.org).

List the methods in the same order they will appear in the Results section, in the logical order in which you did the research:

- Description of synthesis
- Description of experiments done, providing details
- Description of the laboratory method
- Description of the statistical methods used (including confidence levels, etc.)



The Experimental Section: The Key to Longevity of Your Research

<http://pubs.acs.org/doi/full/10.1021/cm500632c>

Chem. Mater., 2014, 26, 1765–1766

14

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 3: Write up the Results**

- **What have you found?**
- Use sub-headings to keep results of the same type together.
- For the data, decide on a **logical order** that tells a clear story and makes it and easy to understand.
- An important issue is that you must not include references in this section; you are **presenting your results**, so you shouldn't refer to others here.
- If you refer to others, is because you are *discussing* your results, and this must be included in the Discussion section.

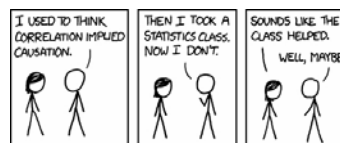


15

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 3: Write the Discussion (most important section!)**

- **Avoid statements that go beyond what the results can support.**
- **Avoid unspecific expressions** such as "higher temperature", "at a lower rate", "highly significant". Quantitative descriptions are always preferred (35 °C, 0.5 %, p < 0.001, respectively).
- **Avoid sudden introduction of new terms or ideas**; you must present everything in the introduction, to be confronted with your results here.
- **Speculations on possible interpretations are allowed, but these should be rooted in facts, rather than imagination.**



16

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 3: Write the Discussion (most important section!)**

To achieve good interpretations think about:

- How do these results relate to the original question or objectives outlined in the Introduction section?
- Do the **data support** your hypothesis?
- Are your **results consistent** with what other investigators have reported?
- Discuss weaknesses and discrepancies. If your results were unexpected, try to explain why.
- Is there another way to **interpret** your results?
- What further research would be necessary to answer the questions raised by your results?
- Explain what is new **without exaggerating**.

17

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 5: Write a Clear Conclusion**

- **How the work advances the field?**
  - A common error in this section is **repeating the abstract, or just listing experimental results.**
  - **Trivial statements of your results are unacceptable in this section.**
- Provide a **clear scientific justification** for your work in this section, and indicate uses and extensions if appropriate.
- **Suggest future experiments** and point out those that are underway.
- **Propose present global and specific conclusions**, in relation to the objectives included in the introduction.



18

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 6: Write a Compelling Introduction**

- **What is the problem to be solved?**
- Are there any existing solutions?
- **Which is the best?**
- What is its main limitation?
- **What do you hope to achieve?**
- Never use more words than necessary (be concise and to-the-point). Don't make this section into a history lesson. Long introductions put readers off.
- **We all know that you are keen to present your new data.** But do not forget that you need to give the whole picture at first.
- Must be **organized** from the global to the particular point of view, guiding the readers to your objectives when writing this paper.
- State the **purpose of the paper** and **research strategy** adopted to answer the question, but do not mix introduction with results, discussion and conclusion.
- **Hypothesis and objectives must be clearly remarked at the end of the introduction.**
- Expressions such as "novel," "first time," "first ever," and "paradigm-changing" are not preferred. Use them sparingly.

19

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 7: Write the Abstract**  
A clear abstract will strongly influence whether or not your work is further considered.

- **Abstracts** must be brief if possible. Check the 'Guide for authors' of the journal - normally less than 250-400 words
- **What has been done? What are the main findings?**



20

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 8: Compose a Concise and Descriptive Title**

- The **title must explain** what the paper is broadly about. It is your first (and probably only) opportunity to attract the reader's attention.
  - We are all flooded by publications, and readers don't have time to read all scientific production.
  - Reviewers will check whether the title is specific and whether it reflects the content of the manuscript.
- Some examples of original titles and how they were changed after reviews and comments to them:
- **Example 1**
- **Original title:** Preliminary observations on the effect of salinity on benthic community distribution within an estuarine system, in the North Sea
- **Revised title:** Effect of salinity on benthic distribution within the Scheldt estuary (North Sea)
- **Comments:** Long title distracts readers. Remove all redundancies such as "studies on," "the nature of," etc. Never use expressions such as "preliminary." Be precise.

21

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 8: Compose a Concise and Descriptive Title**

- **Example 2**
  - **Original title:** Synthesis of Intermetallics
  - **Revised title:** Adventures in Crystal Growth: Synthesis and Characterization of Single Crystals of Complex Intermetallic Compounds
  - **Comments:** Titles should be specific. Think about "how will I search for this piece of information" when you design the title.
- **Example 3**
  - **Original title:** Fabrication of carbon/CdS coaxial nanofibers displaying optical and electrical properties via electrospinning carbon
  - **Revised title:** Electrospinning of carbon/CdS coaxial nanofibers with optical and electrical properties
  - **Comments:** "English" needs help. The title is nonsense. All materials have properties of all varieties. You could examine my hair for its electrical and optical properties!
  - **You MUST be specific. I haven't read the paper but I suspect there is something special about these properties. Otherwise why would you be reporting them?" – the Editor-in-Chief.**

22

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 9: Select Keywords for Indexing**

- They are the label of your manuscript. It is true that now they are less used by journals because you can search the whole text.

**Step 10: Acknowledgements**

- Thank people, granting agencies, and fellowships (include grant numbers)



23

**Part 2:**  
11 steps to structuring a science paper editors will take seriously

**Step 11: Check References**

- Spelling of author(s) names
- Year of publications
- Usages of "et al."
- Punctuation
- Whether all references are included
- Journal abbreviation



<https://utd.edu/library/services/refworks/index.html>

24



## Cover Letter

- Include a statement that manuscript is currently not submitted to another journal
- Indicate the manuscript has been approved for publication by all authors
- State there has been no previous publication of the data



The Art of the Cover Letter

<http://pubs.acs.org/doi/full/10.1021/nn100907e>

ACS Nano, 2010, 4, 2487–2487.

## Reviewer's Criteria

### Reviewer's Criteria



- Does the paper contain sufficient **new material**?
- Is the topic within the **scope** of the journal?
- Is it presented **concisely** and **well organized**?
- Are the methods and experiments presented in the way that they can be replicated again? Correct methodology including study design, data collection and analysis
- Sufficiently **referenced** and grounded in **existing** literature
- Are the results presented adequately?
- Is the discussion **relevant, concise and well documented**?
- Are the **conclusions supported** by the data presented?
- Is the language acceptable? Editorial and ethical policies were adhered to clear presentation and adequate language level
- Are **figures** and **tables** adequate and well designed?
- Are all **references** cited in the text included in the references list

26

## Make Reviewers' Life Easier

- **Keep the text and layout style consistent throughout the manuscript**
  - Use the **same font** (usually Times New Roman) and **font size** in the text and tables.
  - Double line spacing and 12-point font is preferred; this makes more convenient for reviewers to make annotations.
- **Number all pages!**
  - This is very important because it helps reviewers show you the parts to be amended.
- **Number each row in the text**
  - Easier to identify the position of the comments from the reviewers
- **Pay attention to the abbreviations**
  - They should be defined on the first use in both abstract and the main text (also in the legends of figures and tables).
  - Some journals even forbid the usage of abbreviations in the abstract. Refer to the journal's Guide for Authors to see the requirements for abbreviations.

27

## Why I Accepted Your Article

1. **It provides insight into an important issue** – shedding light on an unsolved problem that affects a lot of people.
2. **The insight is useful to people who make decisions.**
3. **The insight is used to develop a framework or theory**, either a new theory or advancing an existing one.
4. **The insight stimulates new, important questions.** (*Show me something new*)
5. **The methods used to explore the issue are appropriate** (*for example, data collection and analysis of data*).
6. **The methods used are applied rigorously and explain why and how the data support the conclusions.**
7. **Connections to prior work in the field or from other fields are made** and serve to make the article's arguments clear.
8. **The article tells a good story**, meaning it is well written and **easy to understand**, the arguments are **logical** and not internally contradictory.

28

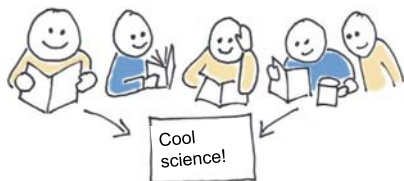
## Take Home Message

**Editors and reviewers are all busy scientists, just like you. Make things easy to save them time.**

- This one is so true – and I would add that I should be able to focus on the science & not be distracted by documents not suitable for submission.

Cherish your own work – if you do not take care, why should the journal?

There is no secret recipe for success – just some simple rules, dedication and hard work.



29

## Useful Links!

- **A Virtual Issue of Editor Tips for Authors Mastering the Art of Scientific Publication**
  - [http://pubs.acs.org/page/vi/art\\_of\\_scientific\\_publication.html](http://pubs.acs.org/page/vi/art_of_scientific_publication.html)
- **Writing Scientific Papers**
  - <http://www.nature.com/scitable/ebooks/english-communication-for-scientists-14053993/contents>



30