

Chemistry 6011

Advanced Inorganic Chemistry I: From Atoms to Coordination Compounds

Group and Element Selection: October 4, 2016

Manuscript Deadline: November 3, 2016

Presentation Rough Draft: November 15, 2016

Presentations: Nov. 22nd, Nov. 29th, Dec. 1st

Assignment. The objective of this assignment is to extend the scope of this course to the in-depth study of a specific main group element. You will work in groups of 3 to 4 people and select any member of the Groups 13 to 16. Key to the selection of the element of your choice is for there to be extensive primary and secondary literature on the properties and research/industrial application of the element. In a 12 page document you will focus on the **SRA** of the element, that is the **Structure** of compounds that the element forms, the important **Reactions** that the element engages in or facilitates, and the **Application** of this reactivity in current research studies. The work is supposed to be a fundamental exploration of the element where the secondary literature can be heavily used and also a survey of recent primary literature (within the last five years) on applications of the properties of the element to produce new knowledge. A minimum of three research articles should be used for the latter half of the assignment. The best manuscripts will be those that can effectively tell the story of the element and help us to understand chemistry not yet discussed in the course.

Grading Scheme for the written assignment.

A. Paper Format (90%)

Please format your paper in the following format but **DO NOT** include these titles in the actual writing.

Introduction: Present an introduction to significance of the main group element to the current chemical understanding. You should then transition to a brief discussion of the element properties currently being explored in research studies.

Body: In this section you will discuss the **SRA** of the element.

Conclusion: Define the major contributions made to chemistry with this element. You should also provide your own assessment of the quality of work produced by the research applications of the element and describe any surprising reactivity that may not have been predicted based on the general knowledge of how the element behaves.

You will include two appendices separate from your twelve pages.

Appendix A: This section will include your equations, figures, schemes, and tables. Make sure you label all of these things numerically using the abbreviation Eq. to represent equations, Fig. to represent figures, and the words Scheme or Table. Equation labels must go to the right of the equation. Figure legends must go beneath a figure and table legends must go above a table. If your figures and tables are borrowed from a reference make sure to use the superscript system defined below to reference these materials.

Appendix B: Your reference page. See referencing format below.

Additional Information-

Your assignment must be written in 12 pt. Times New Roman font, double-space and use 1-inch margins. Please include figures and tables that are necessary to convey an important argument using ChemDraw or some other chemical drawing software. Remember to properly cite any figures that are

NOT your own original creation but only insert high quality versions of the figure. High quality figures can be found in the HTML version of the manuscripts. I do not want to see poor copy/paste versions of the figures.

The purpose of this writing assignment is to expose you to journal search engines and to scientific writing in the form of research articles. There is a reasonable selection of journals available on-line through the University's webpage. Please refer to <http://biblioteca.uprrp.edu/Bases-Datos.html> to gain access to different search engines. Please note that papers from review journals (those that summarize a topic but do not present original work) or non-referenced sources (for instance, an entertainment magazine) will not be accepted. I also recommend using the Web of Science, SciFinder, and Google scholar to help you find references. **Any form of plagiarism whether of the literature or of another student will result in total loss of credit for this assignment. Structural plagiarism is not permitted.**

B. Grammar (10%)

All assignments must be written using proper grammar and featuring a coherent presentation of the material.

How to reference. Please cite your sources by referencing them in the following way. In the text cite any information that you obtained from a journal or other source in numerical order by placing a number superscript next to the information. If there are two authors address them by their last names in the paper. If there are more than two authors, then address them by writing the last name of the first author followed by the phrase et al. For example:

Nicolau created the ultimate hip replacement implant.¹

Tinoco et al. synthesized an awesome titanium anticancer compound.²

The 1 and 2 would indicate that these are the first and second reference that you cite. You will from then on refer to these references as 1 and 2 in your superscripts.

Please cite your sources in the following way.

listing for your reference. Last name (written completely), First name (abbreviated). (You will do this for all the authors). Name of the article. Abbreviated name of the journal written in italics. The journal number written in bold followed by a comma. The pages corresponding to the article and immediately followed by the year the article was published in parenthesis. This format is for a research article from a peer-reviewed journal. As an example:

3. Hager, L.P., Morris, D.R., Brown, F.S. & Eberwein, H. Utilization of halogen anions. *J. Biol. Chem.* **241**, 1769-1777 (1966).

For Books

List all authors by last name and initials, separated by commas if there are more than two authors. Put an "&" before the last author in the list. Then put the title of the book in italics, the publisher, the city, and the number of pages in the book. Follow this with the year the book was published in parenthesis and then a period.

One author:

Gould, S. J., *Hen's Teeth and Horse's Toes*, W. W. Norton, New York City, 413 p, (1983).

Two or more authors:

Ingmanson, D. E. & Wallace, W. J., *Oceanography: An Introduction*, Wadsworth, Belmont, CA, 530 p (1985).

For Articles or Chapters with separate authors from a Book or Compilation

List the author(s) of the article using the same format given above for books, the title of the article or chapter (no quotes, italics or underlines), then the name(s) of the editor(s) of the book or compilation, followed by "ed." or "eds.". Then put the title of the book in italics, the publisher, the city, and the page numbers where the article can be found. Follow this with the year the book was published in parenthesis and then a period.

Rodgers, J., 1983, The life history of a mountain range-- Appalachians, in Hsu, K. J., ed., *Mountain Building Processes*, Academic Press, Orlando, 229-243 (1983).

For an Article from a Journal or Magazine

List the authors by last name (written completely), first name (abbreviated). Place an & before the last author. Name of the article. Abbreviated name of the journal written in italics. The journal volume number written in bold followed by a comma. The pages corresponding to the article and immediately followed by the year the article was published in parenthesis.

One author:

Maddox, J. The great ozone controversy. *Nature*, **329**, 101-105 (1987).

Two or more authors:

Hager, L.P., Morris, D.R., Brown, F.S. & Eberwein, H. Utilization of halogen anions. *J. Biol. Chem.* **241**, 1769-1777 (1966).

For Internet sources (Try to avoid WIKIPEDIA!)

Give the author's last name and initials (if known). Next, list the full title of the work (e.g. the specific web page), and then the title of the complete work or site (if applicable) in italics. Include any version or file numbers, enclosed in parentheses. Most important, provide the full URL to the resource, including the protocol, host address, and the complete path or directories necessary to access the document. You need to carefully write this out. In parenthesis include the year published (or last modification).

Focazio, M.J., Welch, A.H., Watkins, S.A., Helsel, D.R., and Horn, M.A., A retrospective analysis on the occurrence of arsenic in ground-water resources of the United States and limitations in drinking-water-supply characterizations, *U.S. Geological Survey Water-Resources Investigation Report*, 99-4279, <http://co.water.usgs.gov/trace/pubs/wrir-99-4279/> (1999).

For any additional references, please use the above template and modify accordingly.