

Improving technical paper writing skills How to avoid common pitfalls

First hand experience with Thai researchers and students

Supapan Seraphin

Distinguished Professor Emerita, Department of Materials Science & Engineering
University of Arizona, Tucson, Arizona 85721, U.S.A.

Senior Advisor, King Mongkut's University of Technology Thonburi
and
Nanotechnology Center (NANOTEC)
Thailand National Science and Technology Development Agency (NSTDA)

ssupapan7@gmail.com



Why writing a manuscript?

- For fun!!??!!
- “My boss told me to.”
- Publish or perish
- Key performance index (KPI)
- Promotion
- So people know your research work

Beginner Traps

- Not enough data
- Feeling that my data has “nothing new”
- I can report only on “positive” results.
- I must be able to explain everything in the results
 - No need. You can say ‘further details are under investigation.’ That aspect is beyond the scope of the present study.’
- Afraid to contradict with other previous findings
- Contradict with your superiors, advisors, etc.
- My English is not good enough!! **Excuse!**

Change your mentality

- Knowing that writing takes creativity and utmost energy for most of us
- No more excuses:
 - Too many “holes” in my data. I must run back to the lab.
- Don't wait too long to start writing
- Good organization of your data is an on going progress in doing research

Where to start

- Start with Experimental section
- Lay out Figures following a story line. Selling points. What is new in your research? What is different from others? Add diagrams to simplify complicated statements. Tables.
- Results. Well organized, to the point, interesting
- Discussion. Explain and compare your results to others'. Try to get to your selling points.
- Write the last paragraph of the Introduction. Highlight your work.
- Write the whole Introduction
- Write the whole Results and Discussion
- Conclusions
- Abstract – extract the essence of your work, not a summary, no references
- Key words so people can find your work
- Title of the manuscript – concise, interesting

Common Mistakes: Tenses

- Experimental: past tense, passive voice
- Results & Discussion:
 - Past tense for what you did
 - Present tense on results and discussion
 - 'might be, could be' in discussion
- Conclusions: past tense
- Abstract: present tense to show originality, concepts, highlights of the results. Include all key words

Singular vs. plural

a, an, the

- Look up whether the “noun” you want to use is a countable noun or an uncountable noun.
- Countable noun needs a, an if singular.
- You know when to use a or an, right?
- Uncountable noun does NOT need a, an.
- **Most of the time, if a countable noun can be plural, add ‘s’. Then you don’t need ‘the’.**
- ‘The’ is needed when
 - it is specific such as ‘the core’, “the shell’
 - you mention it before
- **One of the most studied polymers - PLURAL**

Active voice vs. passive voice

- It was found that....
- It is suggested that....
- It is indicated that....
- was investigated.
- Figure 1. shows that.....
-illustrates that...
-demonstrates that....
- Interesting v.s. interested

et al. i.e. e.g.

- et al. meaning “and others”. Latin word: *et alii* (masculine), *et aliae* (feminine),
Or *et alia* (neuter)
 - Can use *et al*
 - Common mistakes:
 - et. al.
 - et. Al
- i.e. meaning “that is”
- e.g. meaning “for example”

<https://www.merriam-webster.com/dictionary/et%20al.>

Long sentence

- How long is long?
- Usually too many modifiers
- **Make it simple.**
- Too many “then”, in addition, Furthermore,
- But vs. however

Example 1

- “The results showed a decrease of water uptake with an increase of swollen storage modulus.”

...with **increasing** swollen storage modulus.

No “of”, no “the”

Example 2

- “In this study, polymeric materials used as oral drug carrier is quaternized chitosan (QCS), which is the modified chitosan with quaternization process to improve solubility without any effect on the mucoadhesive property of core chitosan. The well biocompatibility of this chitosan derivative in our previous study was further investigated its effect on P-qp inhibitory mechanism.”
- In this study, polymeric **materials** used as **an** oral drug carrier **is** quaternized chitosan (QCS), which is **the a** modified chitosan with **a** quaternization process to improve solubility without any effect on **the** mucoadhesive property of **the** core chitosan. The well biocompatibility of this chitosan derivative in our previous study was further investigated its effect on P-qp inhibitory mechanism.
- Our previous study on this chitosan derivative showed that it was biocompatible. Its effect on P-qp inhibitory mechanism is further investigated in this study.

Example 3

- The newly developed greenhouse film, especially T3 showed **higher height, bush width as well as weight** than that of the commercial greenhouse cover (T1).
- The Chinese cabbages grown in the newly developed greenhouse film, especially T3, showed **taller, larger and heavier** than those grown in the greenhouse covered with the commercial film (T1).

Tips and Tricks

- Read more, make notes, keep patterns
 - Last paragraph of introduction
 - Conclusions
 - abstract
- Find your selling points – what's new in your manuscript
- Telling a story – make it interesting – add conflict, contradictions that can be explained in your data

สร้างบรรยากาศการเขียน

- Know where and when you are most productive: morning, night, quiet, turmoil, background music, etc.
- Try to eat reasonably: good energy, not to stuff yourself, avoid gluten
- Sit tight and don't give yourself any excuses
- Avoid distractions – phone, TV, internet....
- Keep at it
- Write your thoughts down, come back to polish it later
- Prepare for as many revisions as need be

Plagiarism

- is the act of copying or stealing someone else's words or ideas and passing them off as your own work.

Example: - when you copy a paper from the Internet, put your name on it and turn it in as if you wrote it.

-paraphrasing materials without correctly attributing the source or research text.

✓ There are many software to catch plagiarism.

✓ Be honest.

<http://www.yourdictionary.com/plagiarism>

Authorship

- Intellectual contribution
- Ethical issues
- Touchy issue!
- Share your experience – or what you have heard
- Protect your own reputation
- In case of doubt, talk to someone

Submission

- Expect to be rejected
- Have a backup plan
- Keep trying
- It takes time. Follow up after two months.

Questions