

**Your Research Paper: How to
Make Your TAs Happy and
Achieve Better Grades**

Format

- 6 – 8 pages (NO more than 10 max including references and figures)
- Double spaced (NO single spacing)
- Grammatically correct, spell-checked, no fragmented sentences
- Should have headings to differentiate sections of the paper
- At least 5 references, of which at least 60% must be primary references (i.e., peer-reviewed journals, not a full list of Wikipedia articles)

The introduction...

- Makes clear choice of topic (there will be some overlap in the class, that is OK)
- Has several references integrated into the text that contain information and chemistry pertinent to your topic
- Is approximately 1 page in length, with figures and text to familiarize your reader (me) with the topic without having to read the literature
- Does not cite other sources without using the appropriate reference (or plagiarism, in layman's terms)
- Should not be pulled directly off one website

The methodology/results section...

- Is approximately 1-2 pages in length
 - Half of the section is devoted to specific references used to describe the traditional manner by which your process has been performed
 - Some of this may directly overlap with the introduction, that is OK
- The second half should contain a description of recent advancements of your selected topic, especially in the realm of making them “greener”
 - Be sure to adequately describe what has been done that has made them so
- Discuss in clear, explainable terms any environmental issues that have arisen or may arise due to the process related to your topic.

The proposal section...

- Should be a synthesis of knowledge gained from your references, your time in class, and your chemical intuition.
- Should be $\sim \frac{1}{2}$ - 1 page in length.
- Will contain a proposal of how YOU (not the literature) might improve a process and make it greener.
- Should have a consideration for life-cycle assessment (LCA)
- Does not need to be perfect, does not even necessarily have to work in practice (as we aren't actually doing this).
 - Just make it clear that you are thinking about class topics outside of class examples.

The conclusion...

- Should sum up classic ideas and your new ones, including focusing on:
 - important predictions
 - numbers/data
 - major concepts.
- Should act as a mirror to the introduction, in a way.
 - An introduction begins general and becomes more specific by the end.
 - The best conclusions start specific and end general in a manner mirroring the introduction.
- Should be about ½-1 page length.

The figures...

- Should be made in ChemDraw or other chemistry drawing/rendering programs.
 - As there are about 100 of you and only 1 public computer on our hall with this software, as long as the figures are easy to read and make decent chemical sense, you will not be penalized.
- Such as excel plots, should be remade in the Microsoft Office suite where possible.
 - In cases where you may want to screen capture images from a reference, this is OK unless the resolution is terrible, then I expect you to remake them.
- Should integrate well into the paper (do not make a separate section for them).
 - All tables and figures should have written captions such as “Figure 1. Graphical Representation of a...”: See any random reference paper for a better idea.
 - Schemes do not get captions.

The references...

- Should be in ACS format
 - Example for a journal article:
 - Brothers, S.M.; Pinder, T. *J. Imag. Chem.* **2011**, *1*, 1-10.
 - Example for a book:
 - Pinder, T.; Brothers, S.M. *How to Make a PowerPoint Presentation for Green Chemistry*, 1st ed. Imaginary Publishers: College Station, TX 2011, pp. 1 -100.
 - Example for a website:
 - CHEM 483/489 - Green Chemistry.
<http://www.chem.tamu.edu/rgroup/djd/chem483/index.html> (Accessed March 2011)
- At least 60% of references should be of the first two types
- Minimum of 5 references (the best papers have 8-10)