**Online Assignment**

Scientific Literature and Safety

Recently, the phrase, "I did my own research" has been quite popular. The strength or weakness of that statement depends quite bit on the resources that are used and studied during the research process. Oftentimes, people confuse a Google search or watching an Instagram story with conducting research. An example would be the difference in the quality of research associated with searching on Google for "best graphics card" and reading a review on a reputable site.  [With the standard Google search](https://letmegooglethat.com/?q=best+graphics+card), you will get a set of search results that include our reputable review site, but also the search results include links to retailers that have no interest in discussing the merits of AMD vs Nvidia. [A reputable site that conducts a series of tests and shows the results from their testing is a more useful and informed form of research if you are truly interested in determining which graphics card is the best.](https://www.tomshardware.com/reviews/best-gpus-crypto-mining,5507.html)

Chart

Description automatically generated

Figure 1. Power consumption of various graphics cards while mining ETC ([source](https://www.tomshardware.com/reviews/best-gpus-crypto-mining,5507-2.html))

How do we keep track of the research that is being conducted around the world?

Every day on-campus at Texas A&M University, cutting-edge research is being performed and the results of the research are published in scientific journals. Scientific journals are the gold standard for published research results. The results are vetted through peer review and the "importance" of the results to the field of study is ascertained by experts in the field (journal editors). The people that work in the research labs at Texas A&M University keep up with the research being conducted at other universities by reading the articles that other research groups publish.

While published articles in reputable scientific journals are the gold standard for published research results, how do we evaluate other resources?

One way to evaluate a source is to apply the C.R.A.P. Test.  [The Texas A&M University Writing Center has more information here.](https://writingcenter.tamu.edu/Students/Writing-Speaking-Guides/Alphabetical-List-of-Guides/Citing-Documenting/Evaluating-Scholarly-Sources)The acronym C.R.A.P. stands for **C**urrency, **R**eliability, **A**uthority, and **P**urpose. When evaluating a source based on Currency, you should ask, "When was the source published?" Reliability is an attempt to evaluate the credibility of the source of information. Authority relates to the credentials of either the source or the author. And Purpose is an attempt to evaluate the underlying [raison d'être](https://www.merriam-webster.com/dictionary/raison%20d%27%C3%AAtre) of the source. Another method to evaluate a source is to apply [the SIFT test](https://courses.hayden-mcneil.com/pluginfile.php/2222949/mod_resource/content/1/The_SIFT_Test_handout.pdf). The acronym SIFT stands for **S**top, **I**nvestigate the source, **F**ind better coverage, and **T**race claims, quotes and media to the original context.

What about Wikipedia?

Wikipedia is an interesting case to discuss. [This paper](https://nickmvincent.com/static/wikiserp_cscw.pdf) studied Wikipedia's impact on the internet and found that Wikipedia articles appear in 67% to 84% of all search engine results pages. Information from Wikipedia is the source of most of the "knowledge boxes" or other excerpts that show up on those results pages. [In addition real experts in the field contribute to about 10-30% of all of the edits of pages in their subject-matter expertise.](https://twitter.com/emollick/status/1442294489142468613)But we need to be careful, Wikipedia and other encyclopedias do not qualify as scholarly or academic resources and so they are not acceptable sources to cite when writing reports or papers. Wikipedia is best used as a starting point for research, it can help you get an overview of a topic but the heart of the value of the information on Wikipedia are the sources that are cited on the article page.

Types of Scientific Literature

You are going to need to use the following links and resources to complete the assignment this linked at the bottom of this page. For some of the resources, you may need to be using the on-campus Texas A&M University internet in order to have full access to the resources (please do not pay out of pocket to access any of the resources). If you are off-campus and would like to complete the assignment, [you can install a TAMU VPN by following the instructions here](https://it.tamu.edu/services/network-and-internet-access/virtual-private-networks/virtual-private-network-vpn/). If that sounds like too much work, then try to complete the assignment while using the Texas A&M University on-campus internet.

Original research results reported by scientists are considered **Primary Literature**. The Primary Literature includes dissertations, journal articles, and patents. Many universities have online and/or print subscriptions to the journals that collect and publish articles submitted by scientists. There are journals that are more broad (like [Science](https://www.science.org/journal/science) and [Nature](https://www.nature.com/nature/volumes)) and there are journals that are for more narrowly-focused subfields of study (like [Applied Electronic Materials](https://pubs.acs.org/journal/aaembp)).

The search engine that focuses exclusively on searching through the archives of journals that publish primary literature is [Web of Science](http://proxy.library.tamu.edu/login?url=https://coral.library.tamu.edu/resourcelink.php?resource=1849) (you may need to login using your TAMU NetID).

**Secondary literature** consists of information sources like textbooks, encyclopedias (including Wikipedia), books, and references. Rather than presenting original research results, they are often evaluations of, compilations of, critical examinations of, and/or recontextualizations of research results. [Google Scholar](https://scholar.google.com/) is a search engine that searches both primary and secondary literature.

References Specific to Chemistry

We already used [Ptable](https://ptable.com/" \l "Properties" \t "_blank) to gather melting or boiling point data about various elements. It also has other element and compound-specific data.

[CHEMnetBASE](https://www.chemnetbase.com/faces/search/SimpleSearch.xhtml) is a collection of chemical databases including the Handbook of Chemistry and Physics and the Combined Chemical Dictionary.

[The Merck Index](https://proxy.library.tamu.edu/login?url=https://coral.library.tamu.edu/resourcelink.php?resource=3736)provides information on chemicals, drugs, and biologicals.

Safety

A safety data sheet or SDS (formerly known as a material safety data sheet; MSDS) is a document that lists some of the chemical and physical properties and information about a chemical relating to safe use and potential hazards associated with exposure to the chemical. In addition, they might contain information about how to handle exposure or a spill of the chemical. Most of the time an SDS for a chemical is provided by the vendor that is either distributing or selling the chemical. During the Literature activity you will need to use the following website: <https://lindesds.thewercs.com/External/private/search.aspx?guilang=EN>.

You will want to change the setting of the search to a Pure Gas product type and follow the instructions in the question.

[The Texas A&M University Library](https://library.tamu.edu/)

[The University library offers many services](https://library.tamu.edu/services/) in addition to checking out books and resources.  You can print, scan, or copy at the library and [they even have a studio that you can use to create and edit a multimedia project.](https://library.tamu.edu/libraryInstruction/the-studio.php) [You can also reserve a study room for quiet study or for groups to collaborate.](https://library.tamu.edu/studyspaces/) Your student fees support the library, please take advantage of this excellent on-campus resource.