# How to write a review: a short summary

**1) Summary**

At the beginning you should first summarized rapidly the research presented in the article, describing strengths and weaknesses of the article, both from the point of view of advancement of science and from the point of view of scientific quality (how well planned are the experiments, does the proposed mechanism makes sense, how good is the experimental part)? Decision on novelty: Based on the presented state of the art, is the advancement enough? Please mind there are several kind of novelty: new concept, new reactivity, new mechanism, important technical advancement. Nearly no publication can be novel in all respects. This is usually the more difficult part of the reviewing process, because it is impossible to be completely objective. In the summary, you need to base your evaluation of facts, not "feelings". For example, telling "this work is not novel enough for this journal" without support is useless. You need to give support: for example. in ref. xxx a very similar process describing… . This is also true for all other evaluations.

**2) Decision**

Based on this summary, you can propose a decision:

1) accept = no changes

2) minor revision = usually no experiments, or 1-2 experiment that can be done in one week, only text changes

3) major revision = the work is worthy to publish, but quite a lot needs to be done, 1-4 weeks full time lab work + text editing

4) Reject, but propose resubmission if extended: you think the topic could be worth publishing, but need to be extended a major way, probably requiring 1-6 months of work. In this case, you may propose publication in a "lower profile" journal without this major extension.

5) Reject, telling that the work is not suitable for this journal even with major extension. In this case, you can propose publication in a more specialized or lower profile journal after revisions

The decision needs to be "calibrated" with the reputation of the journal, which can be tricky sometimes. The importance of the advances described and the quality of the work are not always correlated: a work can be perfectly executed, but the advance not major (case for transfer to a specialized journal) or a major advance is described, but the work is poorly done (case for major revision or reject/resubmit).

**3) Needed Revisions**

Give a list of revisions for the author. Makes clear which ones are just suggestions, which ones are absolutely needed for publication.

**4) Preparation work**

What is the preparation work you need to do to be able to write the summary and take a decision? There is a few points below. Obviously, you don't need to describe all the points in the summary, only the ones relevant for your decision. For a review article, only 4.1 is relevant.

**4.1) Introduction**

Very important, you need to check if the presented state of the art is correct:

1) Did the author cite all the important references?

2) Are all aspects of the state of the art presented? Sometimes, the authors present only one aspect of the state-of-the art, but the others are missing (e.g. they describe the importance of products, but not precedence using the same conditions to access different products, or the reverse: describe precedence in conditions, but not other methods to access the same products).

3) Did they highlight the right precedence in text? Unfortunately, some authors tend to bury the truly importance references among 20-30 others. The important references should not be only cited, but described in text and introductory scheme.

Tricks to check: Take a few key references and look in web of science who is citing them. Do a short Reaxys search on the transformation/structure of products.

**4.2) Optimization**

Did the authors forget important logical experiments (especially control experiments). Is their conclusions supported by the data or are more experiment needed? Did they choose the most relevant experiments for the main article? If they did not report anything, a revision should be to add at least optimization details in the SI.

**4.3) Scope**

Are isolated yields on sufficient quantity ( > 5o mg product usually) reported? Is the scope sufficient to determine the synthetic utility of the reaction? Important factors are functional group tolerance, substitution pattern, complexity of products. It is important to know what are the limitations of the method (you don't need to require that it works, but just to know if it works or not). Ask for quality in scope, not quantity (no sense to have 30 derivatives on the only atom of the substrate you can vary…). Ask to add something only if truly relevant for the impact of the method, "nice to have" are not needed, they just burn out resources better used otherwise.

**4.4) Synthetic applications**

Is a scale-up experiment presented? Is there any synthetic application presented? If not, do you think it would have been important to have some? If they are, is something obvious missing (inherent to the specific substrate class synthesized). It is useless to ask for obvious transformations (like cycloaddition if azides are made, reduction if ketones are made, etc.. unless there is a good reason for such a reaction to be tricky).

**4.5) Mechanism**

This part needs to be checked with particular care. Is the mechanism proposed by the authors well-supported? Do all steps make sense? Is another alternative possible? You can suggest further experiments, further references, revisions or in contrary if it is too early to propose a mechanism eventually propose to move it to the SI. For a preliminary communication on a new reaction, it can be OK not to discuss the mechanism, telling it will be done in future work.

**4.6) Conclusion**

Did the authors reach the correct conclusion based on their results?

**4.7) Experimental part**

A full check of the experimental part is excessive, as this usually ask for days of work and need to be performed by the authors. You need to do "sample checks": select randomly 2-3 experiments to check carefully, and see if you see alert signs. It is usually a good idea to choose fluorinated compounds, as those need to be characterized with particular care (C-F coupling in 13C). If you get warning signals, then do a more thorough check. Other points to take care of:

- Starting materials: The synthesis of starting materials need to be sufficiently described. References should be at least given for all known compounds, and the reference should contain a detailed protocol for synthesis and their full characterization. Unknown compounds should be fully characterized, and yields for their synthesis given.

- Procedure for new reactions: are their sufficient details to reproduce the work (e.g. for photochemistry, the used experimental settings should be described in details)

- Spectra quality: are the NMR spectra big enough? Is the purity good enough?

**4.8) Formal quality**

Are the illustrations of good quality? Especially is the drawing of compounds corresponding to their physical structure (typical case: are hypervalent iodine compounds T-shape). Are the catalytic cycles well drawn?

Can the text be readily understood? Perfect English is not required, but if the quality of English is too low and make it difficult to understand the meaning, than it needs to be improved. Give a few examples of sentence you were not able to understand.

**Important note**:

**Be always factual and polite! Always highlight the strong points of the work, even if you think it is not good enough for this journal. Think about the researcher who sweat on this work…**