

## Checklist of Paper and Thesis Writing

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Item	Requirement & Suggestions
Start writing	Do not start writing a paper after you finish all the studies. Instead, start drafting a framework and flow when you start the studies, and make changes later. This requires you to read tons of papers and listen to seminars so that you know the background and motivation really well.
Template	You can get the templates of the manuscript, the cover letter, and the reviewer response letter from ASLers and me or download from the journal website.
Consistency	<ol style="list-style-type: none"><li>1. If you use one word, just keep using it. For instance, do not use “heterojunction” and “heterostructure” in one paper. They are both right but just use one.</li><li>2. Use the same curve color set for a series of samples in one paper.</li><li>3. Do not use “Fig.” in one place and “Figure” in another.</li><li>4. Tense of the verb has to be consistent.</li></ol>
Abstract, conclusion and summary	<ol style="list-style-type: none"><li>1. Include a brief motivation and describe highlights more detailedly.</li><li>2. For key results, provide numerical results. Do not just say qualitative things such as “much improved performance”. By how much?</li><li>3. Different journals have different maximum numbers of words. Do not exceed the maximum by too much and do not fall short by too much. For instance, if one journal says that the maximum number of words is 200, do not get over 220 and do not fall below 170.</li><li>4. Typically there is no word limit for conclusion or summary. So your conclusion or summary needs to be longer than the abstract by providing more details such as numerical result.</li></ol>
Sentences	<ol style="list-style-type: none"><li>1. Do not use long sentences such as a long sentence followed another long sentence starting with “which”. Use period or semi-colon to break a long sentence into two or three short sentences.</li><li>2. Do not forget conjunction such as “and” to connect two sentences separating by comma such as: “We have carried FDTD and APSYS simulation, <b>and</b> performed PLD growth.”</li></ol>
Paragraph	<ol style="list-style-type: none"><li>1. Many paragraphs need to start with a transitioning sentence to describe the purpose of this paragraph. This is common for the introduction and result analysis section. You can use “To XXX” to start those paragraphs. Do not use “In order to”.</li><li>2. Do not use very long paragraph like over 400 words which causes tiredness when reading.</li></ol>
In this study/work/paper	This sentence is among the most important parts of any paper. Before this sentence, you need to talk about the “pain points” prior to your study such as a lack of research, inferior performance or complex process. This sentence should explicitly state the things you do to address the “pain points.”
Writing versus chatting	Writing is not chatting. Do not use “can’t”, “isn’t”, “don’t”, “doesn’t”. Instead, use the expanded form “cannot”, “is not”, “do not”, and “does not”.
When to use a and the	This is the biggest issue for most. You must use “a” or “the” in front of a countable noun such as structure, substrate, device, and atom. For nouns which can be countable or uncountable, it is up to you whether to use “a” or “the”. If you are not sure whether a noun is countable or not, just Google.
a or the for common countable nouns	When a normal noun is firstly used, you use “a”. There are two situations. <ol style="list-style-type: none"><li>1. If you refer to it later again, you use “the”, such as: “<b>A</b> sapphire substrate was employed to grow the UV LED structure by MOCVD.... After that, <b>the</b> sapphire substrate was examined for its optical transparency.”</li><li>2. If you refer to another object, you use “another” or “a second”, such as: “<b>A</b> sapphire substrate was employed to grow the UV LED structure by MOCVD.... After that, <b>another</b> sapphire substrate was utilized for the subsequent MOCVD growth.”</li></ol>

*Write Better, Research Happier*

a or the for <b>proper</b> countable nouns	If the quantity is only one for certain countable nouns, you use “the” such as: “Akasaki, Nakamura, and Amano were recognized by <b>the</b> 2014 Nobel Prize in Physics.” “ <b>The</b> BAIN alloys are promising for UV LEDs and HEMTs.”
Synonym	Reviewers and readers always appreciate that you have a large vocabulary. Thus, do not keep using the same word. Try to use different and more sophisticated words. You do not know? Just Google to find its synonyms. Three examples: Use: utilize, employ, apply So: therefore, hence, thereby, consequently, accordingly Also: as well, moreover, furthermore, alternatively
Figure	1. The figure resolution must be equal or better versus the figures in papers led by our group. 2. The details of figures such as curves, words, legends, and axes must be large enough to see at 100% Zoom of a Word document by a normal person. 3. The color of curves must have strong contrast. Hence avoid pink, yellow, and light green. 4. The figure legend cannot block curves or any important information. 6. The sub-figures must have “a,b,c,...”. Do not use left, middle, right. 7. The sub-figures must have the same size and aspect ratio if they are about the similar measurement or simulation of the same or two similar structures. 8. The distance between two objects must be consistent across sub-figures, such as the X-axis and X-axis label. 9. There is a space between “Fig.” and “2”. Do not use “Fig.2”.
Unit	1. There is a space between the number and unit, such as “2.1 nm”. 2. If you describe a few numbers of the same unit, you just have to write the unit once, for instance: The output powers of the UVC LEDs are 1, 2, 3, 4, 5 mW, respectively.
The use of (XXX)	Try to minimize the use of (XXX) in a sentence to explain things. They make the article less readable. Instead, use which to explain it.
Management of references, figure caption, and table caption	1. Do not manually type the reference number. Use the built-in “Insert Endnote” function under Word-References. For references, you can also use external software such as Endnote. 2. Do not manually type the figure and table number. Use the built-in “Insert Caption” function under Word-References. 3. Mention at least once for any reference, figure, and table you have in the main text.
Copy and paste	Direct copying sentences of other papers including your own papers without “quoting” and citing is viewed as plagiarism. This happens in the introduction most often. <b>Thus, you must not do so. Please write or paraphrase using different language.</b>
Assertive language	1. Do not use assertive language such as “will”, “definitely”, “absolutely”, “completely”. For replacing “will”, Use “could” and “would” instead. 2. Some journals do not allow the use of “first time”, “new”, “novel”, and “record-high”, and some do.
Self-citation	Only cite the papers of our group relevant to area of the paper. Avoid excessive self-citation.
Authorship	Only add those who have contributed scientifically and considerably into the authorship. For instance, if someone just did a favor for you to measure one sample, add him/her into acknowledgement but not authorship. If you need to add a student or postdoc from another group into the authorship, that person must get the approval of his/her PI and properly acknowledge the funding support.